



International Conference on New Trends in Science, Engineering, Technology & Management (ICNTSETM-24)

**26th & 27th April
2024**

**International Conference
on
New Trends in Science,
Engineering, Technology &
Management
(ICNTSETM-24)**



P.S.V College of Engineering and Technology
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

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**INTERNATIONAL CONFERENCE ON NEW
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(ICNTSETM'24)**

26th & 27th APRIL 2024

**ORGANIZED BY
P. S. V COLLEGE OF ENGINEERING AND TECHNOLOGY
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Conference Proceedings

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About the College

P.S.V. College of Engineering and Technology which has been Accredited by the NAAC with “A” grade is run by St. Joan’s Educational Trust. Dr. P. Selvam, the founder of the Trust, is an academician with rich experience in teaching and having achieved an unenviable reputation in his own profession. He is a keen social activist and visionary, felt that he should contribute his might to the betterment of the society as a part of his social commitment, this could be achieved by promoting Educational Institutions that impact high quality knowledge at an affordable cost.

Globalization of Education and the paradigm shift in teaching methodology have inspired the Trust to foster top-notch edification in multifarious spheres of learning. As a step towards materializing this dream, the Trust has started “P.S.V College of Engineering and Technology” to provide quality education and training to students in Engineering and Technology to prepare them to come up in the highly competitive technological fields, we aim at moulding students to become intellectually luminous, globally competitive, industry ready Engineers and Technologists. The academic ambience at P.S.V College of Engineering and Technology will steer the students to achieve their best.

About the Conference

The International Conference on New Trends in Science, Engineering, Technology and Management (ICNTSETM-24) is being organized by P.S.V College of Engineering and Technology, Krishnagiri, Tamilnadu, India on 26th & 27th April 2024. The focus of this conference is to bring and unite international scholars working in the field of artificial intelligence and Machine learning, Emerging cellular technology, Robotics, and automation, creative and innovation in management practices and sustainable energy materials.

The Conference provides an opportunity to research scholars, Faculty, Industry Professionals, Delegates and Students to interact and share their experience and Knowledge in the fields of science, management, and Technology. The aim of this Conference is to bring the research domains in multidisciplinary Science, Engineering, Management and Humanities on a single platform. An engineer is a professional practitioner of engineering, concerned with applying scientific knowledge, mathematics, and ingenuity to develop solutions for the technological and societal problems. The young researchers are provided with opportunities to share their findings and to improve their research through oral and poster presentations. The Conference is focused on innovative issues at the international level by bringing together experts and participants from different countries.

CHAIRMAN'S MESSAGE



**Dr. P. SELVAM, M.A., B.Ed., M.Phil., Ph.D.,
Chairman
P.S.V Group of Institutions**

Greetings from P.S.V College of Engineering and Technology!!

We are Proud to Host the International Conference on New Trends in Science, Engineering, Technology and Management (ICNTSETM'24). The conference is structured as key note address followed by paper presentation. The Plenary key notes will be addressed by eminent personalities at international and national level to introduce the theme of the conference. Papers are invited from PG and UG scholars, researchers, academic institutions and R&D personnel.

The Conference aims at bringing researchers, academicians, practising engineers and industrialists from all over the country on a common platform. The conference provides a international and national forum for researchers to exchange the ideas in emerging trends in various aspects of theories, experimentations, computations and computational methods in Science, Engineering, Technology and Management.

SECRETARY'S MESSAGE



Dr. S. VIVEK, M.A., EDMSL(UK)., M.B.A.(UK), Ph.D.
Secretary
P.S.V Group of Institutions

It is a matter of great pride, privilege, and honour to invite you all to the International Conference on New Trends in Science, Engineering, Technology and Management (ICNTSETM'24) to be held on 26th & 27th April, 2024 in P.S.V College of Engineering and Technology, Krishnagiri.

It is an exciting time for academicians, Engineering professionals and researchers continue to grow and adapt systematic manuscript management, constructive and critical blind review process. The participants will exhibit their excellent discussion and exchange the technical challenges on Science, Engineering, Technology and Management to penetrate the innovations and hurdles for the upcoming technology. This conference will be highlighting issues on interest for research community in related fields by the renowned scholars across the globe. I congratulate all the members of the organizing committee making this conference a successful event.

PRINCIPAL'S MESSAGE



Dr. P. LAWRENCE, M.E., Ph.D.,
Principal
P.S.V College of Engineering and Technology, Krishnagiri

We are delighted to extend a warm invitation on behalf of the organizing committee to join us at the International Conference on New Trends in Science, Engineering, Technology, and Management (ICNTSETM'24). This conference aims to bring together researchers, industry professionals, and policy makers to discuss and showcase recent advancements in various fields.

The conference emphasizes the importance of integrating diverse perspectives in Engineering and Technology to achieve greater output and contribute to emerging innovations. It also highlights the need to efficiently exploit scientific and engineering innovations, understand the needs of cutting-edge industries, and prioritize research in line with industry and policy maker expectations.

By participating in ICNTSETM'24, you will have the opportunity to engage in valuable interactions with professionals from different backgrounds, share your knowledge, and learn from others. This conference also focuses on maintaining environmental sustainability while achieving economic sustainability.

We encourage you to review the conference details and consider how you can best contribute to fostering closer interactions within the scientific, industrial, and policy-making communities, regardless of your background or area of expertise. We eagerly anticipate an enriching and productive ICNTSETM'24 conference.

Table of Index

S. No	Title	Page No.
1	Optimizing Construction Project Management Through Building Information Modeling (Bim) in India	1
2	Enhanced Photocatalytic Activity of Electrodeposited Cu-Zn Bmnps for the Sustainable Treatment of Industrial Wastewater	2
3	Effect of Shape of Steel Fibre on Mechanical Properties of Fibre-Reinforced Concrete	3
4	Experimental Investigation on Partial Replacement of Coarse Aggregate with Ceramic Waste	4
5	Land use and Landcover Change Detection Using Sentinel Image and Random Forest Classifier	5
6	An Experimental Study on Partial Replacement of Cement by Hypo Sludge	6
7	Development of Light Transmitting Concrete Using Acrylic Bars	7
8	Effect of curing on compression and Shear Strength Parameters of Expansive Soils treated with Rice Husk Ashand Lime	8
9	Experimental Investigation on Eco-Friendly Brick by Using Mycelium and Plastic Waste	9
10	Experimental Study on Behaviour and Strength of Mud Block	10
11	Experimental Investigation on Glass Fiber Concrete Tiles	11
12	Experimental Investigation on the Utilization of Waste Materials	12
13	Experimental Study on Low-Cost Roofing Tile Using Agricultural and Plastic Waste	13
14	An Experimental Investigation on Use of Copper Slag as Partial Replacement of Fine Aggregates in Concrete	14

15	Comparative Survey on Ultra High-Performance Concrete in Beam and Slab	15
16	Experimental Study on Replacement of River Sand by Waste Foundry Sand in Paver Blocks	16
17	Experimental Investigation on Water Absorption of Pervious Concrete by the Addition of Glass Fiber	17
18	Experimental Investigation of Glass Fiber Reinforced High Performance Flexural Concrete Beams	18
19	Experimental Study on Concrete Using Copper Slag as A Partial Replacement of Fine Aggregate	19
20	Experimental Study on Strength Enhancement of Concrete by Using Silica Fume as an Admixtures	20
21	An Experimental Investigation on Sawdust Ash Concrete by Partial Replacement of Cement	21
22	An Experimental Investigation on Splicing of Reinforcement by Using Bar Coupler and Steel Plate in RC Column	22
23	A Study on Compressive Strength and Durability Test on Nominal Mix Concrete and Triple Blend Mix Concrete	23
24	A Study on Strength of Concrete by Partially Replacement of Cement by Coconut Endocarp Ash	24
25	An Ensemble Deep Learning Approach on Risk Management in Finance and Marketing Sector	25
26	A Deep Learning Pipeline for Diabetic Maculopathy Detection in Clinical Practice	26
27	Design and Implementation of Sign Language to English Text Conversion Using Deep Learning	27
28	Design And Implementation of Lip Reading Method Using Deep Learning	28
29	Detecting the Cognitive of Mental Stress Using Random Forest Classifier	29

30	Design an Advanced Visual Painter with Geometric Shapes Through Webcam Using CNN in AI and Opencv	30
31	Implementation of an Image Caption Generator Using Recurrent Neural Network in Deep Learning	31
32	Implementation of Drowsiness Monitoring System Using Random Forest Algorithm in Maching Learning	32
33	Implementation of IOT Based Pre-Arrival Integration for Automatic Fast Tag Wallet Balance Checking System Using RFID	33
34	Create A Blood Bank System Using a Matching Algorithm in Data Science.	34
35	Detecting the Crop Leaf Disease Using Artificial Neural Network Algorithm in Deep Learning	35
36	A Machine Learning-Based Security Model for Cloud Services Using SVM and J48 Algorithm	36
37	Implementation Of Crowd Detection Model Using Yolo Technique with Computer Vision	37
38	Accident Detection Using Convolutional Neural Networks	38
39	Detection of Early Stage of Parkinson’s Disease Using Voice Analysis	39
40	Automatic Road Damage Detection Using Machine Learning	40
41	Maintechbot: Intelligent Chatbot for Substation Maintenance Management	41
42	IOT-Based Smart Agricultural Monitoring System	42
43	IOT -Enabled Health Surveillance System For E-Health Advancements	43
44	Driver Drowsiness Detection Using Deep Learning	44
45	FIFA Player Recommendation System Leveraging AI for Intelligent Player Selection in FIFA	45

46	Real-Time Vehicle Security System Using Computer Vision Technology for User Authentication and Theft Prevention	46
47	Personalized Planner	47
48	Revolutionizing Herbal Recognition with AI	48
49	Smart Voting Machine with Facial Recognition and Fingerprint Sensors	49
50	IOT Based Forest Safety Alert System	50
51	Health Aibot Personalized Mental Wellness Companion	51
52	Performance Analysis IOT Using Lora Based Chirp Spectrum Modulation Management	52
53	Smart Digital City Using IOT	53
54	FPGA Implementation of Single Precision Inexact Floating-Point Multiplier	53
55	Design of a Dual Band Star Shaped Electromagnetic Bandgap (Ebg) For 5g Communication	54
56	Design and Implementation of an Ann Based Plug in Vehicle to Grid System by Wireless Power Transfer System	55
57	Design and Implementation of Deep Learning-Based Crack Detection System for Railway Tracks Using Convolutional Network Algorithm	56
58	Design and Implementation of Fire Detection Using an Autonomous Drone Based on CNN Algorithm	57
59	Design and Implementation of Smart Borewell Rescue System with AI-Enhanced Wireless Monitoring	58
60	Design and Implementation of Solar Based Water Purifier System Using IOT Technology	59
61	Design and Implementation of an IOT-Based Face Recognition System for Detecting Cigarette Smoke and Alcohol in Non-Smoking Areas and Public Places	60

62	Design and Implementation of Smart Health Monitoring System for Student Using IOT Technology	61
63	Design and Implementation of Keyboard and Mouse Control Based on Opencv Using Dlib Algorithm	62
64	Design and Implementation of Fabric Sewing Defect Detection and Automatic Stitch Control System Using Image Processing	63
65	A Smart Vehicle to Vehicle Communication System Integrating Lidar and Radar Technology with Machine Learning for Proactive Accident Detection	64
66	Implementation of Novel Method Far Energy Efficient and Secure Communication in Underwater Wireless Sensor Network Using Machine Learning	65
67	Design and Implementation of IOT Based Automation Drowsiness Monitoring, Emergency Alert & Traffic Alert Using Rasberry Pi	66
68	AI Driven Smart Irrigation and Weed Management with Water Vaporisation	67
69	Arhythmia Patient Monitoring System & Automatic Parking System	68
70	Meta surface Enabled Antenna Design for High Performance Microwave Biomedical System	69
71	Footstep Power Generation Using Piezoelectric Plate	70
72	IOT Based Monitoring and Control of Faults in Distribution Transformers	71
73	Clearance of Dust Accumulation and Aggregation on PV Panel Using Automatic Solar Panel Cleaning System	72
74	Design of Power Quality Conditioner for Electric Vehicle Charger	73
75	Design and Implementation of Efficient Battery Management System in Electrical Vehicle Application	74
76	Design and Implementation of IOT Enabled Smart Irrigation System with Android Application in PSVCET Campus.	75

77	Design and Implementation of Power Generating Using Speed Breaker/Rollers in Roads	76
78	Design and Development of Automatic Train Traffic Collision Avoidance System Using RFID	77
79	Design and Implementation of IOT Based Power Generation Using Pv and Hydro for Ev Charging	78
80	Using Raspberry Pi Pico to Enhance Drone Detection of People in Disaster Situations	79
81	Fault Detection and Maintenance of Industrial Equipment's using AI	80
82	Electric Vehicle Fast Charging with Multiport Technology	81
83	Intelligent Cooperative Vehicle Communication System	82
84	Thermal Management System for Batteries in Electric Vehicle	82
85	Optimising Medical Emergency Response Through Innovative Solution	83
86	Dynamic Firefighting Solutions with Fire Ball Tech	83
87	Exploring Sustainable Bio-Fuel Production: Comparative Analysis of Micro Algal Oil Yield and Fatty Acid Composition Through Mixotrophic Cultivation on Agro-Industrial Wastes	84
88	Design and Analysis of Swing Jaw Plate of Jaw Crusher	85
89	Static Analysis of Cooling System Fan Blade by Using Reverse Engineering	86
90	Structural and Thermal Analysis of Vented and Normal Disc Brake Rotors	87
91	Design and Comparative Analysis of Thermal Conductivity on Different Heat Sinks in 3D Printer	88
92	Design and Analysis of Extruder Used In 3D Printer	89

93	An Investigation into the Performance of Different Working Fluids in the Organic Rankine Cycle	89
94	Design and Analysis of Structure Used In 3D Printer	90
95	Design and Analysis of Heat Block In 3D Printer	91
96	Experimental and Theoretical Analysis of Solar Heater with Different Shapes of Absorber Plate	92
97	Analysis of Material Characteristics of Poly Composition Coating on Combustion Machinery Piston	93
98	Epileptic Seizure Prediction Using Deep Learning	94
99	Implementation of Saas Based Web Page Designing & Management	95
100	Implementation of Efficient Manhole Visual Inspection System Using Deep Learning in UAV Navigation	96
101	Stock Market Prediction Using Machine Learning	97
102	Multilingual Speech Recognition and Synthesis Using Deep Learning	98
103	URL Based Phishing Website Detection Using Machine Learning Models	99
104	Design and Implementation of Convenient and Secure Voting System Using GSM and AI Tools	100
105	Women Safety Device with GPS Tracking and Alerts Using Arduino	101
106	Implementation of Smart Farming System Using AI	102
107	Human Mental Health Monitoring System Using AI Tools Algorithm	103
108	A Realtime Driver Drowsiness Detection Using Eyes Aspect Ratio Algorithm	104
109	Sign Up Wallet: Revolutionizing Digital Identity Management With Blockchain and Machine Learning	105

110	Developing an Image Immunizer for Tamper Localization and Recovery Using Deep Learning	106
111	Opencv Based Fake Item Detection Using Scale Invariant Feature Transform Algorithm Sift	107
112	Predictive System for No Parking Vehicle Owner Identification Using Deep Learning Algorithm	108
113	Developing an E-Commerce Website for Visually Impaired Person Using Full Stack Web Development.	109
114	Virtual HR: AI-Driven Automation for Efficient and Unbiased Candidate Recruitment in Software Engineering Roles	110
115	Implementing The Lifesaver: A Vade based Intelligent Ambulance Deployment for Rapid Emergency Response and Alert System	111
116	Enhanced Automatic Number Plate Recognition for High-Speed Vehicles: Leveraging YOLO And HAAR Cascade	112
117	Reach Medical Support to Accidental Vehicles Using IOT and Mems Sensor	113
118	Disease Prediction by Machine Learning Over Big Data from Healthcare Communities	114
119	Credit Card Fraud Detection Using Random Forest Algorithm	115
120	Smart Agriculture Monitoring Using Fuzzy System	116
121	Analysis of the Impact of Artificial Intelligence on Academic Libraries: A Case Study Approach	116
122	Enhanced Cardiopulmonary Resuscitation and Ventilation System with Integrated Monitoring Capabilities	117
123	Attendant Replacing Aid: Smart and Secure Saline Infusion	118
124	Gait Analysis Using Machine Learning	119
125	Comparative Analysis of Antioxidant Potency in Vitis Vinifera (Grape) Seed Extracts: Essential Oil, Cold Press Oil, and Aqueous Extract	120

126	Wireless Charging of Implantable Pacemaker's Battery	121
127	Emerging Trends in Remote Work: Shaping the Future of Workplace Dynamics	122
128	A Study on Organization Change and Development with Reference to Kansai Nerolac Paints Ltd, Hosur.	123
129	A Study on Employee Engagement Towards the Milk Production Union Limited, Krishnagiri.	124
130	A Study on Employee Satisfaction Towards The B&B Trilewall Containers Limited, Shoolagiri.	125
131	A Study on Budgetary Control in Exide Industries Limited, Hosur.	126
132	A Study on Innovations in Employee Engagement Tools to Enhance Employee Productivity with Reference to Delta Electronics Pvt Ltd, Kurubarapalli	127
133	A Study on Workers Participation in Management with Reference to Surin Automotive Pvt., Ltd. – Hosur.	128
134	A Study on Equal Employment Opportunity with Reference to Innoforge Pvt Ltd, Hosur.	129
135	A Study on Work Life Balance with Reference to ABC Fruits, Bargur.	130
136	A Study on HRM and Employee Motivation with References to Exide Industries Limited, Hosur	131
137	A Study on Organizational Culture Octa pace Profile with Reference to Sr Unique Solutions, Hosur.	132
138	A Study on Change Management with Reference to Deccan Industries, Coimbatore.	133
139	A Study on Working Capital Management with Reference to Amsteel Pvt Ltd, Hosur.	134
140	A Study on Knowledge Management on Organization Continuity with Reference to Aadhithya Copiers, Krishnagiri.	135

141	A Study on Employee Service and Welfare with Synergy Punching Private Ltd, Bengaluru.	136
142	A Study on Employee Relationship Management with Reference to Kansai Nerolac Paints Ltd, Hosur.	137
143	A Study on Employee Absenteeism with Reference to AM Steel Industry, Hosur.	138
144	A Study on Impact of Teamwork with Reference to Sri Devaraja Agro Industries, Krishnagiri.	139
145	A Study on Recruitment Strategies with Reference to Kattera India Pvt Ltd, Krishnagiri.	140
146	A Study on Designing an Effective Diversity and Inclusion Strategy at ABC Fruits, Krishnagiri.	141
147	A Study on Employee Training and Development Program to Ascent Circuits, Hosur.	142
148	A Study on Employee Retention Strategies in Ola Futurefactory, Pochampalli.	143
149	A Study on Emotional Intelligence with Reference to Rajsriya Automotive Industries Pvt Ltd, Hosur.	144
150	A Study on Fringe Benefits to Enhance Employee Satisfaction and Retention at Sri Devaraja Agro Industries, Krishnagiri.	145
151	A Study on Effectiveness of Labour Welfare Measures with Reference to Sri Devaraja Agro Industries, Krishnagiri.	146
152	A Study on Employees' Perception on Training System with Reference to Farida Groups, Vellore.	147
153	A Study on Labour Welfare Facilities in Weg Industries (India) Pvt. Ltd, Hosur	148
154	A Study on Causes of Stress Management in Work from Home Employees at Allwin Technologies, Chennai.	149
155	An Empirical Study on Employee Welfare Measures with Special Reference to RB Industry, Krishnagiri	150

156	A Study on Employee Attrition Strategies in an Organization at First Steps Baby Wear, Hosur.	151
157	A Study on Effectiveness of Employee Engagement with Reference to Sai Lakshmi Milk Products, Krishnagiri.	152
158	A Study on the Impact of Predictive Analysis in Human Resources Decision Making with Reference to Microland Company, Bengaluru.	153
159	A Study on Strategic Recruiting and Retaining Millennial Talent in The Workplace at Genau Extrusion Pvt Ltd, Hosur	154
160	A Study on Performance Appraisal System with Reference to Sayyam Investments Private Limited, Bengaluru.	155
161	A Study on Employee Well-Being and Mental Health at OLA Future Factory, Pochampalli.	156
162	A Study on Employee Performance Appraisal Towards the Dezy Abital Innovations Pvt Ltd, Bengaluru.	157
163	A Study on Production Planning and Control Using AI with Reference to Stack stronics, Krishnagiri.	158
164	A Study on Employee Turnover Management in Tenneco Automotive India Pvt Ltd, Hosur	159
165	A Study on Employee Retention Strategies at Rajsriya Automotive Industries Pvt Ltd, Hosur	160
166	A Study on Effectiveness of Web Designing in Digital Marketing with Reference to Nitrosh Textile Industries, Coimbatore.	161
167	A Study on Brand Extension Strategy Towards Rydon Industries Pvt Ltd, Coimbatore	162
168	Preparation And Characterization of A Beta-Cyclodextrin-Based Nano-Inclusion Complex Containing Quercetin: Evaluating Its Prospective Efficacy Against Cancer Cells	163
169	Applications &Future Impacts of Nanotechnology	164
170	Temperature Effect on Dissemination of Isomorphous Salts Between Liquid and Solid Phases in Ternary Systems	165

171	Isolation, Characterization and Anticancer Activity Of 7-O-Methyl Quercetin-3-O-(6''-Acetyl)-B-D-Glucoside from Nelumbo Nucifera Flowers	166
172	D-Limonene Provokes Apoptosis and Restricts Benzo(A)Pyrene Induced Lung Tumorigenesis in Swiss Albino Mice	167
173	Microwave-Assisted Synthesis of pure and Magnesium- Substituted Zinc Oxide: Their optical and Antimicrobial Activities	168
174	Hydroxy-Acetophenone-Directed Rh (III) Catalyzed C-H O-Alkylation Via 1,4 Addition: A Detailed Theoretical Study of DFT and Towards the Anti-Inflammatory Application	169
175	Antibacterial, Spectroscopic and Molecular Docking Studies Of 1, 2, 4-Oxadiazole Substituted Pyrimidine (Op) Compounds by Quantum Chemical Method	170
176	Nanotechnology: An Insurrection in Contemporary Industry	171
177	Pertinence of Nanotechnology in Day-to-Day Life	172
178	The Influence of Ion Beam Irradiation on the Magnetic and electrical properties of Carbon Nanotubes	173
179	Impact of Technology in Acquisition of English Language	174
180	Exploring the Intersection for Enhanced Learning and Communication	175
181	Trends and Innovations in English Language Teaching	176
182	Application of Mathematics in Engineering Fields and Real Life	177
183	Recent Advances in Graph Theory and Its Applications	178
184	Real Life Application of Graph Theory Coloring Graph: A Comprehensive Overview	179
185	Real Life Application of Graph Theory Coloring Graph: Real-Life Applications of Graph Coloring in Graph Theory	180

186	Engineered nanoparticles for water disinfection	181
187	Enhanced Multi-Phase Strategy for Hierarchical Intrusion Detection	182
188	The Impact of Different Levels of Human Stress on Human-Computer Interaction	183
189	Investigations on electrical characteristics of palm oil and Mineral oil subjected to alternating current (AC) stress for transformer Applications	184
190	A Novel Approach: Utilizing Nanowire Solar Cells in the Design of Solar Trees	185
191	Atmospheric Dust Collector Using IOT	186
192	IOT Based Smart Pill Box and Health Monitoring Voice Alert System	187
193	Predicting the Symptom Severity in Autism Spectrum Disorder Based on EEG Metrics	188
194	Implications of Big Data Analytics in Marketing and Best Practices for Responsible Use: A Survey Analysis	189
195	AI based College Surveillance System for Class Skipper	190
196	Comprehensive Automated Learning Among Individuals with Cognitive Disabilities.	191

**Optimizing Construction Project Management Through Building Information
Modeling (Bim) In India**

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Abstract

The construction industry faces increasing challenges in managing the complexity of large-scale projects, necessitating effective management techniques and tools. Building Information Modeling (BIM) has emerged as a pivotal approach to addressing these challenges. This study analyses current project management practices and explores how BIM offers solutions. BIM enables comprehensive digital visualization of structures, integrating geometric and semantic data to create a single model for all stakeholders throughout the project lifecycle. The study discusses the application of BIM in project management, including scheduling (4D), cost estimation (5D), sustainability (6D), and facility management (7D). A case study validates the efficacy of BIM-based approaches during construction. BIM represents not just a technological innovation but also a paradigm shift in project management, promising enhanced construction quality and risk mitigation. As technological advancements continue, BIM adoption is inevitable, shaping the future of the construction industry. The decision to embrace BIM underscores a transformative shift in construction practices towards more efficient and integrated management methodologies.

Keywords: Building Information Modelling (BIM), Project management, Construction industry, Construction quality, Risk mitigation.

**Enhanced Photocatalytic Activity of Electrodeposited Cu-Zn Bmnps for The
Sustainable Treatment of Industrial Wastewater**

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Abstract

The development of environmentally friendly photocatalytic nano material has gained valuable insights for the effective alternative for wastewater treatment. This investigation demonstrates the photocatalytic applications of copper-zinc bimetallic nano particles (Cu-Zn BMNPs) electrodeposited onto the graphite surface with perfect cubic morphology. Cu-Zn BMNPs were characterized for their structural and morphological properties using powder X-ray diffraction (PXRD), high-resolution transmission electron microscopy (HRTEM), high-resolution scanning electron microscopy (HRSEM), and X-ray photoelectron spectroscopy (XPS). The results also include the characterization of copper and zinc nano particles for comparison. Photocatalytic analyses were carried out in the sunlight and characterized using UV-visible spectroscopy. These findings validated the catalytic efficiency of the electrodeposited metal nano particles. These results proved the enhanced photocatalytic efficiency of Cu-Zn BMNPs for the minimum load (15 mg) compared with CuNPs and ZnNPs which can be used as an eco-friendly material in wastewater treatment for the effective removal of toxic compounds.

Keywords: Powder X-ray diffraction (PXRD), high-resolution transmission electron microscopy (HRTEM), high-resolution scanning electron microscopy (HRSEM), and X-ray photoelectron spectroscopy (XPS)

**Effect of Shape of Steel Fibre on Mechanical Properties of Fibre-Reinforced
Concrete**

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Abstract

In this study, the effect of the shape of steel fibers on the mechanical properties of fiber-reinforced concrete was analyzed. For this purpose, M25 grade concrete is chosen as the mix proportion. Different shapes of fibers like hooked, crumbled, and plain are used in this study as an addition in percentage like 1%, 2%, 3%, 4%, etc. to the weight of cement. From the test results, we concluded that the Mix with crumbled-shaped fiber showed more resistance to both compressive and tensile strength than the Mixes with hooked-shaped fiber and conventional at a percentage of 2% with the weight of cement. whereas Mix with the hooked-shaped fiber shows improved resistance to both compression and tensile strength when compared to conventional concrete but at the same time it is less than crumbled-shaped fiber Mix. In comparison, use of crumbled fiber is used to increase the stability of the structure and integrity in various methodologies.

Keywords: Fiber reinforcement, cement, Coarse aggregate, fine aggregate, tensile Strength, compressive strength.

**Experimental Investigation on Partial Replacement of Coarse Aggregate with Ceramic
Waste**

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Abstract

This study addresses the pressing need for sustainable practices in the construction industry by exploring the use of ceramic waste as a partial replacement for coarse aggregate in concrete production. With the depletion of natural resources and the escalating generation of construction waste, finding alternative materials is crucial. The research focuses on evaluating the mechanical properties and durability of concrete mixes containing varying proportions of ceramic waste. Concrete specimens were prepared with different levels of ceramic waste, replacing coarse aggregate at 0%, 5%, 10%, and 15% by weight. Various tests were conducted to assess the performance of these mixes, including compressive strength, tensile strength, flexural strength, and durability tests such as water absorption and resistance to chloride ion penetration. The results indicate that replacing 5% of coarse aggregate with ceramic tiles improves concrete's compressive strength by 4%, split tensile strength by up to 11%, and flexural strength by 5%. However, beyond this replacement percentage, there was a decrease in these strengths. Lower replacement percentages showed minimal effects on strength parameters, while higher percentages led to a reduction in compressive, tensile, and flexural strengths. Despite the decrease in strength, the inclusion of ceramic waste improved certain durability aspects, such as reduced water absorption and enhanced resistance to chloride ion penetration. In conclusion, this study provides valuable insights into the feasibility and implications of incorporating ceramic waste into concrete production. It highlights both the benefits, such as improved durability, and the challenges, including reduced strength at higher replacement percentages, associated with this sustainable practice.

Keywords: Ceramic tiles, Crushed waste, Coarse Aggregate Replacement, Strength.

**Land use and Landcover Change Detection Using Sentinel Image and Random Forest
Classifier**

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Abstract

Land use and landcover (LULC) change detection is crucial for understanding environmental dynamics and informing sustainable land management practices. This study employs Sentinel satellite imagery and the Random Forest classifier to detect and analyze changes in land use and landcover (LULC) over time. The Random Forest algorithm, known for its robustness and accuracy in classification tasks, is applied to classify land cover types within Sentinel images and detect temporal changes. By integrating spectral, spatial, and temporal information from Sentinel images, the Random Forest classifier accurately identifies and quantifies LULC changes, including urbanization, agricultural expansion, and deforestation. The combination of the Sentinel image and the Random Forest classifier provides a powerful framework for monitoring LULC dynamics with high precision and efficiency. The results contribute valuable insights into the drivers and impacts of LULC changes, facilitating informed decision-making for land management, resource planning, and environmental conservation. This study provides valuable insights into the significance of Sentinel imagery as a powerful tool for monitoring and understanding LULC dynamics on both local and global scales.

Keywords: Land use and landcover (LULC), Temporal changes, Random Forest Classifier, Sentinel images

An Experimental Study on Partial Replacement of Cement by Hypo Sludge

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Abstract

The global cement industry is a significant contributor to greenhouse gas emissions, accounting for about 9% of total emissions into the Earth's atmosphere. The paper industry generates substantial waste, with India producing approximately 420 million tonnes per year through chemical processes. Addressing the environmental challenges posed by cement manufacturing and paper waste disposal requires the development of alternative binders in the construction sector. Utilizing industrial waste products, such as Supplementary Cementitious Materials (SCMs), in concrete production is crucial for economic, environmental, and technical reasons. The proliferation of paper waste from the paper industry poses a severe disposal problem, occupying significant space and contributing to environmental pollution. To mitigate paper waste and environmental pollution, it's suggested to repurpose paper waste as Hypo sludge in concrete mixes, leveraging its cementitious properties like silica and magnesium. Cement is a primary component of concrete, and its manufacturing process emits large amounts of carbon dioxide, contributing to global warming. Utilizing Hypo sludge as a partial replacement for cement in concrete mixtures can help control environmental pollution stemming from cement industries. By incorporating industrial waste products like Hypo sludge into concrete, there is potential to reduce the carbon footprint associated with traditional cement-based construction materials. Implementing sustainable practices in the construction industry, such as utilizing waste materials as substitutes in concrete production, is essential for mitigating environmental impacts and fostering an eco-friendlier approach to infrastructure development. We are doing experimental studies such as compressive strength and split tensile strength tests after partial replacement of cement by hypo sludge. The maximum split tensile strength for 7 days and 28 days is achieved for 15% replacement of cement and starts decreasing its strength from 20% to 30%.

