



NEHRU INSTITUTE OF ENGINEERING AND TECHNOLOGY

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Nehru Gardens, Thirumalayampalayam, Coimbatore – 641 105.



3.4.4. Details of books and chapters in edited volumes / books per teacher during the year 2023-2024

Sl. No.	Name of the Teacher	Title of the Book published	Title of the Chapter published	Title of the proceedings of the conference	Name of the conference	National / International	ISBN of the Book/ Conference Proceeding
1.	Dr. K. Sathish Kumar, Dr. B.R. Senthil Kumar	Aerodynamic Load analysis of Wind turbine	-	-	-	National	978-93-5810-935-1
2.	Dr. B. R. Senthil Kumar	Engineering Graphics	-	-	-	National	978-81-967977-1-3
3.	Dr. K.Sathish Kumar	Basics of Aerodynamics	-	-	-	National	978-93-5917-266-8
4.	Dr. K.Sathish Kumar Dr. C.R. Raajesh Krishna	Strength of Materials - Laboratory Manual	-	-	-	National	978-93-340-3194-2
5.	J Karthikeyan Dr. R. Ramaswamy	Aircraft Design A Conceptual Approach	-	-	-	National	978-93-6012-920-0
6.	Dr. S. Rathinavel Ms. Prinsula	Study on Gas Turbine Engines	-	-	-	National	979-88-9186-629-4
7.	R. Arun Prasath	Total Quality Management	-	-	-	National	979-88-9277-155-9

8.	Dr. K. Sathish Kumar	Proceedings of the National Conference on Progresses and Challenges in Aerospace Engineering	Slotted Tabs for Subsonic Jet Flow Control : A Numerical Analysis	Proceedings of the National Conference on Progresses and Challenges in Aerospace Engineering	-	National	-
9.	Dr. K. Sathish Kumar	Proceedings of the National Conference on Progresses and Challenges in Aerospace Engineering	Effect of Velocity Ratios on Coaxial Annular Jets Across Varied Lip Thicknesses	Proceedings of the National Conference on Progresses and Challenges in Aerospace Engineering	National Conference on Progresses and Challenges in Aerospace Engineering	National	-
10.	Dr. B. R. Senthil kumar, Mr. S. Balaji	Handbook of research in Modeling of Transportation and Aviation Processes	Aircrafts Winglets Analysis in CFD	-	-	National	978-93-5980-498-9
11.	Mr. S. Balaji	Handbook of research in Modeling of Transportation and Aviation Processes	An Analysis of CFD Simulations and Various Shapes of Winglets	-	-	National	978-93-5980-498-9
12.	Dr. R. Ramaswamy, Ms. G. Selva Preeti, Ms. J. Prinsula , Mr. R. Arun Prasath	Handbook of research in Modeling of Transportation and Aviation Processes	Cutting Parameters using RSM for High Speed Precision Machining of Titanium Alloys	-	-	National	978-93-5980-498-9
13.	Dr. P. Maniarasan, Mr. S. Balaji	Handbook of research in Modeling of Transportation and Aviation Processes	Numerical Study on the Mixing Characteristics of a Combustor Using Pulsed Fuel Injector for a Scramjet	-	-	National	978-93-5980-498-9
14.	Sruthi S Madhavan	Fundamentals Of Big Data With Machine Learning	-	-	-	National	978-81-19313-28-0
15.	ABHIRAMI.J.S	Database Management Systems	-	-	-	International	978-93-6010-304-0

16.	RAJICHELLAM J	Introduction To Machine Learning	-	-	-	National	978-81-1931-3-68-6
17.	SIKA K	Machine Learning And Data Analytics	-	-	-	International	978-93-5762-223-3
18.	DR V T Krishnaprasath	“Handbook on Industrial and Business Applications with Digital Twins”	Digital Twin for an Irrigation System	-	-	International	9781032737232
19.	Mrs.J.Ruby Elizabeth	Cloud based security management	-	-	-	International	978-81-964397-8-1
20.	Mrs.Priyadharsini.P	Cloud Security and Privacy	-	-	-	International	978-93-5757-530-0
21.	Mrs.Sruthi.P.S Mr.M.Ragul Vignesh Mrs.Priya.B Mrs.Anju.P	“Cloud Services Management”	-	-	-	National	978-81-965070-9-1
22.	Mr.M. Madan Mohan	Handbook of research in Big data Analytics, Artificial intelligence and Machine learning	A New Proposed Cascade Deep Learning-Based Quantization Method	-	-	National	978-93-5782-920-5
23.	Dr.S.Sivakumar	The Future of Wind Energy	Comparison of Artificial Neural Network Techniques in Prediction of Wind Speed Using Combinations of Metrological Variables			International	979-8-88697-232-0
24.	Dr.S.Sivakumar	An Deep Learning based Emotion Detection using Convolution Neural Networks (CNN)	An Deep Learning based Emotion Detection using Convolution Neural Networks (CNN)	-	-	National	978-93-5782-920-5