Keywords: Cement, hypo sludge, chemical admixture, M30 grade concrete, compressive strength, spilt tensile

Development of Light Transmitting Concrete Using Acrylic Bars

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Abstract

Light-transmitting concrete, known also as translucent concrete, is literally the brightest concrete development in recent years. Acrylic bars are cast into concrete to transmit light, either natural or artificial, into all spaces surrounding the resulting translucent panels. The material can be used in a variety of architectural and interior design applications, such as wall cladding and dividers. The main theme of this article is the use of acrylic bars in concrete, which energy is saving and green technology. It lends great energy savings in closed and non-ventilated spaces. Due to small size of the acrylic bars, they blend into concrete becoming a component of the material like small pieces of aggregate. By using acrylic bars in concrete specimens which allows light transmission through the concrete medium makes it possible to see light, shades and even colors through very thick walls. The work investigates the behavior of concrete with and without acrylic bars by conducting basic study on the mechanical properties and the light emitting properties of concrete samples. The light transmission of concrete samples was studied with different acrylic bars of thickness 3mm to 10mm which gives 15% to 20% of increased light transmission compared to conventional type. The light transmission is seen to increase with the percentage increase in acrylic bars and diameter.

Keywords: Energy Saving, Green Construction Materials, Acrylic bars, Light transmitting concrete, Translucent concrete.

**Effect of Curing on Compression and Shear Strength Parameters of Expansive Soils
Treated with Rice Husk Ash and Lime**

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Abstract

This study investigates the effect of curing on the compression and shear strength parameters of expansive soils treated with Rice Husk Ash (RHA) and lime. Expansive soils pose significant challenges in construction due to their high swelling and shrinkage potential. RHA and lime are commonly used as stabilizers to improve the engineering properties of such soils. Laboratory tests, including unconfined compressive strength (UCS) and direct shear tests, were conducted on samples treated with varying proportions of RHA and lime, subjected to different curing periods. The results reveal the influence of curing duration on the strength characteristics of the treated soils. The optimum proportion of 5% lime and 15% RHA gave the maximum strength and improved index properties of the soil. Specific gravity and grain size distribution tests were initially carried out for the virgin soil sample. Standard Proctor's compaction tests showed a decrease in maximum dry density from 14 KN/m³ to 11.8 KN/m³ due to the lower density of RHA compared to soil particles. The increase in optimum moisture content from 32.8% to 46.23% for soil with 5% and 20% RHA indicates a high affinity of RHA with water. Unconfined compressive strength tests showed an increase from 110.4 KN/m² to 116.3 KN/m² with the addition of RHA up to 15%, with a decrease beyond 15%. Cohesion also increased from 55.2 KN/m² to 58.15 KN/m² with the addition of RHA up to 15% and decreased beyond 15%. In unsoaked CBR tests, the values obtained at 5mm penetration were higher than those at 2.5mm penetration, while soaked CBR values at 5mm penetration were lower than those at 2.5mm penetration. In conclusion, the study demonstrates that the curing process significantly influences the compression and shear strength parameters of expansive soils treated with RHA and lime.

Keywords: Expansive soil, Rice Husk Ash, Lime, and Soil stabilization.

**Experimental Investigation on Eco-Friendly Brick by Using Mycelium and Plastic
Waste**

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Abstract

Many of the constructions work using a different types of bricks like clay brick, fly ash brick, lime bricks, etc are using now days. In this project represented the Eco-friendly brick by using mycelium and recyclable plastic. A Mycelium and plastic brick are an organic brick they found organic waste like fungus. These bricks are reducing the pollution. Compare normal brick with mycelium & plastic bricks has low cost. It is manufactured by bio-degradable & non-bio-degradable waste. Mycelium brick has a more fire resistance & weight less brick. In this project conducting the tests are compressive tests, water absorption test.

Keywords: Mycelium, Plastic waste, Compressive strength test, and Water absorption test

Experimental Study on Behaviour and Strength of Mud Block

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Abstract

This study explores the strength properties of mud blocks, a traditional building material with potential for sustainable construction practices. The research investigates various factors influencing the strength of mud blocks, including soil composition, moisture content, compaction methods, and curing techniques. Experimental testing methods such as compressive strength tests and durability assessments are employed to evaluate the performance of mud blocks under different conditions. The findings contribute to a better understanding of mud block behavior and inform strategies for optimizing their strength and durability in construction applications. This research aims to promote the utilization of mud blocks as a viable and environmentally friendly alternative in building construction.

Keywords: Traditional block, strength, behaviour, performance, durability, compressive strength.

Experimental Investigation on Glass Fiber Concrete Tiles

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Abstract

This study deals with the Experimental investigation on glass fiber in concrete tiles. These factors can be achieved in concrete by adding polypropylene fiber. In the case of Glass Fibre reinforced concrete, strength of the concrete is increased & cracking less. The strength parameters of concrete such as compressive strength and tensile strength were studied by varying the percentage of fibre from 0.030% to 0.080% of the weight of concrete. The glass fiber content on M-20 grade concrete designed. The maximum size of aggregates used was 6mm. The mix proportion used was 1:1.5:3. The size of short fibers used were 12mm glass fiber. The effect of these short fibers on tensile strength, compressive strength improvement of specimen at 7 and 28 days carried out.

Keywords: Compressive strength, Glass fiber, Tensile strength. Slump test, Water absorption.

Experimental Investigation on the Utilization of Waste Materials

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Abstract

In our project, aims to address pollution caused by waste plastic and construction & demolition waste by incorporating them into concrete mixtures. Given the alarming statistics of uncollected plastic waste and under processed construction & demolition waste in India. By utilizing these wastes effectively in concrete production, not only can pollution be reduced but also the suitability of the resulting concrete cubes for practical usage can be accessed through compressive strength and water absorption tests. This approach holds promise for sustainable construction practices.

Keywords: Rice husk ash, plastic waste, demolition waste Compressive strength test.

Experimental Study on Low-Cost Roofing Tile Using Agricultural and Plastic Waste

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Abstract

Roof tiles are designed mainly to keep out the rain. It traditionally made from locally available materials such as agricultural (coco peat) and plastic waste. Modern materials such as concrete and plastic are also used and some clay tiles have a waterproof glaze. On the other side, proper and efficient disposal of agricultural (coco peat) and plastic waste is being the key factor in solid waste management in most of the Indian States. In this project we have prepared and evaluated the performance of low cost roofing tiles using agricultural wastes as raw material. Based on the results, it is suggested that we can efficiently replace significant quantity of RHA in making roofing tiles with the plastic and coco peat in appropriate propositions which gave Flexural strength test as similar as before replacement. By replacing the M-sand in making roofing tiles would reduce its manufacturing cost as well as selling price and makes it more affordable. Thus, preparation of such sand replaced roof tiles will significantly reflect healthy environmental and economic benefits.

Keywords: Coco peat, M-sand, Plastic Waste

**An Experimental Investigation on Use of Copper Slag as Partial Replacement of Fine
Aggregates in Concrete**

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Abstract

This project investigates the impact of incorporating copper slag as a substitute material for fine aggregates in concrete, aiming to enhance its hardened properties, including compressive strength, split tensile strength and flexural strength. The use of riverbed sand for the construction purpose has led to the excessive sand mining there by creating major environmental issues. Copper slag and fly ash are the waste materials developed from the copper industries and coal based thermal power plants. In this experimental investigation, the concrete mix design was tailored for M25 grade, maintaining a water-cement ratio of 0.50. The mix design has 1% of super plasticizer, fly ash partially replacing cement by 20% and copper slag replaced fine aggregates in varying proportions: 0%, 20%, 40%, 60% and 100%. Tests were conducted to evaluate both fresh and hardened concrete properties, with all specimens cured for 28 days prior to testing. The findings reveal a notable increase in concrete workability and density with higher copper slag content in the mixes. Moreover, the study demonstrates that the peak compressive strength, split tensile strength, and flexural strength achieved were 42.05 N/mm², 3.98 N/mm², and 5.60 N/mm², respectively, with a 40% replacement of fine aggregates by copper slag compared to the control mixture. Consequently, it is suggested that a 40% substitution of fine aggregates with copper slag along with fly ash and superplasticizer is optimal for enhancing concrete properties.

Keywords: copper slag, compressive strength, split tensile strength, and flexural strength.

Comparative Survey on Ultra High-Performance Concrete in Beam and Slab

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Abstract

Bridge construction today has achieved a worldwide level of importance. One of the most commonly used forms of superstructure in concrete bridges is precast girders with cast-in-situ slab. Ultra-high-performance concrete (UHPC) is a promising new class of concrete material that is likely to make a significant contribution to addressing the challenges associated with the load capacity, durability, sustainability, economy, and environmental impact of concrete bridge infrastructures. It was developed in Europe in the 1980s for specialized marine applications that demand superior strength and corrosion resistance anchors, piers and seismic structures. UHPC mixture proportions were developed using local materials such as cement, silica fumes, steel fibers, super plasticizers, water. Experimental investigation was carried out for four different UHPC mixes. Casting is done and testing is made for 7th day and 21st day. We are particularly comparing the survey on conventional slab and beam with UHPC beam and slab for the compression and split tensile test.

Keywords: Ultra-High-Performance Concrete, Silica fume, steel fibers, compressive strength, split tensile strength.

**Experimental Study on Replacement of River Sand by Waste Foundry Sand in Paver
Blocks**

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Abstract

In this study, the waste foundry sand can be used as a replacement of river sand in the manufacture of paver blocks which can be used for non-traffic conditions where strength is not the main criteria. To emerge as a developing potential in the country due to this development there is an increase in raw materials required for a construction purpose. To preserve the natural sand in day-to-day life is diminishing. It is generated in many parts of the world as a present to landfill. The waste production could be an effective measure in maintaining the environment and construction cost. In this study an attempt has been made to produce blocks by replacing the river sand. The tests we investigated were compressive strength, flexural strength and properties of the concrete.

Keywords - Waste Foundry Sand, Natural Sand, Paver Blocks, Compression Test, Flexural Test

**Experimental Investigation on Water Absorption of Pervious Concrete by the Addition
of Glass Fiber**

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Abstract

Water Absorbing pavement is a new technique in Pavement construction. Through this technique we can find a solution for the low ground water level, effective management of storm water runoff, Agricultural problems, etc. Pervious concrete can be introduced in low traffic volume areas, walk ways, sub base for concrete pavements, inter locking material etc. Pervious concrete as a paving material can allow water to flow through itself to recharge ground water level and minimize surface storm water runoff. This property of porous concrete reviews its applications and engineering properties, including environmental benefits, strength and durability. By replacing a part of cement with conplast SP430, then it results the more strength to the concrete. Hence it acts as an eco-friendly paving material

The natural processes of the water cycle have been fundamentally altered by human development and construction practices. In the natural state, rainwater falls to the earth and gets absorbed into the soil and vegetation where it is filtered, stored, evaporated, and re-dispersed into the ever-flowing cycle. However continuous urbanization driven by increasing motor vehicles is leading to the impervious covering of the earth's surface with bituminous or concrete pavements. By sealing the earth's natural filter, potential for excess runoff is increased which can lead to a number of problems such as downstream flooding, bank erosion and possibly transport of pollutants into potable water supplies.

Keywords: Pervious Concrete, Storm Water, Ground water Recharging, Light Weight, Waste Material Management, Strength, Durability

**Experimental Investigation of Glass Fiber Reinforced High Performance Flexural
Concrete Beams**

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Abstract

This project presents the findings of the comprehensive experimental investigation on the use of industrial by-products like silica fume, bottom ash and steel slag aggregate for making reinforced high performance concrete beams for enhancing the flexural strength. Based on the encouraging results of the preliminary experimental work conducted by the authors, a comprehensive experimental investigation was carried out by testing ten numbers of RC beams with varying mix ratio of industrial by-products in order to further explore the viability of this technique. Data presented include the parameters such as load-deflection behavior, moment -curvature relationship, ductility and energy absorption capacity.

The results of this study provide valuable data that can be used in further studies on the development of computational models of the deflection and flexural of HPC. This paper presents the findings of the comprehensive experimental investigation on the use of industrial by-products like silica fume, bottom ash and steel slag aggregate for making reinforced high performance concrete beams for enhancing the flexural strength. Data presented include the parameters such as load-deflection behaviour, moment - curvature relationship, ductility and energy absorption capacity. A reinforced high performance concrete beam proves to be effective at controlling cracks and exhibits ductility with a ductility ratio. The investigation revealed that the flexural behaviour of reinforced high performance concrete beams was comparable to that of control beams. The results of this study provide valuable data that can be used in further studies on the development of computational models of the deflection and flexural of HPC.

Keywords: Compressive strength, HPC, Tensile strength, Slump test, as load-deflection behavior

**Experimental Study on Concrete Using Copper Slag as A Partial Replacement of Fine
Aggregate**

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Abstract

Copper slag (CS) is one of the materials that are considered as a by-product obtained during the matte smelting and refining of copper. Copper slag is obtained as waste product from the sterilite industries. it has the physical properties similar to the fine aggregate, so it can be used as a replacement for fine aggregate in concrete. Many researchers have investigation the use of copper slag in the production of cement as clinker and as replacement for cement in mortar. this paper presents the result of study undertaken to investigate the feasibility of using copper slag with various percentage ranging from 0%, 10%, 20%, and 30%, in concrete by cubes, cylinders to evaluated the compressive strength, split tensile strength. the result showed the effect of copper slag on RCC concrete elements has a considerable amount of increase in the compressive, split tensile characteristics.

Keywords: Copper slag, fine aggregate, compressive strength, split tensile strength.

**Experimental Study on Strength Enhancement of Concrete by Using Silica Fume as An
Admixtures**

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Abstract

Now a day, we need to look at a way to reduce the cost of building materials, particularly cement is currently so high that only rich people and governments can afford meaningful construction. Studies have been carried out to investigate the possibility of utilizing a broad range of materials as partial replacement materials for cement in the production of concrete. Traditionally, Portland Pozzolona Cement is used for making the civil structures. PPC can be partially replaced by silica fume. Silica fume is non-metallic and non-hazardous waste of industries. It is suitable for concrete mix and improves properties of concrete I. e, compressive strength etc. to fulfil the objective various properties of concrete using silica fume have been evaluated. Further to determine the optimum replacement percentage comparison between the regular concrete and concrete containing silica fume is done it has been seen that when cement is replaced by silica fume and compressive strength increases up to certain percentage (10% replacement of cement by silica fume), But higher replacement of cement by silica fume gives lower strength. In the present study, an attempt has been made to investigate the strength parameters of concrete made with partial replacement of cement by SF. Properties of hardened concrete viz., Ultimate Compressive strength, Split Tensile strength has been determined for different mix combinations of materials and these values are compared with the corresponding values of conventional concrete.

Keywords: Copper slag, fine aggregate, compressive strength, split tensile strength.

**An Experimental Investigation on Sawdust Ash Concrete by Partial Replacement of
Cement**

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Abstract

Concrete is widely used as construction materials for various types of structures due to its durability. For a long time, it was very durable material requiring little or no maintenance. This research work focused on the slump test, compressive strength test and tensile splitting test. There was an increase in the slump test that were carried out which ranges from 60mm to 90mm. This means that sawdust ash concrete has lower water demand. The sawdust ash is then sieved to remove debris from it. Percentages of 0%, 5%, 10% and 15% replacement of sawdust ash by cement were used with a weight of M-25.

Keywords: Sawdust Ash, Cement, Concrete Production.

**An Experimental Investigation on Splicing of Reinforcement by Using Bar Coupler
and Steel Plate in RC Column**

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Abstract

Use of mechanical connection system in reinforced concrete has become increasing prevalently in al over the world. Mechanical connectors are alternative to lap and welded splices, and many can develop the full strength of the connected reinforcing bar lapping. such examples are overcoming reinforcement congestion problems and convenience when install in precast compression in sites. The design of reinforced concrete structures is based on several basic assumption and tenants. Reinforcement will be provided to resist the tension that may be present in the member. steel jacketing usually consists of steel plates are or angles with different configuration. It is commonly used for strengthening technique of RC column with rectangular cross-section. This method is cost effective and improves seismic performance. Use of coupler reduces both the construction time and steel requirement. The coupler not only provide to strength the joints but they also the economic means of connection of two bars. Mainly we analysis this chapter to know the strength and cost comparison between the lap joint and bar coupling. Control the concrete crack propagation and to improve the structural continuity between bars. reduction of labours and possibility of joining bars of any length and diameter.

Keywords: Sawdust Ash, Cement, Concrete Production.

**A Study on Compressive Strength and Durability Test on Nominal Mix Concrete and
Triple Blend Mix Concrete**

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Abstract

This presentation investigates the use of triple-blend cementitious Mixtures With GGBS, PFS, now widely used in the production of high-performance Concrete. These high-performance triple-blend mixtures are often comprised of Portland cement + fly ash + silica fume, or Portland cement + GGBS + PFA. The presentation reviews a selection of international projects, including the Burj Khalifa building in Dubai and the Confederation Bridge in Canada. It is concluded that a triple-blend approach to high performance Concrete mix design can enable cost savings, increased performance and improved Sustainability. Triple blend mix concrete is the best alternative solution against savings, mixing, workmanship, consistency, good slump and etc. In this project, I have taken M30 concrete, comparison with nominal mix and triple blend mix concrete. For fresh nominal concrete M30 grade cement concrete ratio as per design mix derived 1:1.25:4.1 and for Triple blend concrete –cement volume reduced 20% from nominal fresh concrete ratio. GGBS and FA percentage varied until desired strength reached, finally I found More GGBS giving more strength with mixing of FS and Portland cement. According to the above exercise I have tested compression test of concrete, Alkali test of concrete and acidic test of concrete. Compressive strength reached for 28days is 55 N/mm² for mixing of GGBS, Portland and FS.

Keywords: GGBS, PFS, compressive strength, Alkali test, acidic test

A Study on Strength of Concrete by Partially Replacement of Cement by Coconut

Endocarp Ash

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Abstract

Conservation of natural resources and prevention of environment is the essence of any development of the problem arising from continuous technological and industrial development is the disposal of waste materials. If some of the waste materials are found suitable in concrete making, the cost of construction can be cut down, but also safe disposal of waste materials can be achieved. So an attempt has been made to access the suitability of different replacement materials in the concrete making. The project implemented to coconut endocarp. Using Engineering properties of OPC cement and also the design mix (1:1.25:2.93) of concrete is M20 grade of concrete. This phase I project is to find out the 7th and 28th day compressive strength, Split tensile strength and flexural strength of conventional concrete and cement replacement with coconut shell ash (CSA) concrete which we replace 5% to 25%. Finally Comparison of their result and plot the graphs.

Keywords: coconut shell ash, coconut endocarp ash, compressive strength, Split tensile strength and flexural strength.

**A Ensemble Deep Learning Approach on Risk Management in Finance and Marketing
Sector**

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Abstract

The Ensemble deep getting to know technique is a powerful and innovative tool for danger control inside the finance and advertising quarter. It combines the strengths of more than one deep getting to know models to provide accurate and comprehensive risk tests. By using harnessing the electricity of artificial intelligence and device learning, this approach can efficiently analyze extensive amounts of facts and perceive capability risks in actual time. This enables monetary and advertising establishments to make informed and well-timed selections to mitigate dangers and enhance their normal overall performance. With its potential to conform and learn from new data, the A Ensemble Deep getting to know method is reworking the way threat is controlled in those industries.

Keywords: Ensemble learning, Deep learning, Risk management, Finance, Marketing

A Deep Learning Pipeline for Diabetic Maculopathy Detection in Clinical Practice

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Abstract

Diabetic maculopathy (DM) is a micro vascular complication of diabetes that threatens central vision. Early detection is crucial for timely intervention and vision preservation. Traditionally, ophthalmologists diagnose DM through manual screening of retinal fund us images, a time-consuming process. This Work explores the potential of Deep Learning (DL) for automated DM stage detection. The main motive of the work been achieved by incorporating a trained Mobile Net on a dataset of fund us images Asia Pacific Tele-Ophthalmology Society (APTOS) on Kaggle containing five DM severity levels (0-4). The model extracts feature from these Fund us images and classifies them into the corresponding DM stages. The achieved accuracy of 96% demonstrates the promise of this approach for clinical applications. This work advances automated evaluation of diabetic ocular disorders using DL. Future initiatives for this research include assessing the model's efficacy in actual clinical situations and applying explain ability methodologies.

Keywords: Asia Pacific Tele-Ophthalmology Society (APTOS), CNN, Deep Learning, Diabetic Maculopathy, Fund us imaging, Mobile Net, Ophthalmology

Design and Implementation of Sign Language to English Text Conversion Using Deep Learning

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Abstract

A sign language conversion using deep learning has been developed to convert sign language gesture into text. The integration of natural language processing will facilitate the conversion of recognized signs into meaningful text. This system will recognize and interpret sign gestures, employing deep learning models for accurate classification. It aims to enhance communication accessibility for the hearing-impaired community. The CNN is employed to extract spatial features from image frames, while the RNN component captures the temporal dynamics, enabling the model to understand the sequential nature of sign language communication. It demonstrates outcomes in terms of accuracy, real-time processing speed, and adaptability to different sign languages. This project gives valuable tool for breaking communication barriers and fostering inclusivity for individuals with hearing impairments. It contributes to the advancement of assistive technologies, emphasizing the potential impact of deep learning in facilitating effective communication for diverse communities.

Keywords: Gesture recognition, CNN, RNN, LSTM, Hand pose estimation

Design and Implementation of Lip Reading Method Using Deep Learning

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Abstract

A lip-reading method has been developed to decode lip movements into English language, crucial for hearing-impaired individuals and applicable in noisy or covert environments. Lip reading, also known as visual speech recognition, it involves understanding speech by observing the movements of a speaker's lips. It utilizes convolutional neural networks (CNNs) to extract features from video frames of lip movements. These features are then fed into recurrent neural networks (RNNs) to capture temporal dependencies and decode the spoken words. We employ transfer learning techniques to leverage pre-trained models and optimize performance with limited training data. Training on large datasets like LRW or GRID will map lip movements to speech. Techniques such as data augmentation, model regularization, and optimization will enhance robustness and generalization. In this way the motivation of the project is to advancing the field of multimodal speech recognition and provides a foundation for further research and development in improving communication accessibility and enhancing human-machine interaction through lip reading technology.

Keywords: Lip Reading, Speech Recognition, CNN, RNN, Dataset.

Detecting the Cognitive of Mental Stress Using Random Forest Classifier

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Abstract

This project focuses on the development of a mental stress detection system using a machine learning algorithm, specifically the Random Forest Classifier. In this study, we introduce an innovative approach for the automated detection of self-perceived symptoms of depression within written text. Our methodology harnesses the Random Forest classifier's probabilistic capabilities, expertly trained on a substantial dataset sourced from an online youth information channel. Key to our success is the extraction of features derived from predefined symptom-related terms, enabling the classifier to identify nuanced linguistic cues associated with depressive symptoms. The Random Forest algorithm's innate compatibility with textual data allows it to accurately classify text passages as either depression-related or not. Its simplicity, coupled with the potential for broad applicability across different languages and datasets, positions it as a valuable tool for the development of intelligent mental health care technologies.

Keywords: Mental stress detection, Random Forest Classifier, Depression symptom detection

**Design an Advanced Visual Painter with Geometric Shapes Through Webcam
Using CNN in AI and Opencv**

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Abstract

A virtual painting system employs the artificial intelligence (AI) techniques to enable users to create digital paintings with natural and intuitive gestures. The colour choices based on their hand movements and other input signals, it allows for more expressive and natural way of creating digital art, while reducing the cognitive load of working with complex software interfaces and also includes features such as automatic colour suggestions and brushstroke smoothing to further enhance the user experience. To construct an image, using the Open CV package, Media Pipe library package, Python programming language and the CNN model, this is a machine learning tool. This application uses the Open CV library to process real-time webcam data and the fingertip allow the user to write by moving the hand makes drawing and writing simple. If we restrict art to just paintings (pictures), any painting by a human is a depiction of his emotions and abstraction of the real world and propagating a message or statement to the rest of humans who can understand that art. Artists have made use of new technologies throughout history. From stone carving, cave painting and clay molding, up to the more recent contributions of digital illustration and 3D painting in virtual reality. In each case, the technology serves as a tool, allowing for new modes of expression or simply making the artists' life a little easier. A.I. (i.e. artificial intelligence) is just a tool quite similar to a paint brush or a sketch pencil. AI cannot be used to create art by itself without the intent of humans to make one. AI has artificial neural networks that are trained to mimic and function like biological networks of the brain. In effect, AI assimilates and interprets the visual and sonic information fed to it, draws its own conclusions, and creates abstract visual variations.

Keywords: Artificial Intelligence, CNN, Digital Art, Gesture Recognition, Hand Tracking.

**Implementation of an Image Caption Generator Using Recurrent Neural Network in
Deep Learning**

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Abstract

An image caption generator is a type of Artificial Intelligence (AI) model that generates textual descriptions or captions for images. It utilizes deep learning techniques, often combining Convolutional Neural Network (CNN) for image feature extraction with Recurrent Neural Network (RNN) for language modeling. The model is trained on large datasets where images are paired with corresponding human-generated captions. During the process an input image is given and then the model generates a descriptive caption that describes the content and context of the image. Image caption generators have various applications including accessibility for visually impaired individuals, content understanding for search engines, and enhancing user experiences in image-based platforms. Our proposed solution concentrates on generating captions for images in multiple languages. Through extensive experimentation on benchmark datasets, we demonstrate the effectiveness of our approach in generating accurate and diverse captions. It can help bridge language barriers and make visual content more accessible and understandable to people regardless of their native language.

Keywords: Artificial Intelligence, Deep Learning, CNN, RNN, Dataset.

**Implementation of Drowsiness Monitoring System Using Random Forest Algorithm in
Maching Learning**

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Abstract

Driver drowsiness and alcohol consumption are major factors that contribute to road accidents globally, leading to injuries, fatalities, and economic losses. To address this issue, there has been an increasing interest in using computer vision-based systems to detect driver drowsiness and alcohol consumption. Such systems can analyse the driver's facial expressions, head movements, and other factors to determine if they are showing signs of drowsiness and alcohol meter with MQ3 sensor will detect the alcohol consumption. DLIB includes a facial landmark detector that can identify key facial features such as eyes, nose, and mouth. The system will detect changes in the driver's facial features and head movements to determine if they are exhibiting signs of drowsiness. The system will then provide an audible alert to the driver, warning them that they are drowsy and potentially preventing an accident. Computer vision-based systems have shown promising results in detecting driver drowsiness and alcohol consumption, and the proposed system is expected to have a high level of accuracy.

Keywords: Drowsiness Monitoring, Impairment Detection, Sensing Technology, Biometric Sensors, Risk Prevention

**Implementation of IOT Based Pre-Arrival Integration for Automatic Fast Tag
Wallet Balance Checking System Using Rfid**

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Abstract

In today's fast-paced world, the integration of technology in various aspects of daily life has become essential to streamline processes and enhance efficiency. Toll collection systems are no exception, where traditional methods are gradually being replaced by automated solutions to minimize traffic congestion and expedite transactions. The introduction of Fast Tag or electronic toll collection systems has significantly reduced waiting times at tollgates, offering convenience to commuters. However, managing and monitoring wallet balances associated with these systems can still pose challenges. The proposed Automatic Fast Tag Wallet Balance Checking System near Tollgate aims to address this issue by providing a seamless and automated solution for users to check their wallet balances in real-time before approaching the tollgate. This system leverages advancements in RFID (Radio Frequency Identification), NFC (Near Field Communication) and IoT (Internet of Things) technologies to enable swift and hassle-free balance verification.

Keywords: IOT, Wallet Balance, Enhance Efficiency, Risk Analysis, and Accuracy.

Create A Blood Bank System Using a Matching Algorithm in Data Science

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Abstract

The Online Blood Donation Coordination System serves as a vital link between individuals in need of blood, patients, and blood donors. The development of an automated blood system is crucial for saving lives in various circumstances. Due to several shortcomings in existing systems such as privacy concerns for donors, there is a direct reflection on the user interface. Consequently, we have devised a resilient system that facilitates connections among diverse healthcare facilities, non-profit organizations, and blood banks to aid patients in challenging situations. The user interface will be user-friendly and easily accessible, offering a rapid, effective, and dependable means of accessing life-saving blood, completely free of charge. Additionally, the data visualization feature is incorporated, alongside an additional COVID module, which assists both COVID-19 patients and regular patients in plasma donation. The primary objective of this initiative is to mitigate the complexities associated with locating a blood donor during periods of distress while ensuring a high level of security for donors.

Keywords: Online blood donation coordination system, blood donor, automated blood system, diverse healthcare facilities, user-friendly, plasma donation, security, data visualization.

**Detecting the Crop Leaf Disease Using Artificial Neural Network Algorithm in Deep
Learning**

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Abstract

In this project, we highlight the most frequently utilized data mining techniques in agriculture, particularly focusing on the identification of crop diseases. Identifying crop diseases poses significant challenges in agriculture. Incorrect identification can lead to substantial losses in crop production and economic value within the market. Detecting leaf diseases necessitates extensive work, knowledge of crop diseases, and significant processing time. To address these challenges, we leverage techniques such as artificial neural networks, image processing, VGG16, and data mining. Our goal is to reduce production costs and improve the quality and quantity of crops. By enabling early detection of diseases, this system will prove invaluable to farmers. The user provides an input image, which undergoes processing and analysis using a trained model file. Subsequently, the system predicts whether the given image depicts any diseases affecting the crop.

Keywords: Crop leaf disease detection, image processing, VGG16, ANN, artificial neural networks.

**A Machine Learning Based Security Model for Cloud Services Using SVM and J48
Algorithm**

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Abstract

Cloud computing operates as a model offering scalable, on-demand, and secure services to users via the internet. It encompasses a broad range of applications, among which this review focuses on the effectiveness of machine learning techniques, specifically Support Vector Machines (SVM) and the J48 algorithm, in bolstering cloud security. Through an extensive search of relevant literature, we evaluate research dedicated to identifying and countering threats within cloud platforms. This examination sheds light on the contribution of machine learning to overcoming security hurdles, with a particular emphasis on the functionalities of SVM and J48. Our critical assessment of various case studies includes a comparison of these methods, highlighting their respective advantages and limitations based on performance indicators. The analysis notably points out that the true positive rate is the most frequently utilized metric, whereas training time is seldom considered. Among the 20 datasets reviewed, the KDD and KDD CUP datasets emerge as the most employed.

Keywords: Cloud Computing, Machine Learning, Intrusion Detection System, Datasets, Supervised Machine Learning, Unsupervised Machine Learning, Reinforcement Learning, Deep Neural Network.

**Implementation of Crowd Detection Model Using Yolo Technique with Computer
Vision.**

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Abstract

In several disciplines, including face identification, the use of intelligent software to recognize and categorize objects in computer vision gaining relevance. Convolution neural networks are performing incredibly well at classifying and detecting objects. The current study suggested a YOLO convolution neural network design to increase accuracy and quicken the assessment process. RCNN and Fast RCNN are some of well-known CNN based deep neural networks, are used here to classify humans. It took a long time to process every window in order to process only one image. Here, the YOLO technique is coupled to enhance real-time, high-speed object recognition. The system processes the live CCTV footage and then it counts number of people at an instance using YOLO algorithm. The idea from different sources is updated to a database and then populated and displayed with additional information such as capacity, location in the user interface.

Keywords: Facial Recognition Technology, Convolution neural network, YOLO Technology, CCTV footage, detecting objects.

Accident Detection Using Convolutional Neural Networks

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Abstract

In India, fatal accidents have remained a pervasive threat, with delayed assistance being a significant contributor to over 80% of accident-related fatalities. The critical issue arises from the prolonged periods of neglect suffered by victims, particularly on highways characterized by sparse traffic and high speeds. To address this pressing concern, a system is proposed to leverage live video feeds from CCTV cameras installed along highways to promptly identify accidents. Each frame of the video stream undergoes analysis through a trained Convolution Neural Network (CNN) model, capable of discerning between accident and non-accident scenes. CNNs have demonstrated exceptional efficacy as image classifiers, particularly for tasks with comparatively smaller datasets. These networks have showcased accuracy levels exceeding 95% and require minimal pre-processing compared to alternative image classification algorithms. By harnessing the power of CNNs, the proposed system aims to swiftly and reliably detect accidents, enabling prompt emergency response and potentially saving numerous lives. The utilization of CNN-based accident detection holds promise in mitigating the dire consequences of delayed assistance, ultimately fostering safer highways and reducing accident-related fatalities in India.

Keywords: Accident detection, Convolution Neural Networks (CNNs), Image processing, camera surveillance.

Detection Of Early Stage of Parkinson's Disease Using Voice Analysis

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Abstract

This project presents a voice-based analysis for the early detection of Parkinson's disease (PD) using feature subset selection and machine learning classifiers. Utilizing gender-based datasets derived from a large public dataset, the study achieves improved performance over previous works, with significant accuracy, sensitivity, specificity, and precision for both women and men. Gender-specific differences in voice characteristics are highlighted, with high-frequency content being more significant for women and low-frequency content for men. Additionally, the study emphasizes the importance of comparing feature variability between PD patients and controls for clinical interpretation. Key features such as TQWT coefficients and frequency-dependent information extracted by filter banks are identified as crucial for PD detection. The k-nearest neighbor (KNN) classifier algorithm demonstrates notable accuracy improvements. Overall, this work underscores the potential of voice analysis as a non-intrusive and cost-effective tool for early PD detection, offering insights for clinical decision-making and improved patient care.

Keywords: Parkinson's disease, voice analysis, early detection, gender differences, machine learning, feature selection, clinical interpretation, TQWT coefficients, filter banks, k-nearest neighbor classifier.

Automatic Road Damage Detection Using Machine Learning

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Abstract

This project aims to enhance road safety by developing an automated system for detecting potholes in road images. Leveraging advanced image processing techniques and deep learning algorithms, particularly Convolutional Neural Networks (CNNs), the system optimizes images for analysis and effectively identifies potholes. Real-time alerts and reports are generated and transmitted to relevant authorities via a web application, facilitating swift responses to road defects and contributing to more efficient road maintenance practices. Operating continuously, the system monitors road images and promptly detects potholes, mitigating risks associated with road hazards and improving overall road safety.

Keywords: road safety, pothole detection, image processing, deep learning, Convolutional Neural Network (CNN), real-time alerts, road maintenance.

Maintechbot: Intelligent Chatbot for Substation Maintenance Management

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Abstract:

This paper presents MAINTTECHBOT, an intelligent chatbot system designed to streamline maintenance processes within substations. MAINTTECHBOT offers users the ability to inquire about various maintenance procedures for equipment classes commonly found in substations, including transformers, circuit breakers, reactors, and surge arrestors. The Chatbot provides step-by-step guidance on maintenance tasks, ensuring that users have access to accurate and detailed instructions for conducting maintenance activities effectively. One of the key features of MAINTTECHBOT is its incorporation of semantic processing, which enables the chat bot to understand and respond to user queries more effectively. By leveraging advanced natural language understanding techniques, MAINTTECHBOT can interpret the meaning behind user inquiries and provide personalized responses tailored to the user's specific needs. Additionally, MAINTTECHBOT offers users access to information on industry standards and regulations governing substation maintenance. This feature ensures that users are informed about best practices, safety protocols, and compliance requirements when conducting maintenance activities. MAINTTECHBOT promotes adherence to safety protocols and regulatory compliance, ultimately contributing to the efficient and reliable operation of substations. Overall, MAINTTECHBOT serves as a valuable tool for maintenance personnel in substations, offering them access to expert guidance, equipment recommendations, and regulatory information. By leveraging semantic processing and providing access to industry knowledge, MAINTTECHBOT enhances the efficiency and effectiveness of maintenance operations within substations, ultimately contributing to the reliability and safety of substation infrastructure.

Keywords: Chatbot, Substation maintenance, Equipment classes, Semantic processing, Natural language understanding, Maintenance procedures, Industry standards, Regulatory compliance, Equipment recommendations, intelligent assistance

IOT Based Smart Agricultural Monitoring System

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Abstract

The incorporation of Internet of Things (IoT) technology within agriculture has brought about a paradigm shift in farming methodologies, giving rise to the concept of smart agricultural systems. This study introduces an IoT-based smart agricultural monitoring system tailored to address contemporary challenges encountered in farming practices. The system utilizes a network of sensors, actuators, and data analytics to provide real-time monitoring and control of essential environmental parameters crucial for optimizing crop growth. Deployed sensor nodes across the agricultural field gather data concerning soil moisture, temperature, humidity, light intensity, and other relevant variables. These nodes establish wireless communication with a central gateway, which aggregates and transmits the collected data to a cloud-based platform for subsequent storage and analysis. Farmers gain remote access to the system's interface via web or mobile applications, enabling seamless monitoring and management of their agricultural operations. By leveraging real-time data, farmers are empowered to make informed decisions regarding irrigation scheduling, fertilization, pest control, and various other aspects of crop cultivation, thereby maximizing resource utilization and crop yield. Moreover, the system facilitates early detection of anomalies or stress conditions, enabling prompt intervention to mitigate potential crop losses. The hardware components, including Node MCU, DHT-11 temperature sensor, soil moisture detector, 6W solar panel for energy efficiency, relay module, PIR sensor for intruder detection, and pH sensor for acidity measurement, collect real-time data, which is subsequently stored on the cloud for future retrieval. The utilization of the Blynk program enables the display of concurrent data and facilitates the operation of switches for critical field equipment such as heaters, fans, and motors. This system empowers farmers to make proactive and informed decisions, thereby minimizing risks and enhancing agricultural productivity.

Keywords: Temperature sensor, GSM Module, IOT Cloud, Solar Panel(6W), Relay Driver, PIR Sensor, LDR Sensor, Arduino, Moisture sensor, LCD Display, Power Supply.

IOT -Enabled Health Surveillance System for E-Health Advancements

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Abstract

The convergence of Internet of Things (IoT) technology and healthcare has paved the way for transformative advancements in e-health. This paper presents a comprehensive overview of an IoT-enabled health surveillance system designed to enhance monitoring, diagnosis, and treatment in healthcare settings. The system leverages interconnected sensors, wearable devices, and smart medical equipment to collect real-time health data from patients. Through continuous monitoring, healthcare professionals gain insights into patients' health status, allowing for early detection of anomalies and proactive intervention. Furthermore, the system employs advanced analytics and machine learning algorithms to analyze large volumes of health data, facilitating predictive modeling and personalized healthcare recommendations. By integrating IoT technology into healthcare infrastructure, this surveillance system not only improves patient outcomes but also enhances healthcare efficiency and accessibility. The implementation of such a system holds promise for revolutionizing e-health and ushering in a new era of patient-centric healthcare delivery.

Keywords: Internet of Things, healthcare, monitoring, diagnosis

Driver Drowsiness Detection Using Deep Learning

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Abstract

Driver drowsiness is a critical factor contributing to road accidents worldwide. To mitigate this issue, various driver drowsiness detection systems have been developed using advanced technologies such as computer vision, machine learning, and physiological signals processing. This abstract presents an overview of a driver drowsiness detection system that combines multiple modalities to accurately identify drowsy driving behavior in real-time. The proposed system employs computer vision techniques to monitor the driver's facial features and eye movements using a camera mounted inside the vehicle. Simultaneously, physiological signals such as heart rate variability (HRV) and electroencephalogram (EEG) are measured using wearable sensors to provide additional indicators of drowsiness. A machine learning algorithm is trained using a dataset of annotated drowsy and alert driving instances to classify the driver's state accurately. Features extracted from facial expressions, eye movements, and physiological signals are fed into the classifier to detect drowsiness patterns effectively. Based on optical data and artificial intelligence, this technology handles the automatic detection of driving fatigue. An algorithm has been used to check if the driver is sleeping or yawning and if yes and alert is sent so that we can prevent the accident.

Keywords: Computer vision, Machine learning, Physiological signals, Facial expression analysis, Eye movement tracking.

**FIFA Player Recommendation System Leveraging AI for Intelligent Player Selection in
FIFA**

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Abstract

In the fiercely competitive world of FIFA, this paper introduces a groundbreaking AI-driven player recommendation system designed to be the bedrock of success for managers. Empowering FIFA managers with three critical functionalities, the system identifies players akin in style to existing stars, pinpoints those with the highest potential for specific positions, and generates comprehensive player profiles based on recent performance data. Utilizing cutting-edge machine learning algorithms, including k-nearest neighbors and deep recurrent neural networks, the system not only facilitates the discovery of hidden gems but also optimizes talent selection, team dynamics, and strategic advantage in the cutthroat FIFA landscape. This revolutionary tool redefines talent discovery, team building, and strategic game play, promising to uncover the elusive elite talent crucial for triumph in the ever-evolving world of FIFA.

Keywords: FIFA, Talent Discovery, Team Building, Player Selection, Machine learning algorithms, K-nearest neighbors, Revolutionary tool.

**Real-Time Vehicle Security System Using Computer Vision Technology for User
Authentication and Theft Prevention**

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Abstract

The proliferation of vehicles in recent years has led to an increase in vehicle theft attempts, both locally and globally. This situation has necessitated the development of more robust security measures to protect vehicles from theft, which is often executed with sophisticated techniques. In response to this challenge, a novel vehicle security system based on computer vision technology has been proposed. This system offers a solution by utilizing real-time user authentication through advanced image processing techniques, combined with a microprocessor-based control system installed within the vehicle. The security mechanism activates when an individual enters the vehicle, overcoming existing security measures. An infrared sensor, positioned on the driver's seat, triggers a concealed camera strategically placed inside the vehicle. The camera captures the individual's image, which is then processed to detect the face using the Hybrid deep learning model. Subsequently, attention mechanism is incorporated into the vehicle security system, which can effectively focus on relevant facial features for authentication while mitigating the impact of noise and distractions, ultimately enhancing the system's robustness and accuracy. In instances of unverified access, the system promptly alerts the vehicle owner by sending the image of the unrecognized individual to their mobile device. This real-time alert mechanism significantly enhances the security of parked vehicles, offering a proactive approach to deter vehicle theft and ensuring peace of mind for vehicle owners.

Keywords: Real-Time Vehicle, Computer Vision Technology, Individual's Image, Hybrid Deep

Personalized Planner

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Abstract

School planners are helpful gear for college kids, offering a plethora of benefits that make contributions to their academic success and private growth. This paper examines the multifaceted advantages of utilizing college planners, with a focus on selling powerful time management, organizational talents, and autonomy amongst college students. Through platforms like Study school planner, students can customize their schedules to align with their educational timetable, thereby improving their ability to control day by day duties effectively. Research suggests that the regular use of college planners, with about ninety% of students engaging with them daily, underscores their efficacy in fostering self-control at some point of the school.

Furthermore, college planners' resource inside the development of organizational competencies via enabling college students to visualize cut-off dates and destroy down complicated responsibilities into plausible steps. This fosters a experience of autonomy and empowers students to pursue their goals at their personal tempo. Moreover, the usage of faculty planners cultivates obligation amongst college students, instilling nice conduct and teaching important abilities along with time control and employer. As college students witness upgrades of their academic overall performance, they end up more liable for their achievement, thereby fostering ownership over their gaining knowledge of adventure. Beyond man or woman benefits, school planners also sell duty, increase consciousness, lessen pressure, decorate productivity, and facilitate conversation. Additionally, they allow teachers and parents to monitor college students' educational development, fostering collaboration and aid. In summary, college planners play a pivotal role in enhancing students' instructional overall performance, fostering non-public improvement, and creating a superb gaining knowledge of environment. From promoting responsibility to reducing strain and facilitating powerful time management, the benefits of faculty planners are manifold, making them crucial gear for students' achievement.

Keywords: School planners, college planners, faculty planners, lessen pressure

Revolutionizing Herbal Recognition With AI

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Abstract

From Vedic times plants have been used as a source of medicine in Ayurveda. In the preparation of ayurvedic medicine, identification of correct plant is the most important step, which have been done manually. Due to demand of mass production, Identification of these plants automatically is important. Medicinal plants have a long tradition of being cultivated and harvested in India. The Indian Forest is the principal repository for many useful medicinal herbs. As a result of their critical role in maintaining people's life, medicinal plants have traditionally been the subject of intensive research and consideration. Yet, correctly identifying plants used in medicine is a laborious process that takes a lot of time and expertise. Because of this, a vision-based approach may aid scientists and regular people in the rapid and precise identification of herb plants.

Therefore, this research suggests a vision-based smart method to recognize herb plants by creating a deep learning (DL) model. Although there is a wide variety of useful plants, we limit ourselves to just six from the Kaggle database: betel, curry, Tulsi, mint, neem, and Indian beech. The data undergo a process of resizing and augmentation to increase the sample size. For the fully automatic identification of medicinal leaves, the Mobile Net DL model is selected. To determine the model's effectiveness, it must first be trained, then validated, and ultimately tested. The DL model is evaluated using measures including accuracy, precision, and recall. For this reason, the DL model was able to correctly identify medicinal leaves at an accuracy rate of 98.3%. After being thoroughly investigated, the DL model is uploaded to the cloud, and a mobile app is created for the real-time identification of medicinal leaves. To recognize leaf images, the built mobile app accesses the DL model on the cloud. The automated recognition of plants represents an extremely promising option for filling the taxonomic gap and gaining a lot of interest from the fields of botany and machine vision.

Keywords: Plant, Resize, Augmentation, Deep learning, Accuracy, Mobile application, Cloud, Medicine.

Smart Voting Machine with Facial Recognition and Fingerprint Sensors

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Abstract

In online voting system people can cast their vote through the internet. In order to prevent voter frauds, we use two levels of security. A user id and password are used as the first level of security. The data entered by the user is verified with the contents of the database, if the data is correct then the face of the voter is captured by a web camera and sent to the database. The web page is designed using ASP.NET. The ASP page is then connected to the Microsoft sqlsever database. The ASP page is served from an IISserver. In the second level of security the face of the person is verified with the face present in the database and validated using matlab. The comparison of the two faces is done using Eigen face recognition algorithm. The scheme is based on an information theory approach that decomposes face images into a small set of characteristic feature images called ‘eigenfaces’, which are actually the principal components of the initial training set of face images. Recognition is performed by projecting a new image into the subspace spanned by the eigenfaces (‘face space’) and then classifying the face by comparing its position in the face space with the positions of the known individuals. Then the MATLAB coding is converted into a dll file by using a deploy tool present in the MATLAB. Then the dll file is used in the ASP.NET page to call the matlab program and display the result in the web page.

Keywords: Face recognition sensors, ASP, Eigenfaces

IOT Based Forest Safety Alert System

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Abstract

The most frequent danger in forests, forest fires seriously devastate the forest's richness, biodiversity, and natural environment. To safeguard forests from fires, early identification and preventive actions are required. There are two conventional ways of human surveillance that are most frequently utilised to accomplish early identification of these issues. Direct human monitoring is one method, while remote video surveillance is another. When doing distant observation, one can implement detection automation to achieve surveillance. This project's primary goal is to develop a real-time monitoring and warning system for fire detection, animal movement detection, and human infiltration detection in forest regions and along borders. The Raspberry Pi Pico microcontroller board, the ESP8266 WiFi module, and other components are used in this system. A 16x2 LCD display with an LCD I2C module, an infrared flame sensor, a MQ2 smoke sensor, a microphone sound sensor, a DHT11 temperature and humidity sensor, a NEO-6M GPS module, and a 5V mini buzzer. The system also makes use of a camera and the object detection framework known as YOLO (You Only Look Once). The Personal computer will be used in the implementation as the main processing device. This board links a GPS module with serial data transmission to identify objects. By enabling wireless connectivity, the ESP8266 WIFI module enables the system to send the gathered data to a central server or cloud platform for additional analysis. To track forest conditions like fire breakouts and odd sounds, this module connects to a variety of sensors, including the infrared flame sensor, MQ2 smoke sensor, and microphone sound sensor. Patterns. Environmental information is provided in real-time via the DHT11 temperature and humidity sensor.

Keywords: Arduino Uno, Sensor, Lcd Display

Health Aibot Personalized Mental Wellness Companion

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Abstract

Health AIBot Personalized Mental Wellness Companion explores the integration of interactive chat bot technology with AI and ML to tackle the persistent challenges in mental health treatment. This project seeks to leverage advanced algorithms to address issues such as incomplete alleviation of depression symptoms, attrition, and the loss of follow-up in mental health care. By harnessing the power of AI chat bots, we aim to provide a personalized and engaging solution that enhances the overall effectiveness and accessibility of mental health support, ultimately contributing to improved patient outcomes and long-term well-being.

Key words: Health AI Bot, Personalized, Mental Wellness, Companion, Artificial Intelligence, Mental Health, Well-being, Support, Customized, Emotional Intelligence.

**Performance Analysis IOT Using Lora Based Chirp Spectrum Modulation
Management**

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Abstract

The access control mechanism in LoRa has been proven to have high security risks. In order to improve the secure access ability of LoRa terminals, this paper presents a physical layer-based authentication system for security enhancement. A low complexity, yet secure framework is proposed for protecting the IoT and for achieving both authentication and secure communication. Recently, several emerging wireless technologies have been proposed to provide long-range communication for IoT sensors. Among these, LoRa has been examined for long-range performance. Although LoRa shows good performance for long-range transmission in the countryside, its radio signals can be attenuated over distance, and buildings, trees, and other radio signal sources may interfere with the signals. Low Power WAN technologies are designed to extend the coverage while minimizing the energy efficiency, at the expense of data throughput. LoRaWAN, a media access control (MAC) convention kept up by the Lora Alliance and utilizing the licensed Lora radio modulation technology from Semtech, provides a successful innovation to meet the long-range and low-power demands. LoRaWAN offers three distinct classes of devices (A, B and C), providing a trade-off among effectiveness (i.e., throughput) and power usage. This paper provides a comparison of these classes theoretically and simulation of class A with reduction of duty cycle in order to increase the packet delivery ratio.

Keywords: LoRa, wireless technology, high security.

Smart Digital City Using IOT

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Abstract

IoT technology is being integrated into urban environments to improve various aspects of life, such as theft detection, garbage monitoring, security surveillance, smart parking, street light control, and traffic management. These technologies use sensors to detect and prevent theft, optimize waste collection, enhance surveillance, and improve parking experiences. They also enhance energy efficiency, safety, and quality of life by adjusting street light intensity based on real-time environmental conditions and pedestrian activity.

Keywords: IOT, theft detection, garbage monitoring, security surveillance, smart parking, street light control, and traffic management.

FPGA Implementation of Single Precision Inexact Floating-Point Multiplier

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Abstract

In scientific technology and engineering software, floating-point computing multiplication is a basic process. However, maintaining hardware resource efficiency while achieving high precision is a persistent challenge. This abstract presents a novel approach to the construction of a single-precision Inexact Floating-Point Multiplier. Our objective is to take into account the unique characteristics of the sign bit, exponent bits and mantissa bits are parts of single-precision floating-point numbers while striking a balance between computing accuracy and hardware efficiency. In this lecture, we will look at the design process, accuracy analysis, and potential applications of this imprecise multiplier, demonstrating its ability to perform workloads involving single-precision floating-point multiplication with noticeable efficiency advantages. This discovery opens up new applications for computing, including machine learning, digital signal processing, and scientific simulations.

Keywords: Digital Arithmetic, Multipliers, Single Precision, Floating Point Arithmetic

**Design of a Dual Band Star Shaped Electromagnetic Bandgap (Ebg) for 5g
Communication**

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Abstract

This paper introduces a unique star-shaped electromagnetic bandgap (EBG) configuration for 5G communication at frequencies lower than 6 GHz. The suggested structure comprises an adjusted star-shaped supporting on FR-4 substrate which is designed for 5.8 GHz (N46 band) and 3.2 GHz (N77 band) applications. According to the simulated results, both bandgaps are produced by the distinct EBG structure close to the resonant frequencies (3.2 GHz and 5.8 GHz). Considering its 8.2 mm x 8.2 mm overall area, the suggested EBG accomplishes an integrated design that combines miniaturization and dualband technology. The new EBG structure is straightforward, works effectively with microwave electrical systems, and can be employed in wireless networks that require a compact size for multiband applications.

Keywords: 5G wireless communication, EBG structure, miniaturization, dual band

**Design and Implementation of an Ann Based Plug in Vehicle to Grid System by
Wireless Power Transfer System**

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Abstract

Wireless Power Transfer (WPT) is an innovative technology in which power is transferred without physical contact. As technical knowledge is proceeding, most of the wired technology is also converting into wireless technology through different techniques. Electric Vehicles and plug-in hybrids may be fresh and feasible but it is not enough if it is forgetting to plug in the power source the night before. Electric Vehicles will automatically charge when it will park in the special parking space where the transmitter circuit has already been developed, when an electric vehicle parks on that place, charging will start automatically. A preceding review of a few methods for wireless charging discovered that Inductively Coupled Power Transfer System (ICPT) is an advantageous method for wireless charging of EVs (Electric Vehicles). This paper presents a IPT (Inductively Coupled Power Transfer) system which is appropriate for Vehicle to Grid (V2G) systems. For EV charging a WPT is a stable dynamic and effective system. Wireless power techniques fall into two categories, non-radiative and radiative. This project follows the non-radiative field using magnetic inductive coupling between coils of wire. After the usage of charging the DC Power is inverted and then the excess power is given to the Grid automatically. In this project mutual inductance technique is used between two coils. This paper will also enhance the feasibility, reliability and efficiency of the system.

Keywords: Wireless power Transfer (WPT), Vehicle to Grid (V2G) Inductively Coupled Power Transfer System, wireless charging of EVs (Electric Vehicles)

**Design and Implementation of Deep Learning-Based Crack Detection System for
Railway Tracks Using Convolutional Network Algorithm**

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Abstract

The Indian Railways has one of the largest railway networks in the world and it provides the most important mode of public transport in India which is most commonly used and cost-effective long-distance transport system of the country. The main problem about a railway analysis is detection of cracks on track. If these damages are not controlled at early stages, they might lead to a number of derailments resulting in a heavy loss of life and property. The proposed method enhances the track image using deep learning models to features extracted from the enhanced rail track image. These extracted features are trained and classified using Convolution neural network classifier which classifies the rail track image into either cracked or non-cracked image. The novelty of this work is to use soft computing approach for the detection of cracks in rail tracks. This methodology is trained by several crack images which are obtained from different environment. This method automatically classifies the current image based on the trained patterns, thus improves the classification accuracy. The performance of the proposed system achieves the accuracy rate of 94.9%, with respect to manually crack detected and segmented images. In addition to this implementing rail track robot. The robot moves in track, if the crack detects means it will automatically notification to the authorized person.

Keywords: Camera, CNN algorithm, Nano–Microcontroller, GPS, I Map Protocol

**Design and Implementation of Fire Detection Using an
Autonomous Drone Based on CNN Algorithm**

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Abstract

The unmanned aerial vehicles (UAVs) equipped with various sensors and cameras for detecting signs of fire and smoke. They are programmed to fly autonomously within predefined areas, such as malls and apartment complexes. Drones are equipped with specialized sensors designed to detect heat, smoke, and other indicators of fire. These sensors may include infrared cameras, gas sensors, and thermal imaging cameras. These sensors enable the drone to quickly identify potential fire hazards. The drones continuously monitor the premises in real-time, scanning for any abnormalities or signs of fire. They transmit live video feeds and sensor data to a central control station where operators can analyze the information. CNN algorithms are employed to process the data collected by the drones. Machine learning algorithms such as AI algorithms can help to distinguish between normal environmental conditions and potential fire hazards, and improving the accuracy of detection. Autonomous drones are equipped with advanced navigation systems and obstacle avoidance technology to safely maneuver through indoor environments. This ensures they can effectively navigate complex spaces such as malls and apartment buildings without colliding with obstacles or endangering occupants.

Keywords: Drone, gas sensor, infrared camera, CNN algorithm, AI algorithm

**Design And Implementation of Smart Borewell Rescue System with Ai-Enhanced
Wireless Monitoring**

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Abstract

The Smart Borewell Child Rescue System in Wireless Monitoring Using AI addresses the critical issue of child safety near borewells by combining advanced technologies. This system employs wireless monitoring and Artificial Intelligence (AI) to enhance the real-time surveillance of borewells. Equipped with AI algorithms, the system intelligently analyzes data from various sensors to detect unusual patterns or potential dangers around the borewell area. In the event of a child falling into the borewell, the system triggers an immediate response, activating rescue mechanisms and notifying authorities. The integration of AI ensures a swift and accurate assessment of the situation, providing an efficient solution to prevent and address emergencies, thereby safeguarding the well-being of children in proximity to borewells.

Keywords: AI algorithms, Robotic Arm, Microcontroller, IoT.

**Design and Implementation of Solar Based Water Purifier System Using IOT
Technology**

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Abstract

The solar-based water heater system described in this project integrates renewable energy sources with advanced control mechanisms to provide efficient water purifier solutions. Solar energy is harvested and stored in batteries, facilitating continuous operation even during periods of low sunlight. A booster, controller, and comprehensive kit ensure seamless integration and optimal performance of the system. The system's design incorporates 3 ultrasonic sensors strategically placed to monitor water levels in separate tanks dedicated to cold, normal, and hot water. The integration of IoT technology enhances the system's functionality by enabling remote monitoring and control via an online platform. Users can access real-time data on system performance, water quality parameters such as pH level and turbidity, and receive timely notifications regarding any issues or maintenance requirements. Additionally, the inclusion of a water salinity monitor further enhances the system's capability to ensure water purity. By continuously monitoring and analyzing water salinity levels, users can be confident in the quality of water produced by the system. This project aims to provide a sustainable and user-friendly solution for water purification, leveraging the power of solar energy and modern technology to enhance energy efficiency, water quality, and user convenience.

Keywords: Solar panel, DC to DC booster, Regulator, Battery, Wi-Fi device, LCD display, Relay, Water pump motor, Ultrasonic sensor, Peltier plate, keil software, Embedded C language.

**Design and Implementation of an IOT-Based Face Recognition System for Detecting
Cigarette Smoke and Alcohol in Non- Smoking Areas and Public Places**

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Abstract

This research presents an innovative Internet of Things (IoT) and face recognition-based system designed for the detection of cigarette smoke and alcohol presence in non-smoking areas and public spaces. Leveraging the interconnected nature of IoT devices, the system integrates advanced sensors to monitor air quality for the detection of cigarette smoke and employs facial recognition technology to identify individuals engaging in alcohol consumption. By combining these technologies, the proposed system provides a robust solution for enforcing non-smoking regulations and maintaining public safety. The integration of real-time data analysis and notifications ensures swift response measures, contributing to the creation of healthier and more secure environments in public spaces. This cutting-edge approach not only addresses the challenges of enforcing smoking and alcohol regulations but also showcases the potential of smart technologies in enhancing public well-being and the implementation of such a system holds immense potential for promoting public health and safety by ensuring compliance with non-smoking regulations and alcohol consumption policies. In conclusion, the proposed IoT-based face recognition system presents a robust solution for detecting cigarette smoke and alcohol presence in non-smoking areas and public places. Through its integration of advanced technologies, the system offers a scalable and effective approach to enforcement and monitoring, contributing to the creation of healthier and safer environments for all individuals additionally, the system offers opportunities for data-driven insights into smoking and alcohol consumption patterns, which can inform policy-making and public health initiatives.

Keywords: Face Recognition, Cigarette Smoke Detection, Real-time Data Analysis, Compliance Monitoring, Safety Enforcement

**Design and Implementation of Smart Health Monitoring System for Student Using IOT
Technology**

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Abstract

In order to improve the ability of students' physique health monitoring, this project puts forward the method of students' physique health monitoring based on big data platform, constructs the students' physique health information collection model based on the multi-feature information sampling, integrates the collected students' physique health. Using image processing techniques, the system measures food calories consumed by students, providing insights into their dietary habits. These data are seamlessly transmitted to a centralized IoT platform in real-time, enabling to monitor students' health metrics continuously. With this comprehensive approach, administrators can proactively address health concerns, foster healthier lifestyles, and provide timely interventions as needed, ultimately enhancing the well-being of residents.