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26.	Ms.M.Mahabooba	Handbook of research in Big data Analytics, Artificial intelligence and Machine learning	A Review of Convolution Neural Network-(DCNN) Models” on 23.09.2023 with ISBN: 978-9	-	-	National	978-93-5782-920-5
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33.	Mrs K Sivakami, Mrs S M Deepa, Mrs N Revathi	-	-	Reversible Logic Toffoli Gate Priority Encoder for Effective Nano-Scale Application in QCA Paradigm	International Conference on Renewable Energy, Green Computing, and Sustainable Development	International	1865-0929

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53.	Mr Mohan S, Mr T Prabu, Mr Mohammed Kasim	-	-	Image Denoising using Modified Singular Value Decomposition Method	International Conference on Cyber Security in Engineering Technology and Management	International	978-81-965025-4-6
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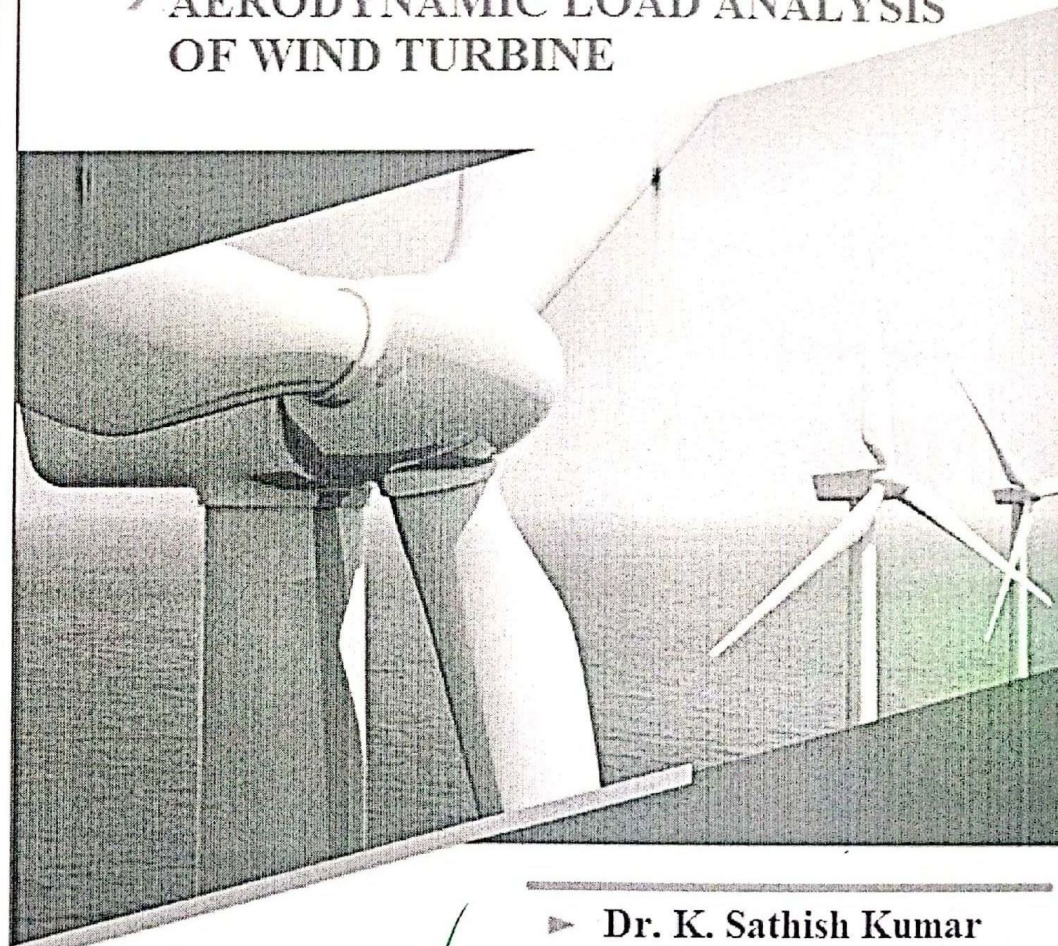
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> AERODYNAMIC LOAD ANALYSIS OF WIND TURBINE