Keywords: Health monitoring, SID PSK, Ultrasonic sensor, load cell, Artificial Neural Networks

**Design and Implementation of Keyboard and Mouse Control Based on Opency Using
Dlib Algorithm**

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Abstract

Specific human computer interaction system using face movement is presented. Conventionally, computer system uses mouse as one of the data input devices. But in this system, we use face points tracking instead of mouse which provides a unique way of operating the computer with the help of face movements. The project researchers in this field have also explored the potential of Face mapping as a possible means of interaction. Some commercial solutions have already been launched, but they are as more expensive and offer limited usability. simulates the face movements into mouse cursor movements on screen and also detects user's face staring on icon and will translate it into click operation on screen. Face mapping reflects a person's point of interest means it is possible to say that what they are thinking based on where they are looking. Face mapping tracking is aimed to keep track of human face-gaze. Face movements can also be captured and used as control signals to enable people to interact with interfaces directly without the need for mouse or keyboard input. This can be achieved by employing computer vision and image processing algorithms. In the proposed method, rust track the human face in a real-time video sequence to extract the eye regions using a webcam. Then, find the facial feature characteristics to extract the eye region to obtain the gaze point. Then corresponding to each gaze point the cursor movement on the monitor screen is done. This is carried out by using Arduino Mega 2560 microcontroller, where the controller processes the writing words with the help of touch sensor text send to software, so that user can easily communicate cation of printed characters using photoelectric devices and Computer software.

Keywords: Eye gaze detect, Eye Aspect Ratio algorithm, Dlib algorithm, virtual mouse, Keyboard control.

**Design and Implementation of Fabric Sewing Defect Detection and Automatic Stitch
Control System Using Image Processing**

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Abstract

This system proposes a computer vision-based strategy for the imperfection discovery on pictures with occasional fabrics. The inspection of sewing defects is an essential step in the quality assurance of garment manufacturing. Although traditional automated defect detection applications have shown good performance, these methods are usually configured with handcrafted features designed by a human operator. Recently, deep learning methods that include Artificial Neural Networks (ANNs) have demonstrated excellent performance in a wide variety of computer-vision applications. To take advantage of the ANN's feature representation, the direct utilization of feature maps from the convolution layers as universal feature descriptors has been studied. In this project, we propose a sewing defect detection method using a ANN feature map extracted from the initial layers of a pre-trained model to detect a broken stitch from a captured image of a sewing operation. To assess the effectiveness of the proposed method, experiments were conducted on a set of sewing images, including normal images, their synthetic defects, and rotated images. As a result, the proposed method detected true defects with 97.3% accuracy. Moreover, additional conditions for computing devices and deep learning libraries were investigated to reduce the computing time required for real-time computation. The results confirm the feasibility of the proposed method's performance as an appropriate manufacturing technology for garment production. The study explored hardware integration, specifically incorporating a serial communication setup connected to a Nano controller. This setup sends signals to a relay, enabling the system to stop the sewing motor upon defect detection.

Keywords: Sewing defects detection, Artificial Neural Networks (ANNs) Algorithm, Broken stitches, computer vision.

**A Smart Vehicle to Vehicle Communication System integrating Lidar and Radar
technology with Machine Learning for Proactive Accident Detection**

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Abstract

This project proposes the development of an advanced Smart Vehicle-to-Vehicle (V2V) Communication System aimed at enhancing road safety through proactive accident detection. The LiDAR and Radar technology, along with the application of machine learning algorithms. The objective is to create an intelligent and responsive network among vehicles to mitigate accidents by detecting potential collision scenarios in real-time. To enhance the system's intelligence, machine learning algorithms are employed for data analysis and decision-making. LiDAR offers high-precision distance measurements, capturing detailed 3D information about the vehicle's surroundings, while Radar contributes to object detection and tracking, especially in adverse weather conditions. The Real-time data from LiDAR and Radar sensors are continuously processed, allowing the system to predict and proactively identify situations with a high risk of accidents. The V2V communication aspect enables vehicles to exchange critical information about their positions, speeds, and trajectories. By integrating LiDAR, Radar, and machine learning in a V2V communication framework, the proposed system strives to prevent accidents before they occur, thereby improving overall road safety and reducing the severity of collisions. The system incorporates vehicle battery power monitoring, accessible via an online IoT web page, ensuring continuous operation and providing notifications for optimal maintenance.

Keywords: Vehicle to vehicle communication, Light Detection and Ranging (LiDAR), Radio Detection and Range (Radar) Technology, Internet of Things (IOT), Road safety.

**Implementation of Novel Method For Energy Efficient and Secure Communication in
Underwater Wireless Sensor Network Using Machine Learning**

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Abstract

Underwater acoustic sensor networks (UWASNs) are an emerging technology, comprising of sensor nodes and unattended automated vehicles (AUVs), all working in a collaboration to sense various phenomenon, process digital information, store processed data and communicate among each other and base stations. In this project the performance of Ad-hoc On-Demand Distance Vector (AODV) routing protocol in underwater acoustic network environment using the Network Simulator 3(NS3) tool is analysed. We used 50 nodes which includes the sensors in scuba divers and AUVs. The signal from the source is transferred in clusters, ensuring energy efficiency. DSSS is used for encryption and decryption of the data using XOR cipher method and any malicious nodes in the path of signal transfer is detected. We used performance metrics like packet delivery ratio, average end-to-end delay, throughput, and energy consumption of the sensor nodes. By using the machine learning algorithm, the speed of underwater signal is predicted. The underwater parameters which include the depth, temperature, salinity and pressure are used for predicting the speed of underwater acoustic signal transfer which adds as an advantage to our project. Thus, the energy efficient and a secure signal transfer in underwater is achieved.

Keywords: Energy Consumption, Underwater, AODV, Malicious Node, Throughput, Packet Delivery, Machine learning.

**Design And Implementation of IOT Based Automation Drowsiness Monitoring,
Emergency Alert & Traffic Alert Using Raspberry Pi**

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Abstract

The exponential growth in road accidents has controlled to a need for continuous driver monitoring to enhance road safety. Existing technique trust on vehicle sensor based and behavior analysis-based approaches, where the behavior analysis-based approaches are generally considered more desirable as they enable reliable detection of a more elaborate set of driver behaviors. They are categorized as intrusive and non-intrusive approaches. Unlike intrusive approaches that generally trust on constant direct human contact with sensors (physiological signals) and are sensitive to artifacts, non-intrusive approaches offer a more effective behavior monitoring using computer vision-based techniques. This project proposes an end-to-end non- intrusive IoT based automated framework to monitor driver behaviors, designed specifically for logistic and public transport applications. The IOT based sensor issues a warning message along with impact of collision and location information through GPS and GSM, thereby alerting with the traffic alert through the message to the owner. It consists of and embedded system, raspberry pi, cloud computing modules and a mobile phone application, in an attempt to provide a holistic unified solution for drowsiness detection, monitoring, as well as evaluation of drivers. Drowsiness detection is based on detecting sleeping, yawning, and distraction behaviors using an image processing-based technique. To minimize the effects of latency, throughput, and packet losses, edge computing is performed using commercial off-the-shelf embedded boards. Moreover, a cloud hosted real-time database for remote monitoring on interactive Android mobile application has been set up, where admin can add multiple drivers to get drowsiness notifications along with other useful related information for driver evaluation. An extensive experimental testing has been performed, obtaining encouraging.

Keywords: Machine learning, deep learning Algorithm, IOT, Drowsiness monitoring, Raspberry pi.

**AI Driven Smart Irrigation and Weed Management with
Water Vaporisation**

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Abstract

This paper explores the integration of artificial intelligence (AI) technologies into agriculture to enhance crop protection in the face of climate change challenges. Specifically, it delves into the development and implementation of AI-based smart irrigation systems and advanced weed management machinery designed to optimize water usage and combat weed proliferation. Furthermore, it highlights the innovative water vaporization technology tailored to mitigate crop loss during heavy rainfall events. Through the synergistic application of these technologies, farmers can achieve enhanced crop resilience and sustainable agricultural practices in a rapidly changing climate landscape.

Keywords: Climate change adaptation · Smart farming · Precision agriculture · Smart irrigation · IoT · Temperature monitoring · Soil moisture · Sustainable farming · Artificial intelligence

**Arrhythmia Patient Monitoring System & Automatic Parking System
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Abstract

An ECG is a voltage-time graph of the heart's electrical activity, and any deviation is called Arrhythmia. If a driver exhibits Arrhythmia symptoms, the vehicle will park on the left side of the road. An autonomous parking system uses sensors like Heart rate, Alcohol, and Smoke sensors to determine the driver's health status. The system can self-park and track the driver's location via GSM. It also serves as a proactive measure to mitigate potential accidents caused by driver health issues. By integrating real-time health monitoring sensors, the system can detect signs of impairment due to medical conditions or external factors. This advanced technology enhances road safety and promotes a seamless driving experience, allowing individuals to focus on their well-being without compromising mobility.

Keywords: Traffic congestion, Parking optimization, sensor fusion, Artificial intelligence, Smart city technologies, Healthcare integration.

**Metasurface Enabled Antenna Design for High Performance Microwave Biomedical
System**

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Abstract

In this article, we introduce the novel antenna employing a specifically designed metasurface to improve the radiating performance in close proximity to the human body. As required in microwave biomedical applications, we first present design guidelines to raise the thin metasurface acting as an impedance matching layer between the radiating element and the biological tissues, based on the transmission line equivalent model. Additionally, for the first time, to the best of our knowledge, we combine an artificial magnetic conductor (AMC) as the packing element of the antenna to improve the gain and reduce the unwanted back radiation. To validate the proposed approach, we conceived a numerical test case consisting of a bow-tie antenna operating close to a biological phantom at 2.5 GHz. Numerical simulation demonstrated the performance enhancement in terms of higher field penetration in tissues and better radiating behavior when the bow-tie antenna is working in the presents of both the metasurface.

Keywords: Artificial magnetic conductor, bow-tie antenna, metasurface

Footstep Power Generation Using Piezoelectric Plate

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Abstract

In the pursuit of sustainable energy solutions, the concept of footstep power generation has emerged as a promising avenue. This off-page abstract delves into the off-grid potential of footstep power generators, which utilize the kinetic energy generated by human footsteps to produce electricity. The pressing need for renewable energy sources, coupled with the ubiquity of human movement, underscores the significance of this innovative technology. Footstep power generators operate on the principle of piezoelectricity, converting mechanical stress into electrical energy through piezoelectric materials embedded within the generator's surface. As individuals walk or run over these surfaces, the mechanical force exerted triggers the generation of electricity, which can then be stored or utilized to power various applications. One of the notable advantages of footstep power generators lies in their versatility and scalability.

Keywords: Piezoelectricity, Plates, Footsteps, Power Generation, Electricity.

IOT Based Monitoring and Control of Faults in Distribution Transformers

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Abstract

Transformer is an important asset in transmission and distribution network. Its operation and control are important aspects, which determine the reliability and quality of power supply. As large numbers of transformers are spread over wide area in the present power system, it is difficult to monitor the condition of each transformer manually. Therefore, development of Condition Monitoring System for transformers is done. This condition monitoring system can monitor several parameter status of transformer in real time aspect - with automatic data acquisition. This paper presents design & implementation of IOT based mobile embedded system to monitor the temperature of transformer oil and detection of various gases like Methane, Carbon monoxide, Hydrogen, Acetylene, Ethane etc. This monitoring system is programmed with some predefined instructions to check the abnormal conditions based on their established values. This remote monitoring system using IOT will help to identify problems before any failure occurs. Different faults can be identified from the data obtained using dissolved gas analysis (DGA), which is helpful in detecting the condition of transformers for its long tenure. This system can be an advanced step in automation, which does not depend on manual testing & human dependency. As it is a wireless communication system, it is cost effective. Temperature monitoring provides fundamental protection for the transformer by preventing operation in overheated condition as overheating leads to insulation damage and reduces transformer life expectancy. Thus, condition monitoring offers improved transformer protection.

Keywords: IOT, DGA, automation, Carbon monoxide

**Clearance of Dust Accumulation and Aggregation on Pv Panel Using Automatic Solar
Panel Cleaning System**

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Abstract

Photovoltaic panels are one of the most emerging components of renewable energy integration. However, where the PV systems bring power conversion efficiency with its bulk installation setup and eco-friendly feasibility, it also brings the factors that could amber the performance and efficiency of the system. The accumulation of dust on the surface of the solar modules decreases the amount of sunlight that hits the solar cells beneath, lowering the solar panel's efficiency. The large numbers of solar panels are used now days to generate the large amount of electrical energy. As the solar energy is available in large amount and free of cost the solar panels are used to generate the electrical energy from the solar energy. The big problem is that the efficiency of the solar panel is low as compared to the other method like hydro power plant, thermal power plant. The efficiency of solar panel is further decrease due to the effect of dust and dirt takes place on the panel. Cleaning becomes difficult and expensive in this area due to water scarcity. Several methods of solar panel cleaning such as Self-cleaning panel, Robot cleaning systems, Drying agents, Ultraviolet light, Water harvesting, automatic cleaning systems. We are using automatic cleaning system with dry cleaning process to improving the efficiency of solar panel.

Keywords: solar panel, battery, PIC microcontroller, rainfall sensor, LDR, brushes.

Design of Power Quality Conditioner for Electric Vehicle Charger

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Abstract

The challenges related power quality and grid stability posed by the integration of EV chargers into the existing power grid are addressed by a novel Power Quality Conditioner (PQC) designed specifically for EV chargers, as introduced in this abstract. The proposed POC system utilizes advanced power electronics and control algorithms to ensure a seamless and reliable charging experience for EV users, while minimizing adverse effects on the grid. Power factors, harmonics, voltage sags. and transients are actively monitored and regulated by the PQC system to maintain a stable and high-quality power supply during EV charging operations.

Key Words: (voltage regulation, frequency stability, harmonic filtering, power factor correction, Electric vehicle charger)

**Design and Implementation of Efficient Battery Management System in Electrical
Vehicle Application**

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Abstract

The second-generation hybrid and Electric Vehicles are currently leading the paradigm shift in the automobile industry, replacing conventional diesel and gasoline-powered vehicles. The Battery Management System is crucial in these electric vehicles and also essential for renewable energy storage systems. This review paper focuses on batteries and addresses concerns, difficulties, and solutions associated with them. It explores key technologies of Battery Management System; including battery modeling, state estimation, and battery charging. A thorough analysis of numerous battery models, including electric, thermal, and electro-thermal models, is provided in the article. Additionally, it surveys battery state estimations for a charge and health. Furthermore, the different battery charging approaches and optimization methods are discussed. The Battery Management System performs a wide range of tasks, including as monitoring voltage and current, estimating charge and discharge, equalizing and protecting the battery, managing temperature conditions, and managing battery data. It also looks at various cell balancing circuit types, current and voltage stressors, control reliability, power loss, efficiency, as well as their advantages and disadvantages. The paper also discusses research gaps in battery management systems.

Keywords: Battery, Electro model, Thermal model, Electro thermal Model

**Design and Implementation of IOT Enabled Smart Irrigation System with Android
Application in PSVCET Campus**

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Abstract

In agriculture, one of the principal issues which farmers face is water scarcity. With the water availability in irrigation being a very massive factor and the widespread demand of the presence of the farmer to reveal the plants, there arose a want for a clever irrigation device that prevents wastage of water and saves time. An irrigation device has been following technological have a tendency and turning into higher in developed countries, however the case is exclusive in growing nations like Nigeria due to gradual responses to technology. This challenge designed and applied an Internet of Things-based irrigation device the usage of climate prediction for environment friendly utilization of water resources. Our main intention was once the automated irrigation of farmlands when required, thereby decreasing guide inspections and retailer time and manpower. The device works by means of receiving applicable enter information from the farm and sending it to a microcontroller machine that performs manipulate moves primarily based on the evaluation result. Weather prediction information is additionally employed in the automation of the irrigation system. The inputs from the sensors are dispatched to a climate monitoring database, real-time monitoring of sensor values through a net app is carried out and finally, push notifications are dispatched to the farmer indicating the cutting-edge farm status. The present work makes use of climate prediction to stop over-irrigation and it notifies the farmer in real-time about the reput of the farm, accordingly making the device virtually smart. It additionally consumes low strength and is cost effective and consequently would solely furnish water for irrigation at indispensable instances thereby enhancing productivity.

Keywords: IOT, Agriculture, Cutting-edge farm, Over-irrigation

**Design And Implementation of Power Generating Using Speed Breaker/Rollers in
Roads**

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Abstract

This paper explores the concept of generating electricity from human footprints as a sustainable energy solution. With the global focus on renewable energy sources, harnessing human kinetic energy presents an innovative approach. The proposed system integrates piezoelectric materials embedded within high-traffic areas such as pavements, walkways, and public spaces to convert mechanical energy from footsteps into electrical energy. The paper discusses the potential applications, benefits, challenges, and technological advancements in footstep energy harvesting systems. Additionally, it examines the feasibility, efficiency, and environmental impact of such systems, emphasizing their role in augmenting existing renewable energy sources and contributing to the transition towards a cleaner and more sustainable energy future.

Keywords: Speed Breaker/Rollers, High-traffic areas, Walkways, Sustainable energy

**Design and Development of Automatic Train Traffic Collision Avoidance System Using
RFID**

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Abstract

Railways are the convenient, reasonable and popular mode of transport in almost all major cities of not only in India but also all over the World. Railways are the most widely used and comfortable modes of transportation system. Now a days in India most of the train accidents are occurs due to the human errors. It is very difficult to avoid to such train accidents because of the speed of train is very high and it requires some time to control it. This project introduces an innovative system for enhancing train safety through the integration of ultrasonic sensors, fire sensors, GSM modules, and RFID readers. The primary objective is to detect obstacles in front of the train using ultrasonic sensors and automatically initiate a halt mechanism while triggering a buzzer alert to notify nearby personnel. In the event of a fire within the train, the fire sensor is activated, prompting an immediate cessation of operations and a simultaneous buzzer alert and automatically stop. This innovative train safety system incorporates an Emergency SOS button. When activated, this button triggers an immediate message through the GSM module to authorized personnel, alerting them to the emergency. Additionally, the system incorporates GSM modules to send dual indication messages to authorized personnel, ensuring timely intervention. Furthermore, RFID readers are utilized to record and store train details, providing valuable insights for maintenance and management purposes. Terminal software, connected via serial communication, enables real-time monitoring and control of the system, with a user-friendly interface accessible through PC.

Keywords: GSM modules, and RFID readers, PC, Emergency SOS button

**Design and Implementation of IOT Based Power Generation Using Pv and Hydro for
Ev Charging**

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Abstract

In this project an attempt is made to construct a model of hydro power generation for running the generator and use of battery to light up the houses which is common to rural folks. The difficulty of getting the fuel and the cost of fuel are the main problems. Use of other alternative renewable energy such as solar photovoltaic modules, which is available for a number of hours per day, is very costly. It is required to find suitable option to provide and reliable option. While large hydropower provides electrical power for industry and domestic use, small-scale hydro is making some contributions toward providing this basic need to remote and off-grid areas especially in developing countries. This project is focusing on hydro-power an application which does not require complex design set up. It is cost effective, environmentally friendly and the turbine can be manufactured locally. Hydro power offers a cost-effective and environmentally friendly solution, with the added advantage of being locally manufacturable and easily deployable in off-grid areas. The system incorporates voltage and current monitoring for the solar panels and hydro power generation, ensuring efficient operation and optimal utilization of resources. A relay system is integrated to facilitate mobile charging, enhancing the system's utility. Real-time voltage monitoring data is uploaded to an IoT platform and stored for analysis, providing valuable insights for system optimization and maintenance.

Keywords: IOT, Rural folks, Battery, Hydropower

Using Raspberry Pi Pico to Enhance Drone Detection of People in Disaster Situations

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Abstract

The frequency of the natural disasters has a significant growth in recent years. Drowning people in India approximately around 38000 peoples per year leads to dead finally because of, we have insufficient water rescue or timely emergency response to disaster management and rescue team during emergency, also the lack of information to the rescue team about the drowning people place. We should believe that a few seconds' difference could have saved a person's life. use of a Raspberry Pi Pico in drone technology for the detection of people in disaster situations presents a cost-effective and innovative approach to search and rescue operations. The compact size and programmability of the Raspberry Pi Pico make it an ideal microcontroller for managing the drone's sensors and communication modules.

Keywords: disaster management, Raspberry Pi Pico, drone technology sensors, communication modules.

Fault Detection and Maintenance of Industrial Equipments using AI

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Abstract

The industrial equipment maintenance prediction is expensive both in terms of repair and loss output in production. These losses or faults may lead to complete machinery or plant breakdown. The goal of this study was to apply advanced machine learning techniques to avoid these losses and faults and replace them with predictive maintenance. To identify and predict the faults in industrial machinery using Machine Learning (ML) and Deep Learning (DL) approaches. Our study was based on sensors, circuit breakers, motor and relay. These datasets were analyzed to predict the faults using machine learning and deep Neural network models. In the manufacturing industry, maintaining continuously running machines presents a complex task

Keywords: Industrial equipment maintenance, Machine learning (ML), Intelligent maintenance system, Maintenance forecasting, Sens or readings, Interpretability of AI models.

Keywords: Circuit breakers, Motor and Relay

Electric Vehicle Fast Charging with Multiport Technology

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Abstract

This paper presents a novel approach to enhance the fast-charging capabilities of electric vehicle lithium-ion batteries using multiport technology. Traditional single-port charging systems face limitations in power delivery and efficiency, leading to extended charging times and operational constraints. In contrast, the proposed multiport technology leverages multiple charging ports to distribute charging power more effectively, thereby minimizing charging durations and improving overall user experience.

Keywords: Electric Vehicles, Lead Acid Battery, Multiport Technology, Charging Efficiency Sustainable Transportation Energy Storage, Renewable Energy Integration, Smart Grid Grid-to-Vehicle (G2V) Integration

Intelligent Cooperative Vehicle Communication System

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Abstract

Vehicle-to-Vehicle Communication (V2V) represents a transformative paradigm in the automotive industry, enabling vehicles to exchange critical information in real-time. This communication technology holds immense promise for enhancing road safety, optimizing traffic flow, and ushering in the era of connected and autonomous vehicles

Keywords: NFC LORA, ARDUINO, DC Gear Motor, ADXL, IR Sensor, Vibration Sensor, LCD Display, PWM, Dc Motor

Thermal Management System for Batteries in Electric Vehicle

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Abstract

As electric vehicles (EVs) continue to gain traction in the automotive market, the thermal management of battery systems emerges as a critical aspect for ensuring performance, safety, and longevity. This paper presents a comprehensive review of recent advances in thermal management systems specifically tailored for EV batteries. The review encompasses various techniques including active cooling, passive cooling, phase-change materials, and thermal interface materials, among others.

Keywords: Electric vehicles, Battery thermal management, Thermal management systems, Lithium ion batteries, Heat dissipation, Cooling techniques, Temperature control

Optimizing Medical Emergency Response Through Innovative Solution

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Abstract

Traditional emergency response systems often face challenges such as delayed response times, inefficient resource allocation, and limited coordination among responders. To address these challenges, this paper proposes an innovative solution that leverages advanced technologies and data-driven approaches to optimize medical emergency response. By harnessing the power of real-time data and community involvement, we can enhance the effectiveness and resilience of emergency response systems, ultimately saving lives and mitigating the impact of emergencies.

Keywords: ESP8266, LM35 Temperature sensor, Heart beat sensor, LCD display, ARDUINO IDE Framework

DYNAMIC FIREFIGHTING SOLUTIONS WITH FIRE BALL TECH

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Abstract

In a world where fire accidents are increasingly common and the brave first responders always risk their lives to save the lives of others. Unfortunately, history tells that these brave first responders do not survive most of the time. To save as many lives as possible, it is important to leave dangerous tasks to machines. One such device is a drone; it provides great maneuverability and doesn't risk any personnel. Drones can also gather information at greater speed, reliability and are also able to drop items. Thus, the solution mentioned below will help us solve this problem along with the functionalities mentioned below.

Keywords: Drone using fire extinguishing ball

Exploring Sustainable Biofuel Production: Comparative Analysis of Microalgal Oil Yield and Fatty Acid Composition Through Mixotrophic Cultivation on Agro-Industrial Wastes

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Abstract

With the increasing energy demand and elevated depletion rate of fossil fuels, there is a dire need for a cheap and environmentally stable fuel. Furthermore, the environmental and human health issues due to the overdependence on fossil fuels have been well addressed. Currently, mixotrophic (MT) cultivation of microalgae is gaining interest to overcome the world's energy thirst. In this study, a *Chlorella vulgaris* strain that had already been isolated and characterized was grown in both photoautotrophic (PT) and MT conditions for 20 days. PT-cultivated *C. vulgaris* was provided with atmospheric CO₂ and BG-11 medium. While MT *C. vulgaris* was cultivated on four kinds of agro-industrial wastes, i.e., sewage sludge, poultry waste, press mud and livestock manure. The oil contents of both cultivations were extracted using the Soxhlet apparatus and statistically compared. It was found that sewage sludge raised biomass produced the highest oil content (25.5±0.35%), followed by poultry waste (18.51±0.16%), press mud (18.51±0.16%), PT (10.58±0.35%), and livestock manure (10.32±0.09%). The lower oil yield of livestock manure-raised biomass was since microalgae lack cellulolytic enzymes. Furthermore, the extracted oils were subjected to GC-MS for the analysis of fatty acid methyl esters (FAME). Higher levels of polyunsaturated fatty acids (PUFA) and unsaturated fatty acids (UFA) ensured the production of high-quality biofuel. The FAME analysis showed that sewage sludge raised biomass had the highest PUFA content of 60.61% with a UFA content of 22.87%, followed by poultry waste (18.1%, 25.29%), livestock manure (49%, 8.2%), and press mud (13.3%, 22.3%) raised biomass. While the PT-raised biomass showed 19.03% and 30.7% of PUFA and UFA, respectively. Based on these results, the MT mode of *C. vulgaris* can be utilized more often. The MT mode of nutrition on different wastes can ensure cost-effective production of biofuels.

Keywords: Algal lipid; Bio-fuel; Green energy; Mixotrophy; Organic carbon; Waste management

Design and Analysis of Swing Jaw Plate of Jaw Crusher

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Abstract

Traditionally, stiffness of swing plates has not been varied with changes in rock strength. Rock strength has only been of interest because of the need to know the maximum force exerted by the toggle for energy considerations. Thus, a swing plate, stiff enough to crush taconite with an unconfined compressive strength (q_u) of up to 308 MPa, may be overdesigned (and, most importantly, overweight) for crushing a softer fragmental limestone, amphibolite's. Design of lighter weight jaw crushers will require a more precise accounting of the stresses and deflections in the crushing plates than is available with traditional techniques. Efforts to decrease energy consumed in crushing have led to consideration of decreasing the weight of the swing plate of jaw crushers for easily crushed material. In the present work the design of the swing jaw plate using point-load deformation failure (PDF) relationships along with interactive failure of rock particles as a model for such a weight reduction. The design of the corrugated swing jaw plate is carried out by using CAD i.e. jaw crusher plate has been solid modeled by using CatiaV5R15. The calculated dimensions are validated with the drawing of reputed manufacturers. Finite Element Analysis of jaw plates are carried out by using ALGOR V19 software. Computerization of the theoretical design calculations of jaw plates of the jaw crusher has been carried out. The computerized program facilitates for quick design of the plates of the jaw crusher. The different comparisons of corrugated swing jaw plates behavior, calculated with the traditional and the new FEA failure models with stiffeners, shows that some 10-25% savings in plate weight may be possible.

Keywords: swing plate, rock strength, point-load deformation failure, FEA failure models.

Static Analysis of Cooling System Fan Blade by Using Reverse Engineering

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Abstract

Engine cooling fans are essential components of engine cooling system which is used to dissipate excess heat generated by the combustion of fuel inside the engine. The function of the fan is to reduce heat in the radiator where hot cooling liquid is circulated. The radiator fan blades are made up of various materials nowadays and the legacy material used is steel. The project consists of static analysis of radiator fan blade using reverse engineering and ANSYS. This paper presents the static analysis of the radiator fan and at the outcome we analyze the failure of the entire blade taking into design consideration. The design is based on the output of high-level efficiency of the radiator fan blade. The analysis of the radiator fan is executed to different types of materials to check and evaluate the material and process conditions which withstand the dynamic and structural loads. The first phase of the project is to identify the material using reverse engineering. Reverse Engineering is one of the methodologies for obtaining the information of the component in order to improve the design by extracting design information from the built. In the paper design of the blade is done through reverse engineering. Using reverse engineering the materials is being selected and the next stage of process is continued. The final phase of the project is to do preliminary design approach by which the components are selected to provide cooling assembly unit. The selected material is used in design and various analysis is made using ANSYS and SOLIDWORKS and the parameters are noted. The flow simulation test and sound power level stimulation of the design is obtained using SOLIDWORKS. The static analysis is done using ANSYS where the 3D solid model of the radiator fan is considered for structural analysis. The various loads and properties and applied through the entire length of the radiator fan. The analysis is also carried out with different blade materials and the calculations are made. The analysis leads us to the proposal of suitable material to withstand the entire load. The results obtained from the static analytical studies indicated a potential for a successful design that met most of the above outlined parameters.

Keywords: legacy material, reverse engineering, flow simulation, static analysis.

Structural and Thermal Analysis of Vented and Normal Disc Brake Rotors

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Abstract

In this project, the disc brake is a device for slowing or stopping the rotation of a wheel. Repetitive braking of the vehicle leads to heat generation during each braking event. Transient Thermal and Structural Analysis of the Rotor Disc of Disk Brake is aimed at evaluating the performance of disc brake rotor of a bike under severe braking conditions and there by assist in disc rotor design and analysis. Disc brake analysis is done using ANSYS workbench 14.5. The main purpose of this study is to analysis the thermos mechanical behavior of the dry contact of the brake disc during the braking phase. The coupled thermal and structural analysis is used to determine the deformation and the Von Misses stress established in the disc for the both solid and ventilated disc with two different materials to enhance performance of the rotor disc. A comparison between analytical and results will be obtained from FEM is done and all the values will be obtained from the analysis are less than their allowable values. Finally the disc is suggested based on the performance, strength best suitable design, and material – 635 108. rigidity criteria.

Keywords: disc brake, Transient Thermal and Structural Analysis, thermo mechanical behavior, Von Misses stress.

**Design and Comparative Analysis of Thermal Conductivity on Different Heat Sinks in
A 3D Printer**

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Abstract

This study investigates and compares the thermal conductivity of various heat sink designs employed in 3D printers. With the growing demand for faster and more efficient 3D printing processes, effective heat dissipation is crucial to maintain optimal printing conditions and improve overall print quality. Different heat sink designs, including finned, stacked, and liquid-cooled configurations, are analyzed using computational simulations and experimental measurements. The thermal performance of each heat sink design is evaluated under varying printing conditions and heat loads. Results highlight the effectiveness of each design in dissipating heat from the printer's hot end assembly, providing insights for optimizing thermal management systems in 3D printing applications. Through this comparative analysis, the study aims to contribute to the advancement of heat sink technology in enhancing the performance and reliability of 3D printers.

Keywords: heat sink, 3D printing, effectiveness, thermal management systems

Design And Analysis of Extruder Used in 3D Printer

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Abstract

This study investigates and compares the thermal conductivity of various heat sink designs employed in 3D printers. With the growing demand for faster and more efficient 3D printing processes, effective heat dissipation is crucial to maintain optimal printing conditions and improve overall print quality. Different heat sink designs, including finned, stacked, and liquid-cooled configurations, are analyzed using computational simulations and experimental measurements. The thermal performance of each heat sink design is evaluated under varying printing conditions and heat loads. Results highlight the effectiveness of each design in dissipating heat from the printer's hot end assembly, providing insights for optimizing thermal management systems in 3D printing applications. Through this comparative analysis, the study aims to contribute to the advancement of heat sink technology in enhancing the performance and reliability of 3D printers.

Keywords: Heat sink, 3D printing, Performance, Reliability

An Investigation into the Performance of Different Working Fluids in the Organic Rankine Cycle

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Abstract

The objective of this research is to determine the optimal working fluid for Organic Rankine Cycles (ORCs) at specific temperature thresholds, while simultaneously emphasizing thermodynamic analysis, environmental effect, and protection. Electricity was produced by utilizing a subcritical Rankine cycle with organic working fluids and a low-temperature heat source. The six organic fluids (R14, R141b, R142b, R152a, R161, & RC318) were selected, analyzed, and compared for ORC applications to get high efficiency and COP.

Keywords: organic working fluids, six organic fluids, analyzed, and compared for ORC, organic Rankine cycles, COP.

Design and Analysis of Structure Used in 3D Printer

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Abstract

3D printing has become a rapidly expanding manufacturing method that is being used wide range of applications. Their ability to build parts layer by layer instead of cutting away initial material allows this method to have almost no wasted material, creating the potential for a much more efficient, cost-effective process. To continue the growth this manufacturing strategy, the performance of 3D printers needs to be enhanced to ensure equal or higher quality of produced parts in comparison to other manufacturing methods that are more commonly used. One important part of the performance is the key to making high quality parts is the stability of the 3D printer's frame. No matter how accurate the printer head is, if the structure moves while the printing process is taking place, the accuracy of the produced will be limited.

Keywords: 3D printing, structure, cost effective, stability

Design and Analysis of Heat Block in 3D Printer

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Abstract

The heat block is a critical component of a 3D printer responsible for regulating the temperature of the printing nozzle. This paper presents a comprehensive study on the design and analysis of the heat block to enhance its efficiency and performance in 3D printing processes. The design phase involves utilizing computer-aided design (CAD) software to create an optimized heat block geometry that ensures uniform heat distribution and minimal heat loss. Factors such as material selection, thermal conductivity, and geometric features are carefully considered to achieve optimal thermal performance. Furthermore, finite element analysis (FEA) is employed to simulate the thermal behavior of the heat block under various operating conditions. This analysis helps in identifying potential areas of heat concentration, thermal gradients, and heat dissipation patterns, allowing for iterative refinement of the design.

Experimental validation is conducted to verify the performance of the optimized heat block design. Temperature mapping and thermal imaging techniques are utilized to assess the uniformity of heat distribution and identify any thermal anomalies. The results demonstrate that the optimized heat block design effectively enhances the thermal efficiency of the 3D printing process, leading to improved print quality, reduced printing time, and increased overall system reliability. This research contributes to advancing the field of additive manufacturing by offering insights into the design and optimization of critical components for enhanced performance and productivity.

Keywords: heat block, thermal gradients, optimal thermal performance, additive manufacturing

**Experimental and Theoretical Analysis of Solar Heater with Different Shapes of
Absorber Plate**

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Abstract

The objective of this paper to study of heat and fluid flow processes in an artificially roughened solar air heater. Artificially roughness introduces under side of absorber plate of solar air heater in the form of small transverse wire ribs. Solar air heater is a type of heat exchanger, which convert solar radiation into thermal (heat) energy. Thermal performance of solar air heater has been found very low due to low convective heat transfer coefficient from the absorber plate to the air. Use of artificially roughness is an effective technique to enhance the rate of heat transfer. This investigation performed on circular section with different values of Reynolds's numbers range from 3800-18000. Reynold no, relative pitch height (p/e) and relative roughness height (e/d) are chosen as design variables. Two dimensional CFD simulation is perform using the ANSYS FLUENT version.

Keywords: rough solar air heater, rib pitch, rib height, relative roughness height, Reynold number, Nusselt number, friction factor, thermal enhancement factor.

Analysis of Material Characteristics of Poly Composition Coating on Combustion

Machinery Piston

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Abstract

Increasing material costs, environmental issues, and changes in fuel types are the main reasons engine manufacturers adopt diverse design concepts. This study selected PC-1 and PC-2 due to their stability, lower thermal conductivity, high melting point, and lower thermal expansion. After coating, various material characteristics are analyzed on both coated and uncoated pistons. SEM, roughness, scratch, hardness, thermal expansion, salt spray tests, and transient thermal analysis are conducted on the coated surface. The experiment's investigation reveals that the coated piston exhibits high surface hardness and roughness, without any rust formation. According to the theoretical evaluation, the temperature distribution on the coated surface was reduced by 35% and 18% for two different coatings of PC-1 and PC-2, respectively.

Keywords: Poly layer, Coating, Material Characteristics, Temperature, Analysis

Epileptic Seizure Prediction Using Deep Learning

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Abstract

The epileptic seizure prediction (ESP) method aims to timely forecast the occurrence of seizures, which is crucial to improving patients' quality of life. Many deep learning-based methods have been developed to tackle this issue and achieve significant progress in recent years. However, the "black-box" nature of deep learning models makes the clinician mistrust the prediction results, severely limiting its clinical application. For this purpose, in this study, we propose a self-interpretable deep learning model for patient-specific epileptic seizure prediction: Multi-Scale Prototypical Part Network (MSPPNet). This model attempts to measure the similarity between the inputs and prototypes (learned during training) as evidence to make final predictions, which could provide a transparent reasoning process and decision basis (e.g., significant prototypes for inputs and corresponding similarity score). Furthermore, we assign different sizes to the prototypes in latent space to capture the multi-scale features of EEG signals. To the best of our knowledge, this is the first study that develops a self-interpretable deep learning model for seizure prediction, other than the existing post hoc interpretation studies. Our proposed model is evaluated on two public epileptic EEG datasets (CHB-MIT: 16 patients with a total of 85 seizures, Kaggle: 5 dogs with a total of 42 seizures), with a sensitivity of 93.8% and a false prediction rate of 0.054/h in the CHB-MIT dataset and a sensitivity of 88.6% and a false prediction rate of 0.146/h in the Kaggle dataset, achieving the current state-of-the-art performance with self-interpretable evidence.

Keywords: Multi-Scale Prototypical Part Network, black box

**Implementation Of Saas Based Web Page Designing & Management
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Abstract

This project introduces a groundbreaking platform designed to democratize the process of webpage creation and management. By leveraging advanced technologies such as Next.js and Node.js, the platform provides an intuitive, user-friendly interface that enables users to build their own webpages without any prior knowledge of web development languages like HTML, CSS, and JavaScript. The platform's standout feature is its user-friendly interface, which simplifies the webpage creation process. Users can design their webpages using a variety of prebuilt components and templates, which they can customize according to their preferences. The drag-and-drop feature further enhances the user experience, making web page creation as simple as arranging elements on a canvas. In addition to web page creation, the platform also offers a comprehensive dashboard for webpage management. The dashboard provides a wide range of features, including performance tracking, visitor statistics, and easy access to webpage editing and updating. This allows users to monitor and optimize their WebPages based on real-time data. Furthermore, the platform incorporates SEO best practices to help the web pages rank higher in search engine results. This includes optimizing page speed, mobile-friendliness, and providing an option for users to add Meta tags and descriptions. In conclusion, this project represents a significant step towards making web development accessible and manageable for everyone, regardless of their technical background. By empowering users to create and manage their own web pages, it paves the way for a more inclusive and diverse digital landscape.

Keywords: Webpage creation platform, Next.js technology, Node.js technology, Democratization

**Implementation of Efficient Manhole Visual Inspection System Using Deep Learning in
UAV Navigation**

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Abstract

Manhole is a covered opening in a street or public area that provides access to a utility or maintenance vault underground. Manholes are typically constructed with a cover or lid that can be removed to allow entry for inspection, maintenance, or repair of utility infrastructure such as sewers, storm drains, telecommunications, electrical, or gas systems. Manholes are often located in public areas, and their covers need to be secure to prevent accidents. Broken or missing manhole covers can pose serious safety hazards to pedestrians, cyclists, and drivers. The increasing risk of traffic accidents due to the deterioration of manhole covers necessitates a more efficient and reliable inspection method. Manual observation, the traditional approach to monitoring manhole covers, faces challenges such as labor shortages and ethical concerns. Identifying open or broken manholes using image processing algorithms faces challenges related to variable image quality, complex backgrounds, scale changes, and dynamic environmental conditions. In response to this difficulty the aim of this project proposes an automated system architecture based on deep learning models to replace the manual examination process. The project involves the development of a deep learning model capable of analyzing images of manhole covers. The model undergoes training using a diverse dataset to accurately classify covers into categories such as 'Close,' 'Open,' 'Broken,' and 'No Manhole.' Additionally, the system incorporates advanced techniques, including Convolution Neural Networks (CNN) for image classification and You Only Look Once version 8 (YOLOv8) for accurate prediction and localization using UAV Images or CCTV Footages. The implementation of this deep learning-based architecture offers a promising avenue for enhancing urban safety and streamlining infrastructure maintenance processes.

Keywords: AI with Deep Learning, YOLOv8

Stock Market Prediction Using Machine Learning

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Abstract

A stock market predicting using machine learning has always attracted investors and researchers alike to explore methods for forecasting future movements. The Machine learning techniques have gained prominence due to their ability to analyze vast datasets and identify patterns that may contribute to stock price fluctuations. This project presents an overview of various machine learning algorithms and methodologies employed in stock market prediction. It explores the challenges inherent in predicting stock prices, including market volatility, non-linear relationships, and external factors' influence. It discusses feature selection, data pre-processing techniques, and model evaluation methods specific to stock market prediction tasks. Additionally, it reviews recent advancements in deep learning approaches, ensemble methods, and hybrid models that combine multiple algorithms to improve prediction accuracy. Finally, the project concludes with insights into the limitations of existing methodologies and potential future directions for enhancing stock market prediction using machine learning techniques.

Keywords: Algorithmic Trading, Predictive modelling, Time series analysis, Regression analysis, Feature Engineering, Recurrent Neural networks, Long Short-Term Memory (LSTM).

Multilingual Speech Recognition and Synthesis Using Deep Learning

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Abstract

In this paper, we develop a deep learning based semantic communication system for speech transmission, named Deep SC-ST. We take the speech recognition and speech synthesis as the transmission tasks of the communication system, respectively. First, the speech recognition-related semantic features are extracted for transmission by a joint semantic-channel encoder and the text is recovered at the receiver based on the received semantic features, which significantly reduces the required amount of data transmission without performance degradation. Then, we perform speech synthesis at the receiver, which dedicates to re-generate the speech signals by feeding the recognized text and the speaker information into a neural network module. To enable the Deep SC-ST adaptive to dynamic channel environments, we identify a robust model to cope with different channel conditions. According to the simulation results, the proposed Deep SC-ST significantly outperforms conventional communication systems and existing DL-enabled communication systems, especially in the low signal-to-noise ratio (SNR) regime. A software demonstration is further developed as a proof- concept of the Deep SC-ST.

Keywords: Deep learning, semantic communication, speech recognition, speech synthesis.

URL Based Phishing Website Detection Using Machine Learning Models

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Abstract

Phishing attacks have emerged as a significant threat to online security, posing risks to both individuals and organizations. The development of efficient detection mechanisms is crucial to mitigate these threats. This project, titled "URL Based Phishing Website Detection using Machine Learning Models," presents a comprehensive approach to identify phishing websites based on their URLs. The project leverages the power of machine learning models, implemented in MATLAB, to enhance the accuracy of phishing website detection. Two prominent algorithms, Support Vector Machine (SVM) and Random Forest, were employed to achieve robust results. The SVM model exhibited remarkable performance, achieving an impressive accuracy rate of 100%. SVM is renowned for its ability to classify data points accurately, making it an ideal choice for binary classification tasks like phishing website detection. Its utilization in this project highlights its effectiveness in accurately distinguishing between legitimate and malicious URLs. Additionally, the Random Forest algorithm was employed, yielding a commendable accuracy rate of 96.97%. Random Forest, a robust ensemble learning method, excels in handling complex and noisy data. Its performance underscores its suitability for the task of phishing website detection. The project's success lies not only in the choice of machine learning algorithms but also in the meticulous data pre-processing, feature engineering, and model tuning processes. These efforts collectively contribute to the outstanding accuracy achieved in phishing website detection. In summary, this project demonstrates the efficacy of machine learning models, particularly SVM and Random Forest, in the domain of URL-based phishing website detection. The achieved accuracies of 100% and 96.97% underscore the potential of these models to significantly enhance online security by effectively identifying and mitigating phishing threats. The methodologies and insights presented in this project can serve as a valuable foundation for future developments in the field of cyber security.

Keywords: Phishing attack, SVM, Machine learning, Random Forest

**Design and Implementation of Convenient and Secure Voting System Using GSM And
AI Tools**

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Abstract

Artificial intelligence (AI) has demonstrated huge potential in a variety of real-world applications. However, some significant considerations like fairness, transparency and trustworthiness are still challenging when applying AI to trust-oriented applications such as E-voting. The technology can ensure the safety of every vote, better and faster and much more accurate counting and automatic tallying. In this project, we aim to facilitate the consolidation of AI ecosystems by developing a block chain-based traceable self-tallying e-voting system. The proposed system presents a novel voting system by using QR and Fingerprint Face eye detection of Aadhaar card. When the e-voting system is integrated with the Internet of Things, any eligible voter can vote from anywhere as there will be two or more levels of authenticity checks. The system will act as registering module on activating switch by the super admin. For registering module, the QR code of Aadhaar is scanned (which is brought by the user) followed by the fingerprint verification & Face eye detection the system permits the elector to cast their vote, block chain technology comes into existence that is integrated within the machine. Each vote is added into each block encrypted by 256-bit SHA hash codes, the hashed block cannot be tampered by any individual as more security is added to the system. By adopting Block chain within the distribution of information will scale back one in every of the cheating sources of database manipulation.

Keyword: GSM-based Authentication, Biometric Verification, End-to-End Encryption, AI-powered Fraud Detection, Block chain for Transparency, multi-Factor Authentication, Secure Data Transmission, Voter Anonymity.

Women Safety Device with GPS Tracking and Alerts Using Arduino

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Abstract

Women's safety is a significant concern today. A tiny smart device can reduce this problem. A smart device with an SMS alert feature with real time location tracking can assure a woman to move freely. This research aims to build a safety device for women's safety. This research introduced a smart device that will take some action to identify the user who is in trouble. The system has a fingerprint module, which ensures that only an authorized person is using this device. If the user cannot press her finger on the fingerprint module within a specific time, the device will consider it a danger, and an automatic SMS will send to the authority. This device can also measure heart pulse and body temperature that make the safety device a smart gadget. A unique feature of this device is it has a built-in teaser gun for self- defense. A specific finger pattern needs to swipe on the module to enable the teaser gun. This device is like a power bank and cannot predict its feature. Smartphone micro-USB chargers are using for the charging purpose of this device.

Keywords: Women's Safety, GPS, GSM, Safety Device, Embedded System, Teaser Gun.

Implementation of Smart Farming System Using AI

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Abstract

The emergence of the smart farming system has revolutionized agricultural practices, facilitating efficient resource management, increased productivity, and enhanced decision-making processes. We propose a comprehensive web-based application that connects farmers directly with consumers, streamlining the supply chain and ensuring transparency and traceability in agricultural products. Our application offers a user-friendly interface for farmers to input and manage their produce, including crop details, harvest schedules, and pricing information. Utilizing sensor technology, farmers can monitor Environmental conditions, soil moisture levels, and crop health remotely, enabling proactive management and optimization of farming operations. Detailed product information, including cultivation practices and farm-to-table journey, consumer transparency and builds trust among consumers, Additionally, consumers can provide feedback and rating, fostering a sense of community and promoting sustainable farming practices. The farmers and consumers, our smart farming application promotes economic empowerment for small-scale farmers, reduces food waste, and forest a more sustainable and resilient food system consumer.

Keywords-Controlled environment agriculture (CEA), Smart farming, web application, Agricultural Technology, supply chain management, Direct marketing, Real-time data, Online marketplace, Customer Feedback.

Human Mental Health Monitoring System Using AI Tools Algorithm

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Abstract

In the present climate, emotional well-being is a main pressing issue. The emotional well-being circumstance has weakened because of a major number of individuals telecommuting and being isolated from their friends and family. Thus, it's basic to monitor and resolve any issues before they get excessively intense. Thus, this venture attempts to accomplish these things for client. This application carries you to a condition of quiet and wellbeing. Client will figure out how to oversee everyday pressure and work on their emotional well-being. Remembering that a few clients might be experiencing psychological instability and may not wish to communicate with an application as much as others. Thus, the application would be exceptionally easy to understand and inviting. To create the application, I will utilize java and firebase. This multitude of dialects will be utilized to foster the application which will be easy to use and have basic UI. The application will initially let the client to sign in and after that it will show a few arrangements of questionnaires which client need to reply. As indicated by answers given by the client, the condition of mental prosperity is shown and based on which legitimate idea is given. What's more, in the extreme case, much appropriate medication and specialist is proposed to the client who will assist them with defeating their current state.

Keywords: Mental health, android application, Java, Firebase

A Realtime Driver Drowsiness Detection Using Eyes Aspect Ratio Algorithm

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Abstract

Every year thousands of people in India lose their lives due to traffic accidents. The role of human factor plays a key role in the accidents. In general, the driver fatigue alone accounts for around 25 percent of the road accidents and up to 60 percent of road accidents result in death or serious injury. A main cause of fatigue is sleeplessness or insomnia. So, a drivers' drowsiness state is a major factor in severe road accidents that claims thousands of lives every year. Hence it is very essential to develop an efficient drowsiness detection system. In the recent years, use of intelligent algorithms in vehicles has developed considerably. This project proposes a technique to check the driver fatigue by detecting the facial expressions of the drivers, using face detection technique. It implements a real-time driving drowsiness detection algorithm that considers the individual differences of driver. A Haar Cascade algorithm is constructed to detect the face region, which avoids the problem of poor accuracy caused by artificial feature extraction. According to the eye's landmarks, a new parameter, called Eyes Aspect Ratio, is introduced to evaluate the drowsiness of driver in the current frame. A unique fatigue state classifier, based on Haar Cascade algorithm, was trained which taking the Eyes Aspect Ratio as input. The trained classifier is application to monitor the state of driver monitor. Because the fatigue driving state is gradually produced, a variable which calculated by number of drowsy frames per unit time is introduced to assess the drowsiness of driver. In simulated driving applications, the proposed algorithm detects the drowsy state of driver quickly from 640*480 resolution images at over 20fps and 98.80% accuracy. This system also generates voice alert to make the driver awake when he/she is detected as drowsy driver. This system performs well with adequate precision and a good recall.

Keywords: Keywords: Eyes Aspect Ratio, Dlib toolkit, Haar Cascade algorithm, OpenCV, Pyttsx3.

Sign Up Wallet: Revolutionizing Digital Identity Management with Blockchain and Machine Learning

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Abstract

Digital identity is a user's online identification, like a physical identification card such as a passport or driver's license. A digital identity contains characteristics or attributes of the user. As we access apps and websites, organizations are dominantly using centralized and federated identity management systems (e.g. signing in with a Google or Facebook account) by default. The centralized system puts data at risk of large-scale hacks and breaches while the federated model enables companies to track user data without their knowledge. Existing identity management systems either use a centralized authentication server or rely on identity providers to authenticate users for gaining access to various services. These systems have failed to safeguard user data privacy and do not encourage the portability of identity data. A trustworthy and reliable system is needed so that individuals can interact and network digitally and securely. These problems are motivated the development of the Sign-Up Wallet a block chain and machine learning based Self-Sovereign Identity model to manage digital identities. The emerging block chain technology enables self-sovereign identity management, a decentralized identity management model that eliminates identity providers as a trusted third party and machine learning is used to find the trusted service provider. In this proposed system users store their digital identity in a Sign-Up Wallet with cryptographic keys. When registering with a trusted service provider, a Unique Personal Identifier (UPI) Code is submitted for direct credential verification. Logistic Regression is used for predicting whether a website is trusted or not. If the service provider is untrusted, a masked credential is generated using a Lookup Substitution Algorithm, preserving privacy during verification. This masked credential is then provided to the service provider, allowing verification without exposing the raw data and maintaining user security. The primary goal of this project is to give individuals greater control over their own digital identities, reducing the reliance on centralized authorities and minimizing the risks associated with data breaches and privacy violations.

Keywords: Machine learning, Block chain, suspicious website, secured Digital Identity, Lookup substitution

**Developing an Image Immunizer for Tamper Localization and Recovery Using Deep
Learning**

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Abstract

Today, people frequently interact with their families, friends, and colleagues through online social networks (OSN). People enjoy posting and sharing their photos in online communities, blogs, and content sharing sites. The problem addressed in this project is the susceptibility of digital images to tampering, which compromises security and privacy. Traditional image forgery detection methods face challenges in reproducing original content after manipulation. This project introduces an advanced Image Immunization System leveraging Invertible Neural Networks. The system, comprising the Cyber Vaccinator, Vaccine Validator, and Forward Pass for Tamper Detection, and Backward Pass for Image Self-Recovery, aims to proactively immunize images against various attacks. Run-Length Encoding in the backward pass to transform hidden perturbations into information, facilitating lossless recovery of the authentic image. Today, people frequently interact with their families, friends, and colleagues through online social networks (OSN). People enjoy posting and sharing their photos in online communities, blogs, and content sharing sites. The problem addressed in this project is the susceptibility of digital images to tampering, which compromises security and privacy. Traditional image forgery detection methods face challenges in reproducing original content after manipulation. This project introduces an advanced Image Immunization System leveraging Invertible Neural Networks. The system, comprising the Cyber Vaccinator, Vaccine Validator, and Forward Pass for Tamper Detection and Backward Pass for Image Self-Recovery, aims to proactively immunize images against various attacks. Run-Length Encoding in the backward pass to transform hidden perturbations into information, facilitating lossless recovery of the authentic image.

Keywords: AI - ML Image losses less Recovery

Opencv Based Fake Item Detection Using Scale Invariant Feature Transform

Algorithm Sift

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Abstract

The availability of fake products in the Market is one of the biggest challenges of the online retail industry. These products appear to be genuine but they are limitations of the original branded products. Almost 20% of the products sold on online websites are fake. The problem of recognizing counterfeits(fake) products is a tedious task in certain cases and can be dangerous when it comes to medical products (life will be dangerous). It becomes easier to product and sell fake products if an individual does not check the details of the product property. This project suggests a better solution using Artificial Intelligence for non-tech-survey customers to find if the product received is fake or original. In this project, images of the original products are saved in the database (local server). The future scope will be cloud servers. If the input image to be analyzed is given, then the image is compared with the original product image which is saved in the database. The comparison is done based on the SIFT algorithm and the product is detected as fake or original. The automatic image and text Recognition and the classification of product information enable end customers to detect counterfeits precisely and quickly by checking them against trained models. The goal of this project is to create an easy-to-use application in which the end- user identifies the counterfeits product and contributes to the fight against product privacy.

Keywords: Counterfeit products, Artificial Intelligence, non-tech-survey, database and SIFT algorithm, Image Recognition, object Detection.

**Predictive System for No Parking Vehicle Owner Identification Using Deep Learning
Algorithm**

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Abstract

In urban environments, the issue of unauthorized parking in designated no-parking zones persists, leading to traffic congestion and safety hazards. Inaccurate license plate recognition, License plate (LP) detection is a crucial task for Automatic License Plate Recognition (ALPR) systems. Most existing LP detection networks can detect License plates, but their accuracy suffers when license plates (LPs) are tilted or deformed due to perspective distortion. This leads to difficulties in identifying vehicle owners. To address this challenge, this project presents Trace Me, a predictive system utilizing advanced machine learning algorithms. The system employs YOLOv8 for efficient object detection, focusing on identifying vehicles in no-parking zones, and Tesseract OCR for accurate license plate recognition. The extracted license plate information is then processed by a machine learning model trained to predict the owner of the vehicle. The proposed system involves collecting and annotating a diverse dataset, training YOLOv8 and LPR Net model for vehicle number plate detection, utilizing Tesseract OCR for license plate extraction, and implementing a machine learning model for owner identification. Real-time processing and integration with surveillance systems allow for immediate identification of unauthorized parking incidents. The system generates alerts or notifications, aiding law enforcement in enforcing parking regulations. Trace Me not only provides a technological solution to mitigate unauthorized parking but also contributes to improved traffic management and public safety.

Keywords: License plate Registrations, Deep Learning, Object detection, YOLOV8.

**Developing an E-Commerce Website for Visually Impaired Person Using Full Stack
Web Development**

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Abstract

Our e-commerce website for the visually impaired aims to provide an inclusive and accessible online shopping experience. Through a user-friendly interface designed with screen readers and voice command technology in mind, we offer a seamless browsing experience for individuals with visual impairments. Our website is optimized for easy navigation, with clear and concise descriptions of products, along with high contrast visuals for better readability. We prioritize the use of alt text for images, ensuring that those using screen readers can fully comprehend the content. Additionally, our website features adjustable text sizes and customizable colour schemes to cater to different visual needs. We provide multiple payment options and secure checkout processes, guaranteeing a smooth transaction process for all users. Our customer service team is trained to assist and accommodate the unique needs of visually impaired individuals, offering support via phone or email. We are committed to creating an inclusive online shopping environment where everyone can shop comfortably and confidently, regardless of their visual abilities.

Keywords: Flask, HTML, CSS, Java Script.

**Virtual HR: AI-Driven Automation for Efficient and Unbiased Candidate Recruitment
in Software Engineering Roles**

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Abstract

Recruitment is an integral part of any HR professional's role and critical for helping organizations build a thriving workforce ready to support business growth. The entire recruitment process is sometimes relatively complex, especially if an HR professional is hiring for multiple roles at once. It's common for HR professionals to face several challenges during the hiring process. To overcome this challenge this project is to develop an AI-driven recruiting platform that aims to make the hiring process more efficient and unbiased. By leveraging artificial intelligence and machine learning, Virtual HR automates various aspects of the recruitment process, such as candidate sourcing, screening, and engagement. The proposed framework employs an automatic resume analysis system tailored to match candidate profiles with suitable job postings, providing valuable recommendations to employers using content-based filtering. The subsequent automated virtual interview process involves three distinct stages: an aptitude test, a programming skill test, and a video calling interview facilitated by Virtual HR. It uses natural language processing (NLP) to understand, interpret, and respond to user voice inputs in a conversational manner and Attention Mechanism for behavioral prediction during visual interview. The proposed system allows candidates to encounter common interview questions and quantifies how they share their attention (gaze and head rotations) to engage with multiple interviewers based on their conversational role (speaking or listening).

Keyword: Artificial intelligence (AI), recruitment, literature review, recruiters, applicants, candidates, job seekers.

**Implementing the Lifesaver: A Vade-Based Intelligent Ambulance Deployment for
Rapid Emergency Response and Alert System**

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Abstract

Every day, the number of traffic accidents rises as the automobile population increases. According to a survey by the World Health Organization (WHO), 1.3 million people die and 50 million are wounded annually around the globe. Most people die because they don't get medical help at the scene of an accident or because it takes too long for resources to get there. The time after an accident can be optimally used to make a difference between a life saved and life lost, if recovery actions are able to take place in time. However, routing problems and traffic congestion is one of the major factors hampering speedy assistance. By identifying sites where the possibility of accidents is higher and the closest spot for ambulance placement, the response time can be great reduced. In order to operate efficiently as we as effectively ambulances should be deployed in areas where there is maximum demand and the ambulance should be able to reach the victim within a drive time of five minutes. This project suggests a specific way to shorts the time it takes for an ambulance to areas at the scene of a road accident. To achive this, the project aims to revolution emergency response strategies by proposing a novel unsupervised generative clustering approach employing Variational Deep Embedding (VaDE). Additionally, this proposed system includes real- time alerts to both hospitals and traffic departments, facilitating route clearance for expedited ambulance travel. Unlike traditional clustering methods, Variational Deep Embedding (VaDE) is a 4-step data generation process that uses deep neural networks and a Gaussian Mixture Model to optimize ambulance positioning strategies. By having an ambulance on site or in close proximity to the spot's venue, the response time can be significantly reduced and thereby saved precious lives.

Keywords: Deep Embedded Clustering (DEC), Cat2Vec, K-means, Ambulance positioning, Accident hotspots.

**Enhanced Automatic Number Plate Recognition for High-Speed Vehicles: Leveraging
YOLO And HAAR Cascade**

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Abstract

The use of artificial intelligence (AI) in the Advanced High-Speed Automatic Number Plate Recognition (ALPR) system provides a cutting-edge method for quickly and accurately identifying license plates on automobiles. To ensure efficient character extraction from collected photos, this system incorporates advanced techniques such as template matching and connected component analysis. Plate extraction, character segmentation, and template matching are all part of the process, which is designed to work reliably in a variety of outdoor settings. It prioritizes quick identification during the day. The ALPR system is very useful in real-world applications such as automated toll collection, parking access control, traffic law enforcement, and road traffic monitoring. The approach makes use of several templates and character identification with artificial intelligence (AI), improving accuracy and efficiency. Following character recognition, the recognized characters are validated by cross-referencing them with a database of license plates. Accuracy percentage obtained is of 91.8. Prominent for its ease of use and speed in character recognition and plate segmentation in various climatic conditions, the suggested model is a noteworthy development in high-speed ALPR technology enabled by AI in various climatic conditions.

Keywords: Database, Feature Extraction High-speed, Segmentation, Template matching, Practical applications, Character recognition, Environmental conditions, Artificial Intelligence (AI), Automatic Number Plate Recognition (ALPR)

Reach Medical Support to Accidental Vehicles Using IOT and Mems Sensor

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Abstract

This Paper aims to protect and save human life by giving proper medical emergency service time while in road accidents. Nowadays, many accidents occur on the highways due to rash driving drunk and driving, and driver carelessness. In many situations, the family members of the ambulance and police authority are not informed in time. At the time of an accident, an individual or group of people may suffer from a serious injury and sometimes immediate first aid can't be provided at the exact time. so, The conceptual idea of achieving this was by accommodating sensors in a vehicle to compute the displacement of the vehicle, location, and chassis number of the vehicle by using **GPS** (Global Positioning System) device to analyze the proper location and share the location using the **IoT** (INTERNET OF THINKING) Receive the information and detail about vehicle details to the control center. With that, necessary emergency response units can be deployed to the accident location. The outcome of this Paper utilizes a gyro sensor (MEMS SENSOR) to monitor angles between 45° – 315° and a vibration sensor at a collision impact frequency of more than or equal to 90 Hz. The prototype can be a viable system to be incorporated by vehicle manufacturers in India to improve a vehicle's safety features and ensure better reliability of vehicle accident detection and reporting systems.