Aerodynamic Load Analysis of Wind Turbine

Published by: Self-Published
Publisher Address: Nehru Gardens, Thirumalayampalayam, Coimbatore-641105
ISBN: 978-93-5810-935-1
Copy Right: Self
Year: 2023


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ISBN : 978-93-5810-935-1

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First Edition, August 2023.

Published by

Self



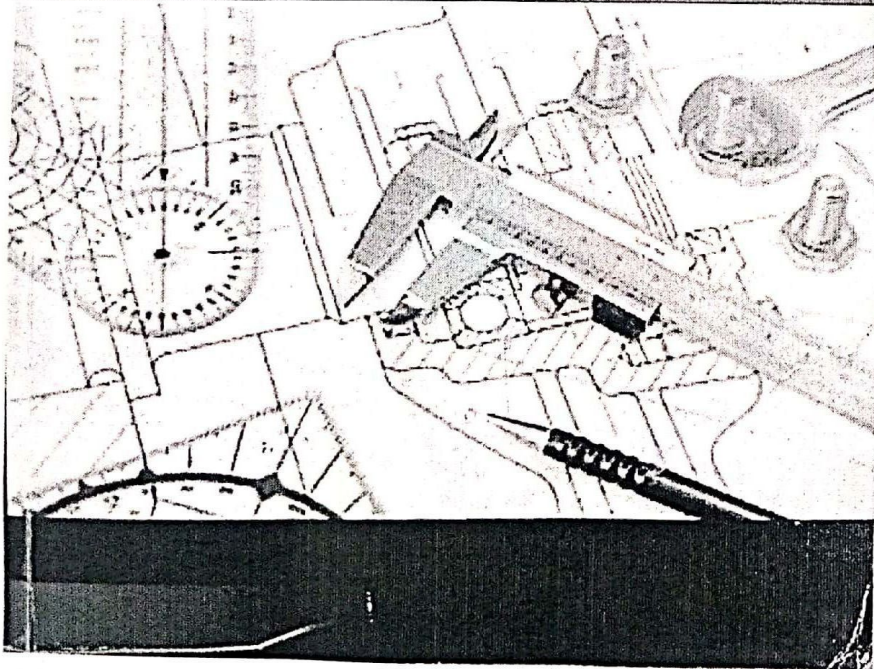
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Mr. K. Raja Karthikeyan, M.E. completed his undergraduate in Mechanical Engineering and Post graduate in Computer Aided Design in First Class with Distinction from Sathyabama University, Chennai. He gained varied exposure and been teaching Engineering subjects in Mechanical Engineering for more than a decade. He is working as an Assistant Professor in the department of Mechanical Engineering at Panimalar Engineering college, Chennai. He rendered a tremendous contribution to the students of Mechanical engineering and published more than 10 Research articles during his service. Presently, he is doing research work in Composite Materials at Anna University in part time.



Mr. N.Rajiv Kumar is a young and dynamic individual with a strong academic background in Mechanical Engineering. Currently working as an Assistant Professor in the Department of Mechanical Engineering, KGISL Institute of Technology, Coimbatore, Tamilnadu. He is passionate about research, believes in learning, striving for enhancing skills. Currently, his research area includes Metal matrix composites, Additive manufacturing. He has 12+ years of teaching and 2 years of industrial experience. His research findings have been published in SCIE and SCOPUS-indexed international journals. He has attended and presented many research articles at national and international conferences, which are indexed in Web of Science and SCOPUS. He has also published patents in various fields. He has attended and organized number of FDP's, Workshop and seminar. He has also received "Best Book Author Award" for his contribution towards book publication.