Keywords: IoT, Mems Sensor, GPS, Microcontroller

Disease Prediction by Machine Learning Over Big Data from Healthcare Communities

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Abstract

With big data growth in biomedical and healthcare communities, accurate analysis of medical data benefits early disease detection, patient care and community services. Streamline machine learning algorithms for effective prediction of chronic disease outbreak in disease-frequent communities. Moreover, different regions exhibit unique characteristics of certain regional diseases, which may weaken the prediction of disease outbreaks. To overcome the difficulty of incomplete data, we use a latent factor model to reconstruct the missing data. To experiment on a regional chronic disease of cerebral infarction. To propose a new convolution neural network based multimodal disease risk prediction (CNN-MDRP) algorithm using structured and unstructured data from hospital. To the best of our knowledge, none of the existing work focused on both data types around medical big data analytics. Compared to several typical prediction algorithms, the prediction accuracy of our proposed algorithm reaches 94.8% with a convergence speed which is faster than that of the CNN-based unimodal disease risk prediction (CNN-UDRP) algorithm.

Keywords: (CNN-UDRP) algorithm, (CNN-MDRP) algorithm, Healthcare communities

Credit Card Fraud Detection Using Random Forest Algorithm

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Abstract

With the rapid development of electronic commerce, the number of transactions by credit cards is increasing rapidly. As online shopping becomes the most popular transaction mode, cases of transaction fraud are also increasing. In this paper, we propose a novel fraud detection method that composes of four stages. To enrich a cardholder's behavioral patterns, we first utilize the cardholders' historical transaction data to divide all cardholders into different groups such that the transaction behaviors of the members in the same group are similar. We thus propose a window-sliding strategy to aggregate the transactions in each group. Next, we extract a collection of specific behavioral patterns for each cardholder based on the aggregated transactions and the cardholder's historical transactions. Then we train a set of classifiers for each group on the base of all behavioral patterns. Finally, we use the classifier set to detect fraud online and if a new transaction is fraudulent, a feedback mechanism is taken in the detection process in order to solve the problem of concept drift. The results of our experiments show that our approach is better than others.

Keywords: Credit Card Fraud, Cardholder's historical transactions, Electronic commerce

Smart Agriculture Monitoring Using Fuzzy System

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Abstract

As the global population approaches 9.7 billion by 2050, the imperative for efficient and sustainable agriculture intensifies. In response, IoT-based smart agriculture systems have emerged, leveraging sensors and devices to monitor environmental parameters like temperature, moisture, ultrasonic, and rainfall. This real-time data empowers farmers with insights to optimize resource usage and enhance productivity. This paper explores the potential of integrating fuzzy systems into smart agriculture monitoring, offering a promising avenue for precision farming and sustainable food production.

Analysis of the Impact of Artificial Intelligence on Academic Libraries: A Case Study

Approach

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Abstract

Artificial Intelligence (AI) has transformed various sectors, including libraries, revolutionizing how information is organized, accessed, and utilized. This paper investigates the impact of AI in libraries, examining its advantages, disadvantages, and potential future directions. Through a comprehensive analysis, it clarifies the role of AI in enhancing library services, addressing challenges, and optimizing user experiences and aims to understand how these technologies are reshaping traditional library functions.

Keywords: Artificial Intelligence, Libraries, Cataloging, Information Retrieval, User Experience, Machine Learning

**Enhanced Cardiopulmonary Resuscitation and Ventilation System with Integrated
Monitoring Capabilities**

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Abstract

This project discusses the prototyping and development of a low cost and portable automated cardiopulmonary resuscitation machine. This machine provides automated resuscitation to person whose heart is not pumping blood completely or improperly. The proposed prototype is operated by a 12 volts DC or AC supply. An LCD display for the status of machine and the status of the piston driven mechanism process. The main motive behind the design of this device to eradicate the manual tiring procedure of resuscitation currently being provided in emergency situations. It should provide calculated number of strokes per minute. It should not produce more injuries to patient. This device should be compact. It should be able to work independently. User interface of the device should be simple and easy to use. Repeat to give 3 compressions sat a rate of 3 compressions per minute. Place the CPR device on the chest again and repeat the cycle of 2 chest compressions, followed by two rescue oxygen breaths after completion of each cycle. Continue the cycle up to 2 cycles. In addition to this we are monitoring the patient health condition like body temperature and pulse rate.

Keywords: AC, DC, LCD, Ventilation System

Attendant Replacing Aid: Smart and Secure Saline Infusion

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Abstract

Saline, one of the most popular intravenous (IV) therapy plays a major role in the management of patients who are critically ill. Surveillance of saline bottle level is very important because when the bottle is emptied and the needle is not removed from the vein then the blood flows outward into the bottle. In hospitals, the nurses or caretakers are responsible for monitoring the saline bottle level. Mostly, due to negligence and any unusual condition, the exact timing of removing the needle from the patient's vein is ignored which causes a serious casualty and may lead to death as well. Furthermore, remote monitoring is a need to provide telehealth services. To prevent the accident due to the ignorance of caretakers and to provide remote surveillance in telehealth services, we have proposed the cost-effective smart saline level monitoring device which includes the combination of sensor and Internet of Things (IoT) technologies. We have built this system by using load sensor and ultra-low power low cost ESP32 WiFi System on Chip (SoC) microcontroller. The load sensor converts the weight of the bottle to a specific voltage. The ESP32 microcontroller generates and publishes a specific message based on the voltage received from the sensor. This system consists of a load cell with amplifier, heart sensor, temperature sensor, Microcontroller, IoT module and alert components. To publish and present the messages to the devices (e.g. smart phone, tablet, laptop etc.) of subscribers like doctors, nurses, or caretakers, we have used MQTT-S publish/subscribe protocol which runs over TCP. This project presents a proposal to create a cost-effective working prototype of saline pump for delivering of drop rates for the administration of small volumes. The presented saline pump utilizes a mechanism that is driven by a DC motor which itself is controlled by an IOT (ESP 8266-12E) module controller that works as the brain of the system and controls fluid infusion to the patient. DC motor is used to detect the flow rate of liquid. The IOT NODE MCU is used to control the flow rate is slow, medium, or fast and is controlled by using cayenne cloud server. We have adopted MQTT-S protocol as it is efficient for low cost and low power devices. Furthermore, MQTT-S also provides guaranteed delivery of messages as it supports asynchronous communication using buffering of messages. We have believed that using this proposed monitoring system one can control the saline fluid from a

distant position which will aid in building smart healthcare system. Remote controlling is a need to provide telehealth services. To prevent the accident due to the ignorance of caretakers and to provide remote surveillance in telehealth services, we have proposed the cost-effective smart saline flow control device.

Gait Analysis Using Machine Learning

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Abstract

Abnormalities and irregularities in walking (gait) are predictors and indicators of both disease and injury. Gait has traditionally been monitored and analyzed in clinical settings using complex video (camera-based) systems, pressure mats, or a combination thereof. Wearable gait sensors the opportunity to collect data in natural settings and to complement data collected in clinical settings, thereby offering the potential to improve quality of care and diagnosis for those whose gait varies from healthy patterns of movement. This project presents a gait monitoring system designed to be worn on the inner knee or upper thigh. It consists of low-power Hall-effect sensors positioned on one leg and a compact magnet positioned on the opposite leg. Wireless data collected from the sensor system were used to analyze stride width, stride width variability, cadence, and cadence variability for four different individuals engaged in normal gait, two types of abnormal gait, and two types of irregular gait. Using leg gap variability as a proxy for stride width variability, 81% of abnormal or irregular strides were accurately identified as different from normal stride. Cadence was surprisingly 100% accurate in identifying strides which strayed from normal, but variability in cadence provided no useful information. This highly sensitive, non-contact Hall-effect sensing method for gait monitoring offers the possibility for detecting visually imperceptible gait variability in natural settings. These nuanced changes in gait are valuable for predicting early stages of disease and for indicating progress in recovering from injury.

Keywords: Machine Learning, leg gap, non-contact Hall-effect sensing

**Comparative Analysis of Antioxidant Potency in *Vitis Vinifera* (Grape) Seed Extracts:
Essential Oil, Cold Press Oil, And Aqueous Extract**

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Abstract

Grape seeds are a great source of the secondary compounds with the wide range of therapeutic applications. A comparative study of phytochemicals having the medicinal values percent in the essential oil, cold press oil and aqueous extract of *Vitis vinifera* was carried out along their antioxidant potency. The inhibitory activity against free radicals was determined through the DPPH assay. The results revealed the presence of significant secondary compounds such as phytosterols, tocopherols, flavonoids (Isoscutellarein, and Scopoletin), triterpenoids, and terpenes, each exhibiting distinct concentrations in different extracts. Notably, the cold press oil demonstrated a higher content of phytosterols and tocopherols compared to the aqueous extract. The essential oil displayed varying compositions of phytochemicals at different temperatures. The DPPH assay indicated that the essential oil possessed superior antioxidant properties compared to the aqueous extract and cold press oil. Specifically, the cold press oil exhibited the highest inhibitory concentration, (IC₅₀60.170µg/ml) followed by the aqueous extract (IC₅₀72.38µg/ml) essential oil at (100°C,75°C,65°C) (IC₅₀34.069µg/ml, IC₅₀57.180µg/ml, IC₅₀44.27µg/ml). These findings underscore the potential of grape seed essential oil, particularly its rich phytosterol content, in the treatment of diseases associated with free radicals like cancers.

Keywords: Aqueous extract, Cold press method, Essential oil, GC-MS and DPPH

Wireless Charging of Implantable Pacemaker's Battery

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Abstract

The advancement of bio-sensors and bio- implants has prompted the need for sustainable power sources for long-term implantation. Addressing the challenge of replacing depleted power sources within implanted devices, this paper proposes a novel approach for artificial cardiac pacemakers. Instead of relying on surgical procedures for source replacement, a rechargeable power unit is introduced. This innovative system involves a transmitter situated externally to the patient's body and a receiver integrated into the pacemaker circuitry. Power is delivered wireless using magnetic induction principles, eliminating the need for invasive surgical interventions. This method not only streamlines the maintenance of artificial cardiac pacemakers but also enhances patient safety and comfort by reducing the risks associated with repeated surgeries.

Keywords: Wireless charging; Pacemaker; Magnetic induction; Wireless power transmission; Non-invasive charging.

Emerging Trends in Remote Work: Shaping the Future of Workplace Dynamics

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Abstract

Remote work has become a prevalent aspect of modern work culture, accelerated by technological advancements and shifting workforce preferences. This abstract examines key emerging trends in remote work that are reshaping workplace dynamics and influencing organizational strategies. The trends highlighted include the adoption of hybrid work models that blend remote and in-person activities to accommodate flexibility and collaboration. Virtual collaboration tools such as video conferencing platforms and project management software are enabling seamless communication and productivity for distributed teams. Additionally, the abstract discusses the growing emphasis on remote team management practices, focusing on building strong team cultures and leveraging technology for efficient coordination and performance tracking. Flexible work arrangements and work-life integration are becoming increasingly important, allowing employees to customize their work schedules and environments based on individual preferences. Furthermore, the rise of digital nomadism and location-independent work reflects a global shift towards remote-friendly policies and increased mobility. Employers are also prioritizing the employee experience in remote settings through virtual wellness programs, remote social activities, and cyber security measures to protect sensitive data. In conclusion, these abstract underscores the transformative impact of these emerging trends on remote work, highlighting the importance of organizational adaptation and technology integration to create flexible, efficient, and engaging remote work environments.

Keywords: Remote Work, Emerging Trends, Hybrid Work Models, Virtual Collaboration Tools, Remote Team Management, Flexible Work Arrangements, Work-Life Integration, Digital Nomadism, Employee Experience, Cyber security

**A Study on Organization Change and Development with Reference to Kansai Nerolac
Paints Ltd, Hosur**

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Abstract

The study on organization changes and development was conducted in Kansai Nerolac Paints Limited, Hosur. The main objective of this study is to find out the organization change and development in Kansai Nerolac Paint Limited, and the causes for that. This study was purely based on Primary data. Questionnaire method and secondary sources such as personnel and organization change and development details of employees and management. The statistical tools for the study used are percentage analysis, chi-square test and charts and diagrams. I tried my best in collecting the reasons for organization change and development and valid suggestions are given to overcome it. The sample size is 100 and the research study comes under descriptive research study. The study highlights that organization change and development. The research was conducted with full confidence. The findings and control measures of this study will help the organization of organization change and development in future. Finally, I would like to say the main function for organization change and development.

Keywords: Organization change, organization development, employee management.

**A Study on Employee Engagement Towards the Milk Production Union Limited,
Krishnagiri.**

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Abstract

The project report deals with the research topic “a study on employee engagement towards the milk production union limited, Krishnagiri”. Aim is to find out the level of satisfaction of the employee by filling up the gap between the employers and the employee. The main objective is to study the level of satisfaction the employee and to study how effective is the relationship between employers and the employee and to study whether the employees are satisfied with the facilities provided in the company. For this project the primary data has been collected directly from the respondents using a questionnaire while the secondary data was collected from books, articles, and websites. In this study, a questionnaire was used to collect data from the sample. The study used convenience sampling technique. The sample size taken for the study is 100. The study has analyzed and interpreted the data using various analytical tools: Correlation, Chi square. The quantitative tool utilized in this study is descriptive analysis, serving as a robust method for interpreting survey data. Through descriptive statistics, including measure of central tendency and dispersion, the study seeks to summarize employee perception of fringe benefits and their impact on satisfaction and retention. By analyzing survey response quantitatively, the research aims to identify trends, patterns, and correlation that shed light on the effectiveness on fringe benefits in employee well- being and organizational retention rates.

Keywords: Employee Satisfaction, Future Development, All around Growth, Fringe Benefits.

**A Study on Employee Satisfaction Towards The B&B Trilewall Containers Limited,
Shoolagiri**

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Abstract

The project report deals with the research topic “A STUDY ON EMPLOYEE SATISFACTION B&B TRIPALL WALL CONTAINERS LIMITED” Aim is to find out the level of satisfaction of the employee by filling up the gap between the employers and the employee. The main objective is to study the level of satisfaction the employee and to study how effective is the relationship between employers and the employee and to study whether the employees are satisfied with the facilities provided in the company. For this project the primary data has been collected directly from the respondents using a questionnaire while the secondary data was collected from books, articles and websites. In this study, a questionnaire was used to collect data from the sample. The study used convenience sampling technique. The population size is 400 and the sample size taken for the study is 100. The study has analyzed and interpreted the data using various description tools like Percentage analysis, Chi-square test, Correlation analysis, Anova. Few suggestions are provided for future development the all-round growth and development of the organization, which in turn will contribute to the development and growth of the employee. By this study it is found that the company is efficiently satisfying the employee needs.

Keywords: Employee Satisfaction, Anova, Chi-Square Analysis

A Study on Budgetary Control in Exide Industries Limited, Hosur

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Abstract

The project entitled 'A Study on Budgetary Control in Exide Industries Limited, Hosur. Measurement of company position by budgetary and budgetary control helps to identify the organizational strengths and weaknesses by financial and focusing attention on issues of organizational importance. The researcher viewed a budget as a plan expressed in quantitative, usually monetary term, covering a specific period, usually one year. While a budgetary control is a method to control of an organization's operations through establishment of standards and targets regarding income and expenditure, and a continuous monitoring and adjustment of performance against them? In this research work, the researcher will be considering an explanation of the importance of budgetary control techniques in the organization. An overview of the advantages and disadvantages of budgeting will be analyzed to understand the importance of finance in an organization. It involves setting budgets, comparing actual Performance to these budgets, identifying variances, and taking corrective actions as necessary. This Abstract: explores the principle and practices of budgetary control, its importance and implication for organizational decision making and performance evaluation. This study will be focusing on an introduction to the methods for preparing budgets, an appreciation of the uses of budgets, the role of budget and budgetary control in an organization. The study will be analyzed using simple percentage, correlation, and trend analysis tools.

Keywords: Budgetary Control, Simple Percentage, Correlation, Trend analysis.

**A Study on Innovations in Employee Engagement Tools to Enhance Employee
Productivity with Reference to Delta Electronics Pvt Ltd, Kurubarapalli**

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Abstract

This survey-based study investigates the effectiveness Innovations in employee engagement tools to enhance employee productivity within the context of Delta electronics pvt ltd. The research employs a mixed-methods approach, integrating both primary and secondary data sources to comprehensively analyze employee engagement levels and the impact of various quantitative tools on organizational performance. Primary data collection involves surveying employees to gather insights into their perceptions of engagement, job satisfaction, and productivity. Additionally, secondary data sources such as organizational records and existing literature are utilized to provide context and comparative analysis. The study evaluates the efficacy of quantitative tools such as employee surveys, performance metrics, and data analytics in measuring and enhancing employee engagement. Through statistical analysis and data visualization techniques, the research aims to identify patterns, correlations, and actionable insights that contribute to a deeper understanding of employee engagement dynamics. This study offers valuable insights into the strengths and limitations of quantitative tools in assessing and improving employee engagement. The research findings inform recommendations for organizations seeking to optimize their employee engagement strategies and leverage quantitative analysis to drive organizational performance and employee satisfaction. This study concludes innovation in employee engagement tools has significantly enhanced employee productivity by fostering better communication, collaboration and recognition within organization. These tools have streamlined workflows, and promoted a positive work culture, ultimately leading to improved performance and retention rates.

Keywords: Employee engagement, Quantitative tools, Employee satisfaction, Comparative analysis, Data visualization techniques.

**A Study on Workers Participation in Management with Reference to Surin Automotive
Pvt., Ltd. – Hosur.**

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Abstract

The present study entitled A STUDY ON WORKERS PARTICIPATION IN MANAGEMENT WITH REFERENCE TO SURIN AUTOMOTIVE PVT., LTD, -HOSUR. Workers' participation in management is a practice where employees are actively engaged in decision-making processes within an organization. The aim was to assess the level of workers' commitment to aiding their organization in achieving its objectives. The main objective of this study is to analyses and evaluates the existing workers participation in management in the Organization. A descriptive research design was employed for this study, utilizing a simple random sampling technique for sample selection. Both primary and secondary data were gathered for analysis. Primary data was acquired through the administration of questionnaires and interviews, while secondary data was sourced from company documents and websites. A total of 200 participants were interviewed. The collected data underwent analysis using appropriate statistical methods such as chi-square, correlation, and regression. After the detailed analysis it was found that the participation of employees in management is very meager percentage. To overcome the issues the following strategies was suggested adapting management by objectives strategies, creating quality circles, conducting regular meeting, collecting feedbacks etc... Participation of workers in management leads to better decision-making and employee satisfaction. Employees often have valuable insights and firsthand knowledge that can contribute to more informed and effective decisions. It helps in converting the employees to Entrepreneur.

Keywords: Workers Participation, Management by Objectives, Quality Circle, Entrepreneur.

**A Study on Equal Employment Opportunity with Reference to Innoforge Pvt Ltd,
Hosur.**

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Abstract

The project entitled as "A STUDY ON EQUAL EMPLOYMENT OPPORTUNITY WITH IN THE WORKPLACE" in Innoforge Pvt Ltd, Hosur. Equal Employment opportunity makes employers to eradicate employees under certain features like religion, color, gender etc. In a workplace Equal opportunity for everyone is the major criteria to feel everyone equally and fairly. This also promotes other factors like engagement between employees in the organization and also improves performance, satisfaction in their job and also in the workplace. The sample size for this study is 110. The research design was carried out for this study is descriptive research. Primary data are collected from the employees and workers in the organization. Secondary data are gathered from the books and websites of Innoforgepvt. ltd. Statistical tools used like percentage analysis, chi- square test and correlation test. Finally, it underscores the broader societal implications of EEO efforts and the imperative for continuous evaluation and adaptation in ensuring workplaces that are truly equitable and diverse.

Keywords: Employee Diversity, Employee Opportunity, Employee Engagement.

A Study on Work Life Balance with Reference to ABC Fruits, Bargur

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Abstract

Work-life balance entails attaining equilibrium between professional work and other activities, so that it reduces friction between official and domestic /personal life. Work life is now increasingly becoming the focal point of study by HRM experts and by managing teams of corporate. It is about effectively managing the balance between paid work and other activities like spending time with family, taking part in sport and recreation, undertaking further study. Work life balance is now playing an important role in deciding the job-related performance of employees in any industry. With swelling obligations in the work place, it is very difficult to the employees to maintain a fair level of work life balance. The data were collected from both primary and secondary sources. The primary data is collected from the employees through direct observation and interview method and the secondary data collected from various journals, magazines, articles, and websites, company records. Such circumstances impact on workers physiologically and psychologically. The hectic life of retention and excelling in fruit processing job has put tremendous pressure on fruit processing employee's life and leads to work life imbalance which is a problem that poses a big risk to workers well-being, their performance as well as the organizational performance. The present study consists of 150 respondents, employee of the ABC FRUIT, BARGUR. The Descriptive research and descriptive tools such as the hypothesis are tested by adopting statistical techniques like ANOVA, Correlation analysis, Chi-square. The paper aims to study the level of work life balance among the Fruit processing employees and explore how it is affecting the work-related activities of the employees.

Keywords: Work Life Balance, Employee Health Issues, Welfare Facilities, Correlations, Chi-Square, Extra Medical Benefits.

**A Study on HRM and Employee Motivation with References to Exide Industries
Limited, Hosur**

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Abstract

The present study entitled "A STUDY ON HRM AND EMPLOYEE MOTIVATION WITH REFERENCES EXIDE INDUSTRIES LTD., HOSUR. The main objective of this study is to analyze and evaluate the existing research has been done on the association between Human resource management practices and its outcomes; less consideration has been focused on the association between HRM practices and its effect on motivation of employees to produce valuable outcomes. The data were collected from both primary and secondary sources. The primary data is collected from the employees through direct observation and interview method and the secondary data collected from various journals, magazines, articles, websites and company records. The present study consists of 150 respondents, employees of the Exide Industries Ltd., Hosur and the sampling method adopted by the researcher is Clustered sampling, and the research is Descriptive research and the descriptive tools such as Chi square test, Correlation test, and charts based on the interpretation certain valuable findings are given about the employee motivation performances. Motivated and satisfied employees will have committed approach towards organizational objective; in turn organizations will also have to show similar commitment towards employee objectives. Here the role of HR is to continuously work towards alignment of aspirations of the employee with the goals of the organization.

Keywords: Employee Motivation, Motivation and Satisfied Employee, Employee Motivation Performances, Statistical Tool, and Data.

**A Study on Organizational Culture Octa pace Profile
With Reference to Sr Unique Solutions, Hosur**

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Abstract

This study delves into the examination of the organizational culture at **SR UNIQUE SOLUTIONS, HOSUR**. A dynamic firm operating in the Automation machinery manufacturing industry, utilizing the **OCTAPACE model** as a guiding framework. The OCTAPACE model delineates eight key dimensions-openness, confrontation, trust, authenticity; pro-action, autonomy, collaboration, experimentation, and learning that collectively define the cultural landscape of an organization. The primary objective is to identify the underlying reasons behind the prevailing organizational culture challenges within the company. Employing a qualitative research approach, data collection involves both primary and secondary sources. The sampling method utilized is simple random sampling, with a target of 100 members from SR Unique Solutions. Descriptive tools such as percentages, chi-square and correlation analysis are employed for data interpretation. The findings reveal crucial insights into the current organizational culture landscape, highlighting areas of strength and areas requiring improvement. Based on these findings, actionable suggestions are proposed to address the identified challenges and enhance organizational culture alignment with company objectives. This study concludes underscores the significance of understanding and managing organizational culture for sustained success and proposes strategies for fostering a positive and conducive work environment at SR Unique Solutions.

Keywords: Organization Culture, OCTAPACE Profile, Culture Landscape, Qualitative Tool, Work Environment.

A Study on Change Management with Reference to Deccan Industries, Coimbatore.

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Abstract

Change may be regarded as one of the few constants of recorded history. In change management may include agility, resilience, stakeholder engagement, organizational culture, digital transformation, remote work, sustainability, and innovation. The objective of the study is to examine the essential factors those are instrumental to the success of change management. The data were collected from both primary and secondary data. The primary data will be collected from the employees from direct observations and survey method. Secondary data is collected from extracted journals, articles, websites, and company records. The study reflects the evolving landscape of change management in response to dynamic market conditions, technological advancements, and societal shifts. It encompasses various processes, such as Planning, Communicating, and implementing changes effectively to minimize resistance and maximize acceptance. The study has gone through questionnaire of 150 respondents under the research methodology used in descriptive research. The study reveals that lower level employees are not participated in change management. So it was suggested that all the level of employees need to participate in change management through the following talent acquisition, Employee participation in management training on current technologies etc. Change management helps in smooth transition of current technologies that the employees will accept the change easily with clear understanding of objectives.

Keywords: Change management, Employee participation in management, Talent Acquisition, Innovation.

A Study on Working Capital Management with Reference to Amsteel Pvt Ltd, Hosur.

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Abstract

The research is based on “A STUDY ON WORKING CAPITAL MANAGEMEN WITH REFERENCE TO AMSTEEL PVT LTD, HOSUR”. Efficient management of working capital is pivotal for sustaining business operations and achieving long-term success. This Abstract: delves into the significance of working capital management (WCM) in enhancing liquidity, profitability, and overall organizational efficiency. By effectively managing components such as accounts receivable, accounts payable, inventory, and cash, businesses can strike a delicate balance between ensuring adequate liquidity for daily operations while maximizing returns on invested capital. The main objective of the study is to analyze the financial performance of the company. The details regarding the history and finance details of the company were collected through discussion with the accountant. Secondary data are based on the annual reports of 2019-2024. Analysis and Interpretation of financial statements help in determining the liquidity position, long term solvency, financial viability and profitability of a company. The various tools used for the study are working capital, balance sheet, and ratio analysis. Tables and charts are used for better understanding. Ratio analysis shows whether company is improving or deteriorating in past years. The data analyzed by ratio analysis such as Current ratio, Quick ratio, Liquid ratio, Capital gearing ratio, Proprietary ratio, Return on shareholders’ fund, Cash ratio, Fixed assets ratio and give interpretation to each ratio. In conclusion, this Abstract: underscores the critical importance of effective working capital management as a cornerstone of financial stability and operational excellence.

Keywords: Working Capital, Current Assets, Current Liabilities, Return on shareholders’ & Total Assets, Profitability.

**A Study on Knowledge Management on Organization Continuity with Reference to
Aadhithya Copiers, Krishnagiri**

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Abstract

The present study entitled “A STUDY ON KNOWLEDGE MANAGEMENT ON ORGANISATION CONTINUITY WITH REFERENCE TO AADHITHYA COPIERS, KRISHNAGIRI”. The main objective of this study is to analyze and evaluate the existing performance of the employees in the organization and to study the continuity of employees in the organization. Knowledge management has become a factor that ensures the success of the organizations and the continuity of their businesses and to stay competitive. They must know how to implement and use knowledge management in effective ways. Knowledge has to be used in organizational process in order to achieve sustainable competitive advantages. The aim of this paper is to give an overview of knowledge management and its importance in the organizations. The methods used to complete this paper are collecting data from publishes journals, conferences paper and books. The company may provide monetary and non-monetary benefits to the employees based on their knowledgeable skills. It must be revised that knowledge management is the main key for the organization to stay competitive and engage employee’s continuity in the organization. Knowledge management also creates innovation and ideas that are unique from employees and enable continuity of employees in the organization with their efficient knowledge and skills.

Keywords: Competitive Advantages, Explicit Knowledge, Innovation, Knowledge Management, Tacit Knowledge.

**A Study on Employee Service and Welfare with Synergy Punching Private Ltd,
Bengaluru**

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Abstract

This study investigates the impact of employee service and welfare initiatives on organizational performance and employee satisfaction. Utilizing a mixed-methods approach, data was gathered through surveys, interviews, and organizational performance metrics. Findings reveal a significant positive correlation between robust employee service programs, improved welfare provisions, and heightened organizational productivity. Moreover, enhanced employee welfare positively influences job satisfaction, retention rates, and overall workplace morale. The study contributes to the growing body of literature on human resource management by providing empirical evidence of the tangible benefits associated with prioritizing employee service and welfare within organizations. Recommendations are offered for businesses seeking to optimize employee well-being to drive organizational success and sustainability.

Keywords: Flexible Working Arrangements, Employee Recognition Programs, Employee Engagement Activities, Maternity and Paternity Leave.

**A Study on Employee Relationship Management with Reference to Kansai Nerolac
Paints Ltd, Hosur**

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Abstract

A study on employee relationship management in Kansai Nerolac Paints Limited, Hosur. The main objective of this study is to find out the employee relationship in Kansai Nerolac Paint Limited, and the causes for that. This study was purely based on Primary data is through questionnaire method and secondary data such as personnel and employee relationship details of employees and management. The statistical tools for the study used are percentage analysis, chi-square test and charts and diagrams. I tried my best in collecting the reasons for employee relationship and valid suggestions are given to overcome it. The sample size is 100 and the research study comes under descriptive research study. The study highlights that employee relationship. The research was conducted with full confidence. The findings and control measures of this study will help the organization of employee relationship in future.

Keywords: Employee Relation, Employee Relationship Management, Chi-Square Test and Chart.

A Study on Employee Absenteeism with Reference to AM Steel Industry, Hosur

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Abstract

The present study entitled "A STUDY ON EMPLOYEE ABSENTEEISM WITH REFERENCE TO AM STEEL INDUSTRY, HOSUR". The main objective of the study is to analyze and evaluate the existing employee absenteeism followed by the company and to study the impact of employees. The data were collected on both primary and secondary sources. The primary data is collected from the employees through direct observation and interview method and the secondary data collected from various journals, magazines, articles, websites and company records. The present study consists of 150 respondents, employees of Amsteel Industry, Hosur. Sampling method adopted by the researcher is Clustered sampling, and the research is Descriptive research and the descriptive tools such as Chi square test, Correlation test, and charts based on the interpretation certain valuable findings are given about the employee absenteeism. And the company may provide monetary and non-monetary benefits to the employees based on their absenteeism. The study highlights that absenteeism was high in the second half of the calendar year. And it also says income level, welfare measures are not the reasons for absenteeism. The research was conducted with full confidence. The findings and control measures of this study will help the organization to avoid the problem of absenteeism in future. Finally, the main reasons for absenteeism are personal work, illness and Social and religious functions.

Keywords: Employee Absenteeism, Monetary and Non-Monetary Benefits, Chi Square, Correlation Test, Personal Work and Illness.

**A Study on Impact of Teamwork with Reference to Sri Devaraja Agro Industries,
Krishnagiri.**

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Abstract

The present study entitled “A STUDY ON IMPACT OF TEAMWORK WITH REFERENCE TO SRI DEVARAJA AGRO INDUSTRIES, KRISHNAGIRI.” The main objective is to analysis the impact of teamwork as group with a common purpose for the achievement of specific goals/tasks. The primary data will be collected from the employees from direct observation and interview method and the secondary data collected will be collected from various journals, magazines, articles, websites and company records. A descriptive research design was used in executing the study. Descriptive research is a research method describing the characteristics of the population or phenomenon studied. Organization must invest in developing strategies and fostering an environment conducive to effective teamwork, including providing training, establishing clear goals and promoting a culture of collaboration and inclusivity. To find out the impact of teamwork on various factors of organizational performance, including productivity, innovation, employee satisfaction, and overall effectiveness. To suggestion, it involves combining the unique knowledge and skills of the team members to achieve shared objectives. Result from the data analysis will indicates the significant relationship exists between teamwork and employee performance.

Keywords: Effective Teamwork, Employee Performance and Employee Satisfaction.

**A Study on Recruitment Strategies with Reference to Katterra India Pvt Ltd,
Krishnagiri.**

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Abstract

The present study entitled "A STUDY ON RECRUITMENT STRATEGIES WITH REFERENCE TO KATERRA INDIA.PVT.LTD, KRISHNAGIRI". Recruitment is the process by which organizations locate and attract top-tier talent has become a paramount challenge for organizations across industries. The main objective of the study is to view on Recruitment strategies and identify the preferred recruitment channels and the impact of recruitment strategies on attracting top tier-talent. The study recognizes the significance of recruiting exceptional individuals for organizational success and explores various strategies that organizations can employ to attract and retain elite talent. The data were collected from both primary and secondary data. Primary data is collected through interviews and surveys, while secondary data is obtained from relevant literature. The type of research methodology is used in the study is descriptive research. Through questionnaire the data were collected from 150 out of 250 employees. The strategies may include targeted advertising, networking events, employee referral programs and Outsourcing. By understanding the effectiveness of these strategies, organizations can enhance their ability to attract and select highly skilled individuals who can make significant contributions to the success of the organization. The findings of this research provide valuable insights for organizations seeking to improve their recruitment practices and attract elite talent. This suggestion helps the organization by implementing effective recruitment strategies, organizations can gain a competitive advantage in the talent market and increase their chances of achieving organizational success.

Keywords: Top-Tier Talent, Advertising, Networking Events, Employee Referral Programs.

**A Study on Designing an Effective Diversity and Inclusion Strategy at ABC Fruits,
Krishnagiri**

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Abstract

The study is about designing an effective diversity and inclusion strategy for the work place. In today's globalized and interconnected world, diversity and inclusion have become integral components of organizational success and sustainability. This study presents an overview of the key elements involved in formulating and implementing an effective diversity and inclusion (D&I) strategy. The study outlines the core components of an effective diversity and inclusion strategy, which includes leadership commitment, comprehensive policies and practices, employee training and development, measurement and accountability mechanisms, and continuous improvement efforts. It stresses the importance of aligning diversity and inclusion initiatives with the organization's mission, values, and business objectives to ensure their long-term effectiveness and sustainability. The research discusses the role of leadership in driving cultural change and fostering an inclusive work environment. It emphasizes the need for visible and active support from top management, as well as the importance of diversity in leadership positions to serve as role models and advocates for diversity and inclusion initiatives. It involves addresses the challenges and barriers that organizations may encounter in implementing diversity and inclusion strategies, such as resistance to change, unconscious bias, and lack of resources or expertise. It emphasizes the importance of addressing these challenges proactively through education, communication, and collaboration across all levels of the organization.

Keywords: Diversity, Inclusion, Organizational success, Competitive advantage, Leadership Commitment.

A Study on Employee Training and Development Program to Ascent Circuits, Hosur

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Abstract

The main objective of the study is to analyze the employee training and development program followed by the company and to study the method of training and development process on employees, The Primary data collected from the employees through direct observation and interview method and secondary the secondary method data collected from various journals, magazines, articles, websites and company records. The present study consists of 200 respondents, employees of the Ascent circuits, Hosur and the sampling method adopted by the researcher is games based training and internship ,job rotation, job shadowing lecture ,mentoring and apprenticeship, programmed instruction role-modeling ,role play, simulation ,stimulus-based training and team training, The nature and characteristics of these training methods and the relationships among them were analyzed using the following seven criteria learning modality, learning environment, trainer presence, proximity, interaction level cost considerations and time demand. The Ascent Circuits recognizes the importance of identifying skill gaps and providing targeted training programs to enhance employee competencies. Challenges such as maintaining engagement, adapting to technological advancements, and measuring program effectiveness are addressed through innovative approaches. Leveraging personalized training modules, immersive technologies, and data-driven insights, Ascent Circuits fosters a culture of continuous learning and improvement. By investing in leadership development and remote work readiness, the company ensures that its workforce remains adaptable and resilient in the face of evolving industry trends. The result is a highly skilled and motivated workforce that drives innovation, quality, and competitiveness within Ascent Circuits and the broader technology sector.

Keywords: Learning Environment, Team Training, Skill gaps, Training and development process

A Study on Employee Retention Strategies in OLA Future factory, Pochampalli

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Abstract

This study is based on employee retention is a process in which the employees are encouraged to remain with the organization for life time or maximum period. It is a strategic tool for the success of the firm. Data collected from primary and secondary data. Retention of employees is becoming a real challenge in today's operating environment as Employers begin to realize the value of people that make up the organization. This study examines the human resource (HR) practices that promote employee retention. Retaining employees is most important for human resources function. 100 employees have been taken as sample for the present study. The proposed strategy begins with the identification of key factors influencing employee retention, including compensation, career development opportunities, work-life balance, organizational culture and job satisfaction. Data collection methods such as surveys, interviews, focus groups, and performance evaluations are employed to gather quantitative and qualitative data on these factors. Data analysis techniques such as descriptive statistics, regression analysis, and sentiment analysis are applied to identify patterns, trends, and correlations within the collected data. By analysing factors associated with high employee retention rates, organizations can develop targeted interventions and initiatives to address areas of concern and reinforce positive aspects of the workplace environment.

Keywords: Employee Retention, Strategic Tool, HR Practices, Challenges, Operating Environment, Value of People, Key Factor, Compensation, Career Development Opportunity.

**A Study on Emotional Intelligence with Reference to Rajsriya Automotive Industries
Pvt Ltd, Hosur.**

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Abstract

A study on emotional intelligence in Rajsriya Automotive Industries Pvt Ltd explores the significance of emotional intelligence (EI) in the contemporary workplace environment. It investigates how EI influences various aspects of professional life, including interpersonal relationships, teamwork, leadership effectiveness, job satisfaction, and overall organizational performance. The research adopts fixed-methods approach, combining qualitative and quantitative analyses to provide a comprehensive understanding of EI's role in the workplace. Through surveys, interviews, and behavioral observations, the study examines the correlation between EI competencies and employee productivity, engagement, and retention. Additionally, it investigates the effectiveness of EI training programs in enhancing individual and organizational outcomes. Population 500 employees sample size 100 to analyzing the Correlation, Percentage analysis, Chi-square, and Anova. The findings underscore the critical importance of EI in fostering a positive work culture, improving communication, and mitigating conflicts. Moreover, the study offers practical recommendations for organizations to cultivate EI among their workforce, thereby promoting greater resilience, adaptability, and success in today's dynamic business landscape.

Keywords: Inter Personal Relationship, Job Satisfaction Leadership Effectiveness and Team Work.

**A Study on Fringe Benefits to Enhance Employee Satisfaction and Retention at Sri
Devaraja Agro Industries, Krishnagiri**

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Abstract

“A study on fringe benefits to enhance employee satisfaction and retention”. This study investigates the impact of fringe benefits on employee satisfaction and retention through a quantitative lens. Drawing on both primary and secondary data sources, the research aims to provide a comprehensive understanding of the relationship between fringe benefits and employee outcomes. The primary data collection method involves surveys distributed among employees to measure satisfaction levels and retention intentions. Secondary data analysis complements the findings by offering contextual insights within organizational and industry contexts. Through descriptive statistics, the study seeks to summarize employee perceptions of fringe benefits and their impact on satisfaction and retention. By analyzing survey responses quantitatively, the research aims to identify trends, patterns, and correlations that shed light on the effectiveness of fringe benefits in enhancing employee well-being and organizational retention rates. The findings of this study contribute to the existing literature by providing empirical evidence of the relationship between fringe benefits, employee satisfaction, and retention. By employing a quantitative approach, the research offers actionable insights for organizations seeking to optimize their fringe benefit strategies. Ultimately, this study supports evidence-based decision-making and strategic planning regarding employee benefits and retention initiatives, utilizing descriptive analysis as a robust method for synthesizing and interpreting quantitative data.

Keywords: Quantitative Data, Fringe Benefits, Employee Perceptions, Descriptive Analysis, Robust Method, Contextual Insights.

**A Study on Effectiveness of Labour Welfare Measures with Reference to Sri Devaraja
Agro Industries, Krishnagiri.**

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Abstract

The present study entitled “A STUDY ON EFFECTIVENESS OF LABOUR WELFARE MEASURES WITH REFERENCE TO SRI DEVARAJA AGRO INDUSTRIES, KRISHNAGIRI. The term employee welfare refers to all actions taken by an employer for the benefit or comfort of its employees, including the provision of services, facilities, and perks. The main objective of the study is to analyze and evaluate the effectiveness of the existing welfare measures followed by the organization. The data were collected from both primary and secondary data. The primary data is collected from the employees through observation and interview method and the secondary data collected from various journals, magazines, articles, websites and company records. The type of research methodology used in the study is descriptive research. Through Questionnaire the data's were collected from 150 samples to find out the harmonious work environment of employee welfare measures. After analyzing the data's through statistical tools the following welfare measure are suggested to the organization housing options, free medical care, retirement benefits, children's and adults' educational perks, loan options. The suggestion helps the organization to increase production, inspire workers and to promote the total development of the employee's. Labor welfare has shed light on the significance of creating conducive work environments that prioritize the well-being and rights of employees. It becomes evident that investing in labor welfare not only benefits the workforce but also yields positive outcomes for organizations and society as a whole.

Keywords: Harmonious Work Environment, Employee Welfare, Retirement, Educational Perks

**A Study on Employees' Perception on Training System with Reference to Farida
Groups, Vellore**

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Abstract

The present study entitled “A STUDY ON EMPLOYEES PERCEPTION ON TRAINING SYSTEM WITH REFERENCE TO FARIDA GROUPS, VELLORE”. The main objective of this study is to analyze and evaluate employee’s perception over the training system implemented in the organization. Evaluating the perception of employees training help companies as well as employees to improve their performance. The companies are eager to go for the training programs for their employees with regular intervals and the management wants to know the perception of employees towards the provided training program. Training programs definitely result in skill enhancement, improved efficiency and productivity and growth opportunities for employees. This paper attempts to study the employees perception about training system programs in organization and to know the level of satisfaction of employees after attending the training and to offer suggestions and recommendations for successful implementation of training in the organization. This study was conducted after completion of training program to know about the perception of employees towards the training program organized for them. The data was collected through a structured questionnaire from employees of the organization. Employees can be easily motivated by management with their perception over training system in the organization.

Keywords: Training Program, Motivation, Productivity, Perception of Employee, Work-Life Balance.

A Study on Labour Welfare Facilities in Weg Industries (India) Pvt. Ltd, Hosur

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Abstract

A study on lab our welfare facilities in WEG Industries (India) Pvt. Ltd, Hosur. The main objective of this study is to find out the Lab our welfare facilities in WEG Industries (India) Pvt. Ltd, and the causes for that. Employee welfare as “the efforts to make life worth living for workmen”. The term lab our welfare, Employee welfare and workers welfare are used interchangeable to denote various services provided by the employers to the employees in addition to wages. Welfare includes provision of various facilities and amenities in and around the work-place for the better life of the employees. Employee welfare includes both statutory as well as non-statutory activities. Employee is a back bone of every organization; without employee no work can be done. So, employee’s satisfaction is very important. Employees will be more satisfied if they get what they expected, job satisfaction relates to feelings of workers. The main aim of this study is to analyze the welfare system of coal mines employees. Personal interviews and asking related questions have been used in this study to measure the Employee Welfare.

Keywords: Employee Welfare, Workmen, Worth Living

**A Study on Causes of Stress Management in Work from Home Employees at Allwin
Technologies, Chennai.**

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Abstract

As the work from home continues to rise, effective stress management strategies for remote workers become increasingly important. This abstract provides us various stress factors faced by individuals working from home and identifies proactive approaches to mitigate them. Factors contributing to stress in remote work environment include absence of boundaries between personal and professional life, social isolation, technological challenges, lack of supervision, lack of focus, distractive environment. To address these challenges, this abstract proposes a multifaceted approach encompassing boundary setting, regular communication with colleagues, embracing technology for collaboration, implementation self-care techniques and a supportive culture. By implementing strategies, workers can enhance their wellbeing, productivity, and overall job satisfaction, ultimately leading to a more sustainable and fulfilling work from home experience. Additional, in today's fast paced society, stress has become a prevalent issue affecting individuals across various demographics. Hence a comprehensive review of effective strategies for stress management, encompassing psychological, behavior and life style interventions. Physiological techniques such as Cognitive Behavioral Therapy (CBT) and Mindfulness-Based Stress Reduction (MBSR) are efficient tool in enhancing better mental health of the employees. Organization can play a pivot role in fostering a supportive work from home environment that prioritizes the mental health and satisfaction of their employees.

Keywords: Stress Management, Work from Home, HR Strategies, Proactive approaches.

**An Empirical Study on Employee Welfare Measures with Special Reference to RB
Industry, Krishnagiri**

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Abstract

The project on employee welfare measures aims to study the various initiatives undertaken by organizations to ensure the well-being of their employees. This study focuses on identifying the welfare measures implemented by companies, including healthcare benefits, flexible work arrangements, employee assistance programs, and wellness programs. The project explores the impact of these initiatives on employee productivity, job satisfaction, and overall organizational performance. This research provides insights for organizations looking to improve their employee welfare programs, ultimately contributing to the development of a healthier and more productive workforce. The sample size for the study is 150. The research design was carried out for this study is descriptive research. Primary data are collected from the employees and workers in the organization. Secondary data are gathered from the books and websites of RB INDUSTRY, KRISHNAGIRI. Statistical tools used like Quota sampling method and logistic regression.

Keywords: Employees Satisfaction, Welfare Measures, Work Place, Job Security

**A Study on Employee Attrition Strategies in an Organization at First Steps Baby Wear,
Hosur**

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Abstract

Employee attrition is a significant concern for organizations, as it can lead to productivity losses, increased recruitment costs, and a negative impact on company culture. To address this issue, organizations implement various strategies aimed at reducing attrition rates and retaining valuable talent. These strategies typically include creating a positive work environment, offering competitive compensation and benefits, providing opportunities for career growth and development, implementing effective performance management processes, and fostering strong leadership and communication. Flexible working condition, supervisor relationship, career growth and development, management support, motivation these are all helps to reduce the attrition rate, why attrition occurs, and to find the areas where this company is lagging behind. The data was collected from both primary and secondary sources. The sampling method adopted by the researcher is Simple random sampling, and the research is Qualitative research and the descriptive tools such as Percentage analysis, chi square test, and correlation test and charts based on the interpretation certain valuable findings are given about the Employee Attrition. The company should therefore address the gap in satisfying the employees' need and expectations towards their job and other related aspects which help the company to retain them more effectively. The company can also go for introducing new incentives schemes, transport facility, accommodation facility and to increase the bonus amount which helps the organization to motivate their employees to work even more and this brings best result from the employees. The company can effectively retain their all valuable employees if they follow the above suggestions.

Keywords: Attrition, Career Growth, Career Development, Motivation, Supervisor Relationship, Management Support.

**A Study on Effectiveness of Employee Engagement with Reference to Sai Lakshmi Milk
Products, Krishnagiri.**

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Abstract

The present study entitled "A Study on Effectiveness of Employee Engagement with Reference to Sai Lakshmi Milk Products, Krishnagiri. Employee engagement is a crucial aspect of organizational success, as it directly influences productivity, retention, and overall morale. This abstract involves into various strategies employed by organizations to faster employee engagement, including effective communication, recognition programs, and opportunities for professional development. Furthermore, it explores the multifaceted impacts of employee engagement on organizational performance, such as increased innovation, reduced turnover rates, and enhanced customer satisfaction. By prioritizing employee engagement, organizations can create a thriving workplace culture conducive to both individual and collective success. Employee engagement is really the "heart and soul" of any organization. It's all about creating a workplace where employees feel motivated and connected to the company's mission and values. It is the measure of how invested an employee is in their job and how motivated they are to do their best work. An engaged employee is aware of business context, and works with colleagues to improve performance within the job for the benefit of the organization. Employee engagement develops positive attitude among the employees towards the organization. Employee engagement is the emotional attachment employees feel towards their place of work, job role, position within the company, colleagues, culture and the effect this attachment has on wellbeing and productivity." This paper focuses on various factors which lead to employee engagement and what should company do to make the employees engaged. Proper attention on engagement strategies will increase the organizational effectiveness in terms of higher productivity, profits, quality, customer satisfaction, employee retention and increased adaptability.

Keywords: Employee Engagement, Organisational Effectiveness, Productivity, Outcomes, Employee Retention

**A Study on the Impact of Predictive Analysis in Human Resources Decision Making
with Reference to Microland Company, Bengaluru**

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Abstract

The present study entitled “A STUDY ON THE IMPACT OF PREDICTIVE ANALYSIS IN HUMAN RESOURCES DECISION MAKING WITH REFERENCE TO MICROLAND COMPANY, BENGALURU”. Predictive analysis has emerged as a powerful tool to aid HR professionals in making informed decisions regarding recruitment, retention, training, and talent management. This study aims to explore the impact of predictive analysis on HR decision making processes. The research methodology involves a thorough literature review to understand the theoretical foundations of predictive analysis in HR, followed by empirical research comprising surveys and interviews with HR professionals from diverse industries. The study examines how predictive analysis models are implemented in HR functions, the challenges faced during implementation, and the benefits realized in decision making. Preliminary findings suggest that predictive analysis significantly enhances HR decision making by providing insights into workforce trends, identifying high potential candidates, predicting turnover rates, and optimizing resource allocation. However, challenges such as data quality, privacy concerns, and the need for specialized skills are prevalent obstacles to effective implementation. The implications of this study are twofold, it contributes to the existing body of knowledge on the integration of predictive analysis in HR practices and offers practical recommendations for organizations looking to leverage predictive analysis for improved decision making. Ultimately, this research underscores the transformative potential of predictive analysis in optimizing HR strategies and driving organizational success in the current competition.

Keywords: Data Collection, Retention Strategy, Performance Management, Predictive Analysis, Data-Driven Decision Making, Machine Learning Techniques.

**A Study on Strategic Recruiting and Retaining Millennial Talent in the Workplace at
Genau Extrusion Pvt Ltd, Hosur**

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Abstract

This study aims to explore effective strategies for recruiting and retaining millennial talent in the workplace. By understanding the factors that attract millennial to employers and the key elements that contribute to their engagement and retention, organizations can develop targeted initiatives to attract, retain, and maximize the potential of this demographic group. To achieve the objectives of this study, a mixed-methods approach will be employed, combining both quantitative and qualitative data collection methods. The following data collection and sampling techniques will be utilized. A structured questionnaire will be administered to a sample of millennial currently employed in various industries. The survey will gather demographic information, as well as insights into their career aspirations, preferences regarding workplace culture, and factors influencing their decision to join and remain with an organization. Convenience sampling will be used to recruit participants through online platforms and professional networks. Relevant literature, industry reports, and organizational documents (e.g., recruitment policies, employee handbooks) will be reviewed to gain a comprehensive understanding of existing practices and trends in recruiting and retaining millennial talent. By employing a combination of these data collection methods and sampling techniques, this study aims to provide a comprehensive analysis of effective strategies for recruiting and retaining millennial talent in the workplace, offering practical insights for organizations seeking to optimize their workforce management practices in an increasingly competitive labor market.

Keywords: Millennial Generation, Workforce, Recruitment Strategies, Retention Initiatives.

**A Study on Performance Appraisal System with Reference to Sayyam Investments
Private Limited, Bengaluru.**

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Abstract

This study delves into the examination of the performance appraisal system at Sayyam Investments Private Limited, Bengaluru aims at having a close look at how performance appraisal system is practiced in Sayyam Investments Private Limited. The purpose of any appraisal program is employee development. The value of performance appraisal is the process of communication between supervisor and employee and not merely in the completion of the form. The main objective of the study is to study the existing performance appraisal system, to know the awareness and effectiveness of it. Since the problem is well defined descriptive research designs has been adopted. The sample units are company workers and middle level managements staffs. The sample size is 100 out of the population of 500. Simple random probability sampling has been adopted. This research is based on primary and secondary data. Primary data were collected with the help of structured questionnaire and personal interview. Secondary data were collected from company manuals, booklets, internal records, and internet and management journals. The data collected were analyzed with the help of percentage analysis. The major findings of the study are most of the jobs are routine in nature. Most of the respondents are considered performance appraisal is compulsory. Majority of the respondent wants change in the present performance appraisal system. The output of the study will give the company an insight into the areas, which needs change and improvement with specific recommendations to adopt performance appraisal system.

Keywords: Performance Appraisal, Simple Random Probability Sampling, Descriptive Research, Employee Development.

**A Study on Employee Well-Being and Mental Health at OLA Future Factory,
Pochampalli.**

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Abstract

This research project delves into the critical realm of employee well-being and mental health initiatives within organizational settings, utilizing a quantitative approach supplemented by primary and secondary data collection methods. With a focus on understanding the multifaceted dimensions of employee well-being and the efficacy of mental health interventions, this study aims to provide empirical insights to inform organizational strategies and practices. The primary data collection will involve administering standardized surveys to employees across various industries, assessing their perceptions of well-being and the effectiveness of existing mental health initiatives within their organizations. Additionally, secondary data from relevant literature, organizational reports, and scholarly articles will be analysed to complement and enrich the quantitative findings. The quantitative analysis will encompass statistical techniques such as correlation analysis, regression modeling, and descriptive statistics to explore the relationships between different variables related to employee well-being and mental health initiatives. The findings of this research will be contextualized within the broader theoretical frameworks of organizational behaviour, psychology, and public health. Through rigorous data analysis and interpretation, this study aims to contribute to the empirical understanding of employee well-being and mental health in the workplace, offering practical insights for organizational leaders, human resource professionals, and policymakers. Ultimately, by integrating quantitative measures with primary and secondary data analysis, this research endeavours to provide a comprehensive understanding of employee well-being and mental health initiatives, fostering evidence-based decision-making and facilitating the development of supportive workplace environments conducive to the flourishing of employees and organizational success.

Keywords: Employee Well-Being, Mental Health, Workplace, Job Satisfaction, Work-Life Balance, Organizational Policies, Interventions, Quantitative Analysis, Productivity.

**A Study on Employee Performance Appraisal Towards the Dezy Abital Innovations Pvt
Ltd, Bengaluru.**

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Abstract

The Project Report deals with the research topic “**A Study on Employee Performance Appraisal Towards the Dezy Abital Innovations Pvt Ltd, Bengaluru**”. Employee Performance Appraisal Plays a Pivotal role in Organizational Management, Facilitating the assessment of individual contributions towards organizational goals. This paper provides a comprehensive review of the existing literature on employee Performance Appraisal, Focusing on its Significance, Methodologies, Challenges, and Potential Enhancements. The review encompasses traditional Appraisal methods such as graphic rating scales and behaviorally anchored rating scales, as well as Modern Approaches including 360° degree feedback and Continuous Performance Management. Additionally, explores the influence of Organizational Culture, Leadership Style, and Technological Advancement on the Effectiveness of Performance Appraisal System. The Quantitative tool utilized in this study is Descriptive Analysis, serving as a firm interpreting Survey Data. Through descriptive Statistics, including Measure of Central Tendency and Dispersion, the study seeks to summarize employee perception of fringe benefits and their impact on satisfaction and retention.

Keywords: Performance Appraisal, Employee Evaluation, Performance Management, Feedback, Goal Setting, 360° Degree feedback.

**A Study on Production Planning and Control Using AI with Reference to Stack
stronics, Krishnagiri**

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Abstract

This study delves into the production planning and control using Artificial Intelligent at Stackstronics, Krishnagiri. The fast-growing literature corpus of industry 4.0 in the last years also reflects the various applications of Artificial Intelligence (AI) in the manufacturing domain. This paper conducts a literature survey to infer patterns and correlations within this scientific domain. This analysis aims to identify the knowledge gaps within the literature of AI-enabled manufacturing systems. Therefore, the objective of this study is twofold; first, we aim to identify commonalities and general trends in ML-enabled manufacturing systems. Secondly, we map the various application areas of AI-based Production Planning and Control (PPC). To this end, an overall analysis of the keywords highlighted four major scientific scopes for AI in manufacturing systems. Moreover, further investigation of this literature corpus was made to identify the different applications for AI to enhance decision-making in PPC. Based on this analysis, three major pillars were identified as potential areas for AI-enabled PPC for decision intensive tasks: dynamic scheduling, performance evaluation and monitoring, and automated process control.

Keywords: Artificial Intelligence, Production Planning Control, Dynamic Scheduling, Performance Evaluation, Monitoring, Process Automation.

**A Study on Employee Turnover Management in Tenneco Automotive India Pvt Ltd,
Hosur**

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Abstract

This paper explores the factors of employee turnover in Tenneco automotive industry. The study used survey method where data were collected through schedule from sample of 110 employees working in automobile industry in Hosur. The study reveals that the natures of employer, pay and work environment are the main factors of retention. The results demonstrate that the employee turnover is not a much serious problem as of now in the sector due to loyalty of employees towards their owner especially senior employees, but in the case of new recruits, it is sometimes difficult to retain them. This study attempts to identify the particular reasons behind turnover and its damaging effects on the industry in Hosur. The term “employee turnover” is a crucial metric that's usually central to organizations workforce planning and strategy. The impact of turnover has received substantial attention by senior management, human resources professionals and engineers in the industry. To explore turnover in larger detail, this text can examine the most sources of turnover rate, its effects and advocate some ways on however a company will retain staff and scale back turnover rate in the industry in Hosur. The main objective is to understand the key requirements of executives and the reasons for the turnover of executives in the industry. Employees are considered as the most essential asset of an organization and they work for the growth of the organization. Finally, the results will be critically analyzed to conclude the main areas that become core factors to make an executive leave an organization and will further explain the recommendations which can be taken to reduce the impact.

Keywords: Employee Turnover, Workforce Planning, Organisation Asset.

**A Study on Employee Retention Strategies at Rajsriya Automotive Industries Pvt Ltd,
Hosur**

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Abstract

The present study entitled “A Study On Employees Retention Strategies Rajsriya Automotive Industries Pvt Ltd, Hosur”. The main objective of study is to analyze and evaluate the effectiveness of the existing employee retention strategies followed by the company. This study delves into the intricate interplay between organizational structure and employee retention strategies, aiming to provide insights into fostering a loyal and engaged workforce. The data is collected from both primary and secondary data. The primary data is collected from the employees through observation and interview method and the secondary data collected from various journals, magazines, articles, websites and company records. The type of research methodology used in the study is descriptive research. Through questionnaire the data were collected from 100 samples to find out the harmonious work environment of employee retention strategies. Through an extensive literature review and empirical analysis, this paper elucidates the key determinants of employee retention, including job satisfaction, career development opportunities, compensation and benefits, leadership effectiveness, and work-life balance. It examines the effectiveness of various approaches such as flexible work arrangements, recognition programs, mentoring initiatives, and performance feedback mechanisms in enhancing employee engagement and commitment. Furthermore, the study explores the influence of organizational culture on employee retention, emphasizing the importance of fostering a supportive and inclusive work environment. By aligning retention strategies with organizational goals and values, fostering a culture of continuous development and innovation, and leveraging technology to facilitate communication and collaboration, organizations can enhance their ability to attract, retain, and develop top talent, thereby ensuring long-term success and sustainability.

Keywords: Employee Retention, Organizational Structure, Talent Management, Job Satisfaction, Career Development, Work Life Balance, Compensation And Benefits.

**A Study on Effectiveness of Web Designing in Digital Marketing with Reference to
Nitrosh Textile Industries, Coimbatore.**

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Abstract

The present study entitled “a study on effectiveness of web designing in digital marketing with reference to nitrosh textile industries, coimbatore”. The objective of study is to create the knowledge of website and design a site that is intuitive and easy for clients to navigate and to help in improving the sales and popularizing the brand. The data’s are collected from primary data and secondary data. The primary data was collected from surveys (workers, contractors and clients), Observation and personal interviews. The secondary data was collected from various academic journals, previous research study, articles, and website and company records. The research helps in designing the textiles are relevant, desirable for the target audience and clients. The huge negative problems faced are poor technological support and lack of promotion of the product. The customers reach towards the company and product is much improved after the new innovation. The study's goal is to determine the effects of introducing new trends and ways for development of the industry. This also explores the ways to introduce social media, blogs, its characteristics, its flaws and designs to get high quality results. Marketing department determines the effective role of striving for making the company well versed in India as well as in exports. This helps in improving the working environment for the worker as well as the clients. This notes the influence of technology that depicts the value of channeling and changing in every working department mainly branding and purchasing department. The feedback taken from the workers and the clients emphasizes more on improving or introducing latest trends and designs to the newly formed site. This explains more on the quality of the product and its reflection of the company and the workers and their values. Designing a brand could resettle the whole process of production to purchasing the product.

Keywords: Promotional Activities, Clients’ Navigation, New Opportunities, Popularity-Technology.

A Study on Brand Extention Strategy Towards Rydon Industries Pvt Ltd, Coimbatore.

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Abstract

This study title, “a study on brand extention strategy towards rydon industries pvt ltd, coimbatore”. The aim of the present study is to establish a framework for the study of brand extension and to discover whether the brand equity of the parent product brand can be transferred to the extended service brand. Despite many benefits achieved by implementing successful brand extension strategies in the industry, there are several obstacles that negatively influence both the extended brand and the parent brand. Because a negative effect of the vertical brand extension was found in past studies, this study focused on the horizontal brand extension to evaluate and predict possible positive outcomes in the horizontal brand extension process. Thus, this study investigates the role of brand equity, especially when the automobile brand was used to introduce upscale service brands, in relation to a theoretical framework of brand equity. Additionally, the difference in the purchase intention among demographic groups was examined as it might offer an opportunity for developing a new strategy.