Dr. Ram Subbiah is currently working as Professor, Department of Mechanical Engineering in Gokaraju Rangaraju Institute of Engineering & Technology, Hyderabad. He completed his Diploma in Mechanical Engineering (DME), Bachelor of Engineering (B.E) in Mechatronics Engineering, Master of Technology (M.Tech) in Computer Integrated Manufacturing as a Gold Medalist, Master of Business Administration (MBA) in Education Management. He carried out his research work at Indian Space Research Organization (ISRO) and completed his Ph.D from Singhania University, Pili. Altogether by completing all the degrees by 29 years of age, he has 15 years of Academic/ Research experience and has published 25 Project Patents. More than 500 Research papers which includes National/ International - Journals & Conferences. He received many awards for showing outstanding achievements in the field of Education and Research activities. His areas of specializations are Material Science - Surface Hardening Processes, Mechatronics and Automation.



Dr. M. Nagaraj is an assistant professor in the Department of Argo Energy Engineering at the Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences, Chennai, India. He received his B.E. in mechanical engineering and his M.E. in energy engineering from Anna University. He received his Ph.D. from Hindustan University in Chennai, India. He has 10 years of academic experience. His research areas are CFD, Deform3D, and Energy Engineering. He has published around 40 research articles in Scopus and SCI-indexed journals. He has presented around four papers at International conferences. He has published two patents. He got funding for 54,000 rupees from the UGC XII Plan for a solar energy awareness program.



Dr. B.R.Senthil Kumar, Professor and HOD/ Dept of Aeronautical Engineering, Nehru Institute of Engineering and Technology has 23 years experience in teaching. Published 15 papers in the National and International journals. authored Four text books, published 3 patents. Received 2.5 lakhs grant from Central govt fund from New generation Innovation entrepreneurship cell for a start up project as a mentor during the year 2021-22. Has coordinated for various activities working for the past 24 years in the Teaching field and 14.5 years in NIET. Conversant with 6 languages, sir can help all students for their career growth. producing many students as Anna university Rank holders in the Aeronautical engineering at NIET from the year 2006, sir is working for the upliftment of students career.



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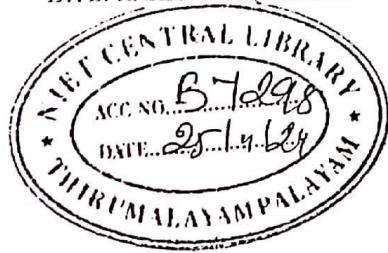
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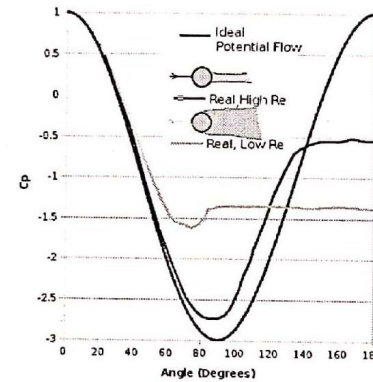

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Basics of Aerodynamics

First Edition.

Published by: Self-Published
Publisher Address: Nehru Gardens, Thirumalayampalayam, Coimbatore-641105
ISBN: 978-93-5917-266-8
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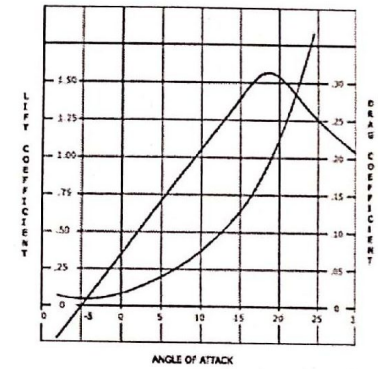
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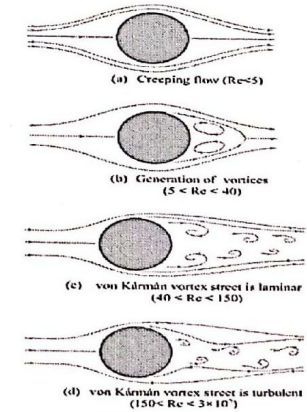
(a) C_p distribution over a circular cylinder

Device	$C_{L, \max}$	$\Delta C_{L, \max}$
plain airfoil	1.45	-
plain flap	2.25	0.80
single-slotted flap	2.60	1.15
double-slotted flap	2.80	1.35
split flap	2.40	0.95
Zap-flap	2.50	1.05
double wing (Junkers)	2.25	0.80
Fowler-flap	2.80	1.35
slit	2.00	0.55
slit and plain flap	2.45	1.00
slit and single slotted flap	2.70	1.25
slit and double slotted flap	2.90	1.45
slit and Fowler-flap	3.00	1.55

(c) Maximum lift coefficient for various types of high-lift devices



(b) C_L and C_D Vs α



(d) Flow over a circular cylinder

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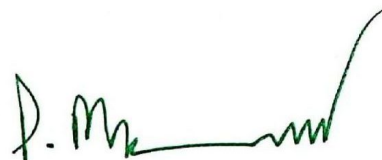


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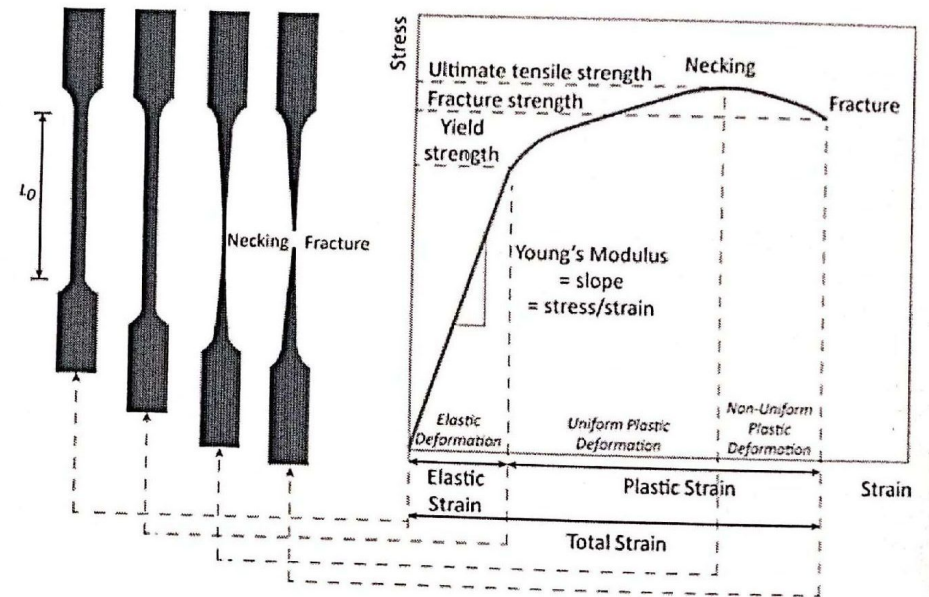
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STRENGTH OF MATERIALS - Laboratory Manual
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Published by: Self-Published
Publisher Address: Thirumalayampalayam, Coimbatore-641105
ISBN: 978-93-340-3194-2
Copy Right: Self
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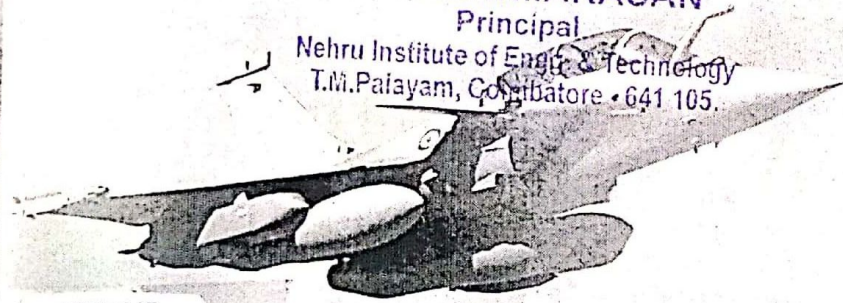
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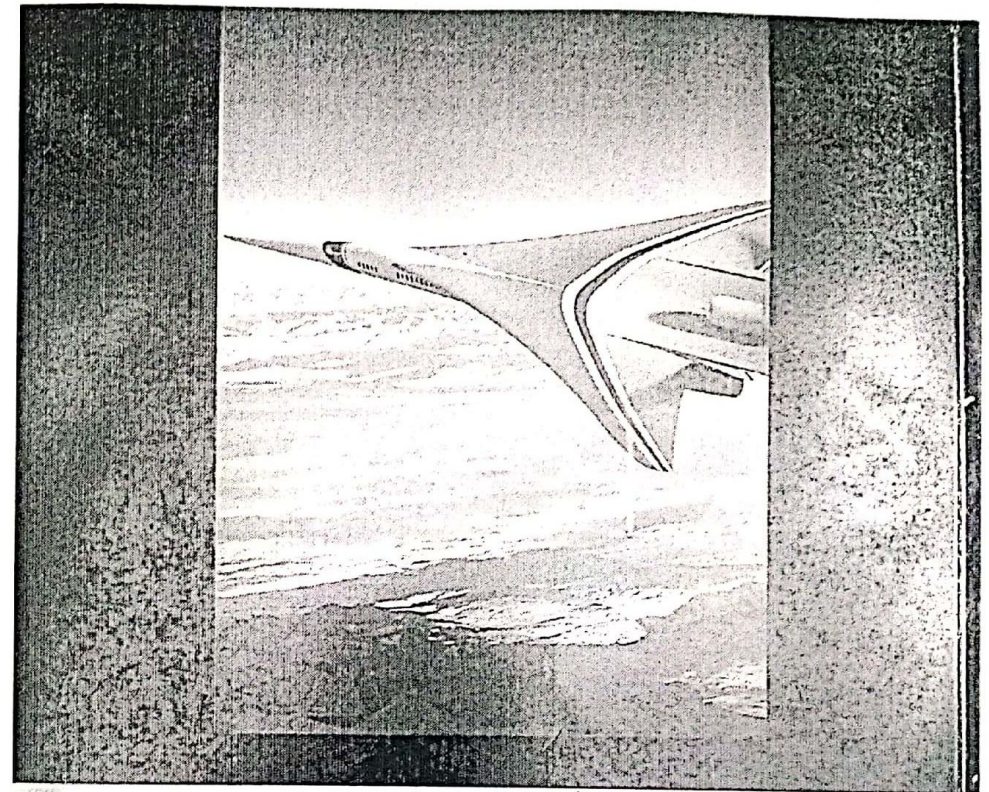
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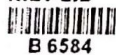
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	Potential of Dye-Sensitized Solar Cells for Aircraft Applications		
71	<i>Vincent Joseph K L, Mary Rosana N T, Jagan K S, Ramya R, Rufe Adrin Rebecca R</i>	71	NCPCAE-2024-91
	Experimental Investigation on the Effect of Solid Slit Tab on Mixing Enrichment of Subsonic Jets		
72	<i>Dhamodaran.K, Mohamad Arshath.M, Anusri.S, Jejin Barnabas Thurai.J</i>	72	NCPCAE-2024-93
	Mixing Enhancement Investigation On Subsonic Jet Flow Using Triangular Slot Tab		
73	<i>Dhamodaran k, Rasamalla Navya, Sriram s, Nisha c</i>	73	NCPCAE-2024-94