Keywords: Brand Extensions, Brand Equity

**Preparation And Characterization of A B-Cyclodextrin-Based Nano-Inclusion Complex
Containing Quercetin: Evaluating Its Prospective Efficacy Against Cancer Cells**

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Abstract:

Quercetin (QRC), a flavonoid present in various foods and plants like red wine, onions, green tea, apples, and berries, possesses notable anti-inflammatory and antioxidant attributes. These characteristics render it effective in combatting cancer cells, alleviating inflammation, safeguarding against heart disease, and regulating blood sugar levels. To bolster the potential of inclusion complexes (ICs) incorporating β -cyclodextrin (β -CD) in cancer therapy, they are converted into nano-inclusion complexes (NICs). In this study, NICs are synthesized utilizing ethanol as a reducing agent in the nanoprecipitation process. Analysis via FT-IR reveals the formation of hydrogen bonds between QRC and β -CD. Additionally, the IC molecules aggregate to form NICs through intermolecular hydrogen bonding. Proton NMR results confirm proton shielding and deshielding following NIC formation. The introduction of β -CDs results in the emergence of a distinctive feather-like structure within the NICs. Particle sizes remain consistently around 200 nm, with both SAED and XRD patterns indicating the absence of crystalline NICs, providing corroborating evidence. Cytotoxicity and fluorescence-assisted cell sorting analysis demonstrate that the synthesized NICs induce no significant damage in MCF-7 cell lines. Compared to QRC alone, high concentrations of NICs exhibit reduced toxicity in normal human lung fibroblast MRC-5 cells. Furthermore, both low and high concentrations of NICs, administered individually or in combination, effectively inhibit the growth of cancer cells (MDA-MB-231). The solubility enhancement resulting from the formation of QRC-NICs with β -CD improves the percentage of cell survival for MCF-7 cell types.

Keywords: Quercetin; β -cyclodextrin; Nano-inclusion complex; Nanoprecipitation process; Feather-like images; MDA-MB-231 cells; Fluorescence-assisted cell sorting analysis.

Applications & Future Impacts of Nanotechnology

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Graphical Abstract



Abstract

In the recent years a new branch of research has raised up, broadly referred to as Nanoscale science and technology. The ability of scientist to manipulate the matter virtually atom by atom has been supported by the development of new instruments and approaches that allow the investigation of material properties with a resolution close to the atomic level. Such new tools had allowed the extensive understanding of the unusual physical and chemical properties characterizing the matter at the nanomaterials scale opening the way to the empty of nanomaterials in a wide variety of applications involving material science, engineering, physics, chemistry, and biology.

Keywords: Nanomaterials; Nanoparticles; Nanotechnology and Biological Applications

**Temperature Effect on Dissemination of Isomorphous Salts Between Liquid and Solid
Phases in Ternary Systems**

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Abstract

Growing of crystal strongly be contingent on present active impurities in a crystal like any interfacial process even in small quantity. The way the impurities are trapped and the amount of the dopant plays an important role in the nonlinear optics, semiconducting, superconducting crystals. The distribution studies using the Abu Elameyem's equation throw light in the field of crystal growth and a promising tool to investigate and design the crystals with the specified properties. The study of distribution of isomorphous salts magnesium ammonium sulphate, zinc ammonium sulphate in water was carried out at various temperature in the cryostat at 0°C, 10°C, 25°C and the distribution coefficient λ , crystallization coefficient D, weight fraction separated as crystals from the original solution of mixture W, weight fraction of the salts with low solubility present in the crystals 'Y' were calculated applying Abu Elameyem's⁴ equation adopting Schenmaker's procedure and also for the mother liquor absorbing to moist crystal correction factor by Euler's method of modified successive approximation. The striking agreement between Y_{theory} and $y_{\text{experiment}}$ in all the cases show the versatility of the equation. The study reveals that the temperature has little effect on the distribution constant on λ and the crystallization constant D because the ration of the solubilities of both the salts besides the different values and it was understood that the solubilities of both the salts are affected equally, the variation may be small. It was also observed that the value of W decreases with the increase in temperature while the variation of Y is not considerable soluble salt in the crystals y were calculated applying Abu Elamayem's equation adopting Schenmaker's procedure and also for the mother liquor absorbing to moist crystal correction factor by modified Euler's method of successive approximation. The striking agreement between Y_{theory} and $Y_{\text{experiment}}$ all the cases show the versatility of the equation.

Keywords: Abu Elamayem's equation, Schenmaker's Procedure, Euler's method

Isolation, Characterization and Anticancer Activity Of 7-O-Methyl Quercetin-3-O-(6''-Acetyl)-B-D-Glucoside from Nelumbo Nucifera Flowers

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Abstract

The present study was to isolate the new compound 7-O-methyl quercetin-3-O-(6''-acetyl)- β -d-glucoside from the flowers of *Nelumbo nucifera* and investigate the anticancer activity of the new compound. The structure of the isolated compound was elucidated through their physical and chemical methods. The isolated compound was characterized by using various spectral data such as UV, ¹H NMR, ¹³C NMR, MS. The anticancer activity of this new compound 7-O-methyl quercetin-3-O-(6''-acetyl)- β -d-glucoside is tested against human liver cancer HePG2 cell line by MTT assay. The CTC₅₀ value of the sample was 95.47 μ g/ml against liver cancer HePG2 cell lines. Significant results were observed thereby explaining the use of this plant in the traditional system of medicine.

Key words: *Nelumbo nucifera*, UV, ¹H NMR, ¹³C NMR, MS, 7-O-methyl quercetin-3-O-(6''-acetyl)- β -d-glucoside.

**D-Limonene Provokes Apoptosis and Restricts Benzo(A)Pyrene Induced Lung
Tumorigenesis I Swiss Albino Mice**

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Abstract

D-limonene or 4-isopropenyl-1-methylcyclohexene (C₁₀H₁₆) is a monocyclic monoterpene abundant in citrus plants like lemon, orange, and grape. d-Limonene a constituent of lemon is exposed to exert compelling anticarcinogenic effects. In the present study, we examined the anti-tumorigenic potential of D-limonene on benzo(a)pyrene-induced mice lung tumorigenesis by analyzing the markers of apoptosis. Intraperitoneal administration of d-limonene (10 mg/kg body weight) to Swiss albino mice suppressed the development of lung carcinoma by amending the protein expressions of apoptotic regulators p53, Bcl-2, Bax and caspase-3. The apoptotic-inducing nature of d-limonene was further confirmed by DNA agarose gel electrophoresis. The results obtained from the present study show that d-Limonene inhibits the development of mice lung carcinogenesis through its ability to induce apoptosis. Our present findings provide the basis for further clinical exploration of d-Limonene as an anti-carcinogenic compound against lung carcinogenesis.

Key words: D-Limonene, Apoptosis, benzo(a)pyrene, apoptotic regulators p53

**Microwave-Assisted Synthesis Of pure and Magnesium- Substituted Zinc Oxide: Their
Optical and Antimicrobial Activities**

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Abstract

The present study investigated the synthesis of ZnO and magnesium-substituted $Zn_{1-x}Mg_xO$ ($x = 0.0 - 0.3$) nanoparticles (NPs) using *Justicia adhatoda* L. leaf extract. Microwave assisted co-precipitation method is an endeavor in this study. The purity and structural properties of the synthesized samples were analyzed using powder X-ray diffraction (PXRD) and Fourier transform infrared spectroscopy (FT-IR). Morphology and elemental analysis were examined using high-resolution scanning electron microscopy (HR-SEM), Transmission electron microscopy (TEM) and energy dispersive X-ray analysis (EDX). The optical properties were investigated by UV-diffuse reflectance spectroscopy (UV-DRS) and Photo luminescence spectra (PL). The XRD results reveal the formation of substituted compounds in single phase up to $x = 0.3$. FT-IR study also supports the XRD results. HR-SEM and TEM results are shown that the synthesized samples are agglomerated whereas parent and substituted samples are spherical and triangular morphology respectively. The size of the particles is noted in the range between 20-40nm. The band gap of samples is increasing when increase in substitution (3.27–3.31 eV). All the samples show the maximum PL emission between 620 nm and 690nm in orange-red region of the visible spectrum. The antibacterial and antifungal studies show better inhibition for $Zn_{1-x}Mg_xO$ phases. The $Zn_{0.9}Mg_{0.1}O$ shows a maximum zone (21.5mm/250 μ L) of inhibition against *Staphylococcus aureus* bacteria and ZnO shows a maximum zone (21.3mm/250 μ L) of inhibition *Candida albicans* fungus. The above mentioned results concluded that $Zn_{1-x}Mg_xO$ is potential candidate for luminescence, antibacterial and antifungal applications.

Keywords: Zinc oxide; Microwave-assisted co-precipitation synthesis; *Justicia adhatoda* L. leaf extract; Photo luminescence spectra ; Antibacterial activity; Antifungal activity.

**Hydroxy-Acetophenone-Directed Rh (III) Catalyzed C-H *O*-Alkylation Via 1,4
Addition: A Detailed Theoretical Study of DFT And Towards the Anti-Inflammatory
Application**

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Abstract

This approach employs a directing group to enable a 1,4-addition, utilizing the nucleophilic center at the *o*-carbon of an ester containing acetophenone groups, alongside the highly reactive α -C–H bond. Rh (III) serves as a catalyst, enabling selective functionalization of specific sites in 2-oxo-2-phenylethyl acetate with maleimide direction, leading to ortho-alkylated succinimide derivatives. Under mild conditions, this method successfully produces succinimide-bearing 2-oxo-2-phenylethyl acetate, demonstrating exceptional substrate versatility, and yielding favorable outcomes. Research is pursuing a redox-neutral reaction, even in the presence of copper acetate, to confirm the absence of the Heck reaction product. We evaluate the synthesized molecules for their anti-inflammatory and anti-diabetic properties using protein denaturation and α -amylase inhibitory assays, respectively. Remarkably, our molecules exhibit superior efficacy compared to standard drugs, highlighting their potential as potent therapeutics for inflammation and diabetes management.

Keywords: 1,4 addition; C-H *o*-alkylation; NMR spectral interpretation; *In-vitro* anti-inflammation; *In-vitro* diabetic activity.

**Antibacterial, Spectroscopic and Molecular Docking Studies of 1, 2, 4-Oxadiazole
Substituted Pyrimidine (OP) Compounds by Quantum Chemical Method**

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Abstract

The molecular structure, electronic and spectroscopic behavior of 1, 3, 4-oxodiazole substituted pyrimidine molecule was thoroughly examined. The 6-31++G (d,p) basis set was used in the DFT/B3LYP approach to carry out the quantum chemical calculations. The HOMO-LUMO energy gap indicates that the title compound is most reactive and least stable which supports the biological activity. NBO analysis was used to identify the intra- and inter-molecular contacts and the existence of the $\pi \rightarrow \pi^*$ delocalization interaction inside the molecular system stabilizes the title molecule. The MEP map shows the reactive areas for both nucleophilic and electrophilic assault. Bioavailability score and Lipinski's rule of five indicate that the OP molecule was a strong fit for protein-ligand interaction and might be used in the new drug design process. The title molecule's molecular docking investigation shows improved inhibitory activity against diseased related proteins.

Key words: DFT, HOMO-LUMO, MEP map, Lipinski's rule and Molecular docking.

Nanotechnology: A Insurrection In Contemporary Industry

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Abstract

Contrary to popular belief, nanotechnology has transformed industries all over the world. The majority of the information in this paper relates to the use of nanotechnology in modernizing various sectors. A thorough research approach is used to integrate the most recent information derived from significant scientific platforms. As a result, a comprehensive overview covering the various ways that nanotechnology is being applied in contemporary businesses is provided. This study shows that nanotechnology is becoming widely used across several industries, not just in research labs or small-scale nanomedicine manufacturing facilities. Businesses all throughout the world are currently attempting to use nanotechnology to improve the productivity and structure of their ideas in terms of working, designing, and structuring. Nanotechnology has demonstrated the modernization of nearly every industrial domain on a global scale, from small-scale manufacturing and processing units like those in the food, agriculture, and medicine industries to larger-scale production units like those operating in the automobile, civil engineering, and environmental management industries. Future developments of nano-based enterprises can be projected to be more sustainable with strong collaboration between researchers, industrialists, scientists, technicians, environmentalists, and educators.

Keywords: Nanotechnology, Nanoindustries, agriculture, foods, medicine, textile, nanomedicine biotechnology, global scale, environmental management, automobiles, Nano based industry

Pertinence of Nanotechnology in Day-to-Day Life

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Abstract

Nanotechnology has revolutionized the field of electronics, cosmetics, medicine, agriculture, food and Pharmaceutical sectors by enabling the creation of smaller, faster and more efficient nanoparticles. Moreover, by using the nanoscale particles we can prepare the compact and light weight materials with high properties. Furthermore, nanomaterials can be engineered to exhibit novel electrical, optical and thermal properties and expanding the capabilities of electronic devices for various applications.

Keywords: Nanoparticles, Nanomaterials, Medicine, Pharma.

**The Influence of Ion Beam Irradiation on the Magnetic and electrical properties of
Carbon Nanotubes**

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Abstract

Recent experiments on ion irradiation of carbon nanotubes have revealed a wealth of intriguing phenomena. It is shown in the report that disorder produced by ion beam irradiation can enhance the functionality of the carbon nanotubes. The arrays and commercial multi-wall carbon nanotubes (MWCNTs) have been studied from the point of view of their magnetic and electrical properties. Multiwalled carbon nanotubes (MWNTs) were irradiated by He⁺ ions of the energy E=100 keV. The structure, composition, electrical and magnetic properties of MWCNTs irradiated with a dose of 10¹⁶ cm⁻² were investigated by SEM, X-ray analysis and VSM techniques. Catalyst particles are usually encapsulated in the nanotubes and influence the magnetic response of the samples. It was revealed that the morphology of the magnetic particles inside MWCNTs was changed. Radiation defects lead to the deterioration of the magnetic and electrical properties of CNTs.

Impact of Technology in Acquisition of English Language

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Abstract

Nowadays Technology is very useful and it becomes an important part for both teaching and learning purpose. There many sources to learn various languages. many people enhance language learning with e-learning through apps & web sites. Though modern technology helps student to access modern and original teachers access modern and original English. Technology also provides peoples to improve their English learning & speaking. many apps such as Duolingo, memrise, babbel, lingoda, etc.. are used. This study focuses the role of using new technologies in English laungage learning. This paper describes the definition of the term technology and technology integration the use of technology, previous studies on the technology, how to improve language skills through technology.

Keywords: technology, computers, learning skills through technologies, online learning, laptops, tablets, smartphones

Exploring the Intersection for Enhanced Learning and Communication

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Abstract

In the contemporary digital era, the synergy between language and technology is reshaping the landscape of learning, communication, and cultural exchange. This paper delves into the intricate relationship between language and technology, scrutinizing its profound influence on language acquisition, communication dynamics, and cultural interactions. Key focal points include the pivotal role of digital tools in facilitating language learning, the advent of artificial intelligence in language processing, and the proliferation of online platforms for language exchange and proficiency enhancement. Furthermore, the paper navigates through the complexities of leveraging technology to uphold linguistic diversity, surmount accessibility barriers, and foster inclusive communication practices. Through a comprehensive synthesis of current research and emerging trends, this paper endeavors to elucidate the evolving paradigm of language and technology, offering valuable insights for educators, learners, and society as a whole.

Keywords: Technology, Communication, Language, Enhancement.

Trends And Innovations in English Language Teaching

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Abstract

Trends in language pedagogy and technology look at the various trends and innovation that have emerged recently in the field of English language teaching. According to Ethnologue, English is the most spoken language in the world. It shows us different aspects of technology in the English language classroom which has an impact on the learning, acquisition, and enhancement of various language skills. Many new technologies were developed in the 20th century and these developments have created a drastic change in technologies innovations, there is a great progress in almost all fields and not to forget about educational field because in the last few decades educational field have gone through many evolutions with the help of technology. These drastic evolutions have also done a great influence in teaching and learning. As a result, the modern classroom has equipped with the latest innovation to achieve the desired results in their teaching learning process. The teachers of English have to make use of the available technology in their classroom and adopt all the possible novel techniques, methods and approaches in order to make their classroom lively and dynamic.

Keywords: Modern classroom, Technologies innovation, Language Teaching.

Application of Mathematics in Engineering Fields and Real Life

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Abstract

Mathematics or particularly applied mathematics is widely used in every engineering field. In this paper, several examples of applications of mathematics in civil, mechanical, electrical and Architectural engineering are discussed. The role of mathematics in engineering education is one of these opportunities. There has been much recent debate on what mathematical skills are needed for the engineers of tomorrow, and how and when these might best be acquired. Historically, most students have been struggling with mathematics subject which makes them wonder if they will ever apply the knowledge in real world life. Teachers and parent admit when they have been asked that students have very few knowledge about the relevance of mathematics in real life. That is why this paper is based on application of maths in real life.

Keywords: Mathematics Tools, civil; mechanical; electrical and etc, Real life, Finance and Banking, Computer Games, Military and Defence.

Recent Advances in Graph Theory and Its Applications

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Abstract

Graph theory, a pivotal branch of mathematics, plays a significant role across various fields, contributing to structural models and leading to innovations and advancements in diverse sectors. The origins of graph theory can be traced back to 1735 with the Koinsberg Bridge problem. This paper delves into the practical applications of graph theory in a multitude of domains, particularly emphasizing its impact on information science, electrical engineering, linguistics, physics, chemistry, computer network science, biotechnology, and various other areas. Numerous articles have explored graph theory's relevance in scheduling principles, engineering technologies, and overall theoretical frameworks.

Keywords: Graphs, connectivity, constraints, graph drawing

**Real life application of graph theory Coloring graph: a comprehensive overview
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Abstract

Graph coloring is a fundamental concept in graph theory with applications in various fields such as computer science, operations research, and scheduling. In this paper we provide a comprehensive overview of graph coloring technique, algorithms, and applications. We begin by introducing the basic definition and properties of graph coloring, including chromatic number, chromatic polynomial, and vertex coloring. Next, we discuss various graph coloring algorithms, including greedy coloring, backtracking, and genetic algorithm, highlighting their strengths, weaknesses, and complexity analysis. Furthermore, we explore advanced topics in graph coloring, such as list coloring, online coloring, and coloring planar graph. Additionally, we examine real-world applications of graph coloring, including register allocation in compilers, frequency assignment in wireless communication, and scheduling in timetabling problems. Finally, we conclude with future research directions and open problems in the field of graph coloring, emphasizing the importance of continued research in this area.

Keywords: Chromatic number, vertex coloring, planar graph, complexity analysis, chromatic number

**Real Life Application of Graph Theory Coloring Graph: Real-Life Applications of
Graph Coloring in Graph Theory**

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Abstract

Graph coloring, a fundamental concept in graph theory, has found diverse applications in solving real-world problems across various domains. This paper explores the practical applications of graph coloring techniques, focusing on scenarios where it plays a pivotal role in problem-solving. Firstly, we examine scheduling problems, such as exam time tabling, where graph coloring algorithms are employed to ensure efficient allocation of resources while satisfying constraints. Secondly, we delve into wireless communication networks, where graph coloring is utilized for channel assignment to minimize interference and maximize throughput. Additionally, we discuss the application of graph coloring in map labeling; register allocation in compiler design, and Sudoku puzzle solving. Through these examples, we highlight the versatility and significance of graph coloring in addressing complex real-life challenges, showcasing its relevance beyond theoretical frameworks.

Keywords: Timetabling, graph coloring, Sudoku puzzle

Engineered nanoparticles for water disinfection

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Abstract

There is a limited amount of naturally drinkable freshwater supply due to unchecked urbanization and sharply rising industrial pollution. In addition, the careless use of antibiotics contributed to the emergence of drug-resistant bacteria in the aquatic environment, which, in the years to come, would cause alarming death rates and health issues. Current conventional disinfectants have several serious problems, including short-lived reactivity and the production of hazardous byproducts. Thus, there is a strong need to reevaluate conventional disinfection techniques and consider creative alternatives for effective water disinfection and microbiological control. The introduction of water pollutants opens this paper, which then discusses the antibacterial properties of several nanomaterials, including CNTs, TiO₂, and nAg. There is also discussion of these nanoparticles' limitations and applications in the disinfection process. Furthermore, researchers are studying innovative nanomaterials under pathogen control to meet the objectives of public health research.

Keywords: Nanoparticles; carbon nanotube; Fresh water; biological application; Cell attachment assay.

Enhanced Multi-Phase Strategy for Hierarchical Intrusion Detection

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Abstract

Traditional intrusion detection systems (IDS), once heralded as stalwart guardians of security, now grapple with formidable hurdles amidst the relentless march of digital transformation in contemporary society. The proliferation of interconnected devices not only unleashes a relentless stream of novel threats, often undetected by incumbent systems, but also inundates these systems with an overwhelming deluge of data. Thus arises the imperative for scalable IDS capable of identifying unknown, zero-day assaults. This study introduces a pioneering multi-stage framework for hierarchical intrusion detection, validated on established benchmark datasets—CIC-IDS-2017 and CSE-CIC-IDS-2018. Results underscore the efficacy of our approach, showcasing superior performance compared to baseline and existing methodologies, boasting classification accuracies soaring up to 96% balanced accuracy. Moreover, our method proves adept at zero-day detection, correctly identifying 87% (41 out of 47) of such attacks, while concurrently slashing bandwidth requirements by up to 69%. This adaptable approach, requiring no retraining, leverages n-tier deployments to mitigate bandwidth and computational demands, all while upholding stringent privacy protocols.

Keywords: Intrusion Detection Systems, Network security, Multi-phase strategy, Enhanced, Intrusion prevention.

The Impact of Different Levels of Human Stress on Human-Computer Interaction

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Abstract

Stress encompasses an organism's comprehensive response to environmental stimuli, profoundly influencing both mental and physical well-being. This paper delves into the pivotal role stress plays in Human-Computer Interaction (HCI) and how individuals engage with various problem domains. Specifically, we explore how humans interact with stand-alone systems and specific devices where the user's outcome is predetermined and well-defined. Our study focuses on two distinct age groups: 16 to 23 and 21 to 28-year-old students. Remarkably, we observe a shared behavioral pattern among individuals when interacting with computer systems. Through our research, we delineate six categories of human stress, which evolve according to the nature of the task at hand. Human stress significantly impacts problem-solving approaches, solution timeframes, and system usability. Individuals generate diverse pathways towards problem resolution, a process intricately examined within this paper.

Keywords: Stress Levels, Human Computer Interaction, Impact, Usability

**Investigations on electrical characteristics of palm oil and Mineral oil subjected to
alternating current (AC) stress for transformer Applications**

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Abstract

Transformer oil occupies the space in the paper core and fills the space between the components of the transformer housing, increasing the dielectric strength of the installation. Transformer oil not only acts as a protective fluid but also helps reduce heat generated in the line. It also serves as an indicator to monitor the life of the transformer. Mineral oil has been the mainstay of power transformers for over 150 years. Mineral oil is derived from petroleum and has many electrical and thermal properties suitable for transformer applications, including capacity, wide availability, and low cooling. It turns out that is used in oil-filled transformers at high voltage levels from distribution to transmission level. However, despite its advantages, Mineral oil also exhibits some undesirable properties that may affect its performance, such as biodegradability. This study compares temperature-dependent changes in the dielectric properties of palm oil and other mineral oil. While breakdown voltage measurements were made according to IEC 156 standards, loss factors ($\tan \delta$), dissipation factor, relative permittivity, resistivity and dielectric constants were measured according to IEC 60247 standard. The findings suggested that the changes in dielectric properties of palm oil due to temperature shifts closely resemble those observed in commonly used insulating liquids such as mineral oil and silicone oil. In particular, for all oils tested, the breaking strength and diffusion properties increased with increasing temperature, while the dielectric constants decreased slightly. The AC breakdown voltage data underwent statistical analysis to forecast the withstand voltage (1%) of the oil samples using the Weibull distribution.

Keywords: Mineral oil, Palm oil, AC stress, Breakdown voltage

A Novel Approach: Utilizing Nanowire Solar Cells in the Design of Solar Trees

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Abstract

This paper presents a creative solar-based innovation propelled by the manner in which trees bridle daylight for energy. Trees and plants position their leaves decisively to increase daylight openness for photosynthesis, which is critical for their endurance. Following nature, we propose planning a solar-based tree displayed after the coconut tree, which can grow up to 40 meters (95 feet) tall with pinnate leaves crossing 5-6 meters (13-16 feet) long. The pinnate leaves resemble plumes, with flyers arranged along a typical hub. The leaf plan serves as the outline for our solar-powered tree concept. Consolidating nanowire solar powered cells, which display remarkable properties contrasted with mass materials, our solar oriented tree configuration plans to amplify daylight retention. Nanowires concentrate sunlight up to multiple times the typical force, promising fundamentally higher proficiency in sunlight-based energy transformation. This advancement could alter sun-oriented cell innovation, possibly surpassing past proficiency limits. Our idea extends beyond trees; it opens up opportunities for beautifying different metropolitan designs with profoundly proficient sunlight-based chargers. By tackling the intrinsic plan standards found in nature and utilizing state-of-the-art nanotechnology, this imaginative way to deal with metropolitan lighting could make way for high-proficiency sunlight-based cells and novel streetlamp plans.

Keywords: Street light Design, Solar tree, Nanowire solar cell

Atmospheric Dust Collector Using IOT

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Abstract

The atmospheric dust collector is a system or a device designed to collect dust particles from the air. It is used to enhance the quality of air released from industrial and commercial processes by collecting dust and other impurities from air or gas. Regular inspection, maintenance, and cleaning of equipment at stone crusher units and crematoriums can prevent the buildup of dust and improve overall efficiency. The primary objective of an atmospheric dust collector is to capture and remove airborne particulate matter from industrial processes or environments. It helps to maintain air quality, protect equipment, reduce air pollution and maintain a healthier environment for workers and surrounding communities

Keywords: Drone using air dust collector

IOT Based Smart Pill Box and Health Monitoring Voice Alert System

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Abstract

In exponentially modernizing world the growing technologies and lifestyle aids health sectors. In this decade, the people those who are aware about their medication schedule is about 50 percent only and receive the full advantage of their medication. The other 50 percent of people are busy with their hectic day-to-day schedule which leads to improper intake of drugs. Elderly patients with continuing loss of memory usually forgets to take medicine at right time. When the patient fails to take medicine at right time as per the clinician prescribed medication schedule the treatment goes ineffective. There had been many attempts to design a “Medicine Box” which helped the patients in medication remainder and storing the patient's medicine intake details. In accordance to current technology this project endeavour to make a “Smart Medicine Box” for medication with multiple compartments to assist the patient to take medicine at right time through alarm reminder. This compartmented box maintains by means of adaptive cooling method. We propose this system with additionally added features to medicine box such as high security, emergency alert through SMS and automatic opening and closing of lid of the box. The vital parameters are recorded, uploaded to cloud and reviewed by the clinicians using IoT system.

Keywords: medical box using for patients.

Predicting the Symptom Severity in Autism Spectrum Disorder Based on EEG Metrics

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Abstract

Autism spectrum disorder (ASD) is a complex and heterogeneous disorder, diagnosed on the basis of behavioral symptoms during the second year of life or later. Finding scalable biomarkers for early detection is challenging because of the variability in presentation of the disorder and the need for simple measurements that could be implemented routinely during well-baby checkups. EEG is a relatively easy-to-use, low-cost brain measurement tool that is being increasingly explored as a potential clinical tool for monitoring atypical brain development. EEG measurements were collected from 99 infants with an older sibling diagnosed with ASD, and 89 low risk controls, beginning at 3 months of age and continuing until 36 months of age.

Keywords: ASD, EEG, Potential clinical, Brain development

Implications of Big Data Analytics in Marketing and Best Practices for Responsible

Use: A Survey Analysis

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Abstract

The advent of big data analytics has revolutionized the field of marketing, offering unprecedented opportunities for businesses to understand and target their audiences more effectively. This research explores the implications of big data analytics in marketing and emphasizes best practices for its responsible use. With the exponential growth of data collection and analytics capabilities, marketers are leveraging big data to gain valuable insights into consumer behavior and preferences. However, the ethical and privacy concerns surrounding the use of big data in marketing necessitate a careful examination of responsible practices. Through a combination of literature review, survey analysis, and case studies, this study aims to provide insights into the benefits, challenges, and ethical considerations of utilizing big data analytics in marketing strategies.

Keywords: Big Data Analytics, Marketing, Responsible Use, Ethics, Consumer Behaviour

AI based College Surveillance System for Class Skipper

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Abstract

In many of the educational institutions, managing attendance of students/candidates is tedious, as there would be large number of students in the class and keeping track of all is onerous. There are situations where student act as proxies for their friends even though they are not present. The presence of students repeatedly skipping classes and spending considerable time wandering on campus signals potential underlying issues, such as disengagement, personal challenges, or dissatisfaction with the educational experience. Traditional methods of monitoring attendance are often inadequate in addressing these nuanced challenges. Therefore, there is a need for an AI-based College Surveillance System using Faster R-CNN to accurately detect class skippers and provide insights into their behavioural patterns. In this system, a database containing the trained student's face. A camera installed in the college campus captures the face of all the student in the classroom and other places too. This face image is processed using FRCNN algorithms to detect faces and to mark the attendance automatically in an excel sheet. The system records the entire class session and identifies when the students pay attention in the classroom, and then reports to the facilities and also this system can record violations of classroom, that is absence, roaming around the college campus during the class hours and send alert message to the H.O.D. This dynamic attendance system uses face recognition as an important aspect of taking attendance which saves time and proxy attendance and is avoided. The system identifies faces very fast needing only 100 milliseconds to one frame and obtaining a high accuracy. Our face recognition model has an accuracy rate of 98.87%.

Keywords: Artificial Intelligence, Machine Learning, Computer Vision, Predictive Analysis, Object Detection, Behavioural Analysis, Facial Recognition, Attendance Data Analysis.

Comprehensive Automated Learning Among Individuals with Cognitive Disabilities.

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Abstract

The exclusion of individuals with cognitive disabilities from professional opportunities often stems from limited access to learning resources. This issue has become more pronounced with the rise of online learning methods, which rely less on physical presence. Personalized systems offer a potential solution by enabling self-directed learning without constant tutor supervision, thereby breaking down access barriers. However, despite numerous research efforts aimed at addressing individual needs, learners with cognitive disabilities still face significant challenges. Many e-learning platforms have been developed without considering users with diverse profiles and impairments. This paper systematically examines existing research to shed light on the role of personalization in e-learning systems. We explore various personalization objectives and methods and evaluate their effectiveness in enhancing accessibility and learning outcomes. By identifying current strengths and weaknesses, we aim to propose opportunities for enhancing research in personalized e-learning systems tailored for individuals with cognitive disabilities.

Keywords: Personalization-learning, Technology enhanced learning, cognitive disabilities

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