	Application of friction stir welding process for joining of 3D printed Polylactic Acid B.		
74	<i>Shiva kumar, B. Singaravel, B. Chakradhar, Ch. Divya. and R. Eswaraiah</i>	74	NCPCAE-2024-95
	Design of a Hydraulic Machine and Analysis of Composite Material		
75	<i>Raj Rohith. M, Chakradhar. B, Singaravel. B, Eswaraiah. R and Divya. Ch</i>	75	NCPCAE-2024-96
	Machining of Aerospace Alloy using Textured Cutting Inserts and Solid Lubricants		
76	<i>M. Sudheer Reddy, Ch.Divya, R. Eswaraiah, B. Singaravel and B. Chakradhar</i>	76	NCPCAE-2024-97
	Experimental Analysis of Waveguide Parabolic Antenna Using ANSYS and EDM Process		
77	<i>V. Nithish Kumar, R. Eswaraiah, B.Chakradhar, Ch.Divya4 and B.Singaravel</i>	77	NCPCAE-2024-98
	Parametric Analysis of 3D-Printed Part using ABS and PLA for Drone Applications		
78	<i>Atharva Patil, Abhishek Indupally, J Lakshmi Deepak, T. Niranjana, and B. Singaravel</i>	78	NCPCAE-2024-99
	CLEARING THE COSMOS: Mitigating Space Debris for Sustainable Space Exploration		
79	<i>Athulya A , Baraniya P, Dhamodaran K</i>	79	NCPCAE-2024-100
	Slotted Tabs for Subsonic Jet Flow Control: A Numerical Analysis		
80	<i>AnuSindhiya K, Vinayagamurthy G, Sathish Kumar K, Arun Prasath R, Naren Shankar R</i>	80	NCPCAE-2024-101
	Effect of Velocity Ratios on Coaxial Annular Jets Across Varied Lip Thicknesses		
81	<i>R. Naren Shankar, S. Irish Angelin, K Sathish Kumar, Siva G</i>	81	NCPCAE-2024-102



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Slotted Tabs for Subsonic Jet Flow Control: A Numerical Analysis

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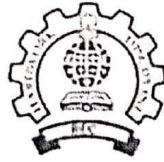
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Abstract

The success of using rectangular slotted tabs with three distinct slot profiles - slant, L-bent, and arc, to numerically control the Mach 0.6 jet is discussed in this paper. In the outflow plane of a 13 mm diameter convergent nozzle, a perforation, slot, or aperture is made on the adjacent faces of two rectangular tabs spaced 180 degrees apart. For a flow blockage ratio of about 7.3%, the tabbed jet's jet spread and flow development properties are examined. Due to significant levels of turbulence caused by the flow from the slots interacting and impinging into the mainstream flow perpendicularly, it is discovered that the slots encourage mixing. Comparing this behavior to the free jet also results in jet instability. It is discovered that slotted tabs perform better as mixing promoters than free jet. Therefore, a significant amount of potential core decay will be seen in the regulated jet. For the tabs with slanted, L- bent, and arc slotted surfaces, a reduction in potential core length of approximately 78.5, 85.71, and 87.5 percent, respectively, is obtained in comparison to the uncontrolled jet.

Keywords- tabs, instability, arc, mixing

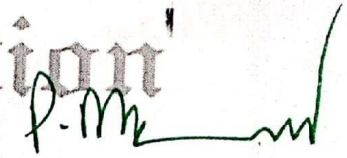

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Effect of Velocity Ratios on Coaxial Annular Jets Across Varied Lip Thicknesses

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Abstract

The effect of velocity ratio on a coaxial annular jet decay at different lip thicknesses have been studied numerically. Annular jets from coaxial nozzles of the same primary nozzle exit diameter with varying lip thickness of 0.7 to 10.7mm in steps of 2 have also been studied. A single jet from a coaxial nozzle with a primary nozzle exit diameter equal to that annular nozzle was also studied for comparison. Jet centerline total pressure decay, static pressure contours, turbulence contours, and velocity streamlines showing the vortex present in the near-field of the jet were analyzed. The results show that the mixing of an annular jet is superior to the coaxial jet at velocity ratio 100 of the present study. Also, low velocity ratio experiences a significantly higher mixing than the annular jet. For high lip thickness the recirculation zone at high velocity ratio's becomes interior to that of the blockage ratio for an annular jet affecting the recirculation region at all the lip thickness considered in the present study.

Keywords- Co-flow, Velocity Ratio, Thin Lip Thickness, High Subsonic Jet, and Jet Mixing.


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CHAPTER 3

Aircrafts Winglets Analysis in CFD

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ABSTRACT

The main purpose of this project is learning and analysing the aerodynamics performance of Wing and different types of winglets with wings. The aerofoils BAC 449/450/451 designed in solid works and gone through flow simulation in solid works. The best aerodynamically performed aerofoil NACA BAC 449/450/451 in terms of aerodynamic efficiency chosen for wing construction which has dimensions of Boeing 737. The three wing models with different winglets were carried out. Wing with Blended winglet, Ranked winglet and Twin wing simulated to find the aerodynamic efficiency. In order to found more efficient wing with winglets, designs of Blended, Twin and Ranked winglets modified. Blended winglet and Twin winglet with Ranked winglet designed. These 3 wings with winglets studied and simulated in STAR CCM+. As a result of this project it has found that adding the winglet to the wing increase the aerodynamic efficiency of wing in terms of Cl/Cd .

Keywords: *aerofoils, Twin and Ranked winglets, Ranked winglets, Twin wing simulated etc*

INTRODUCTION

A winglet is a device used to improve the efficiency of aircraft by lowering the lift induced drag caused by wingtip vortices. It is a vertical or angled extension at the tips of each wing. Winglets improve efficiency by diffusing the shed wingtip vortex, which in turn reduces the drag due to lift and improves the wing's lift over drag ratio. Winglets increase the effective aspect ratio of a wing without adding greatly to the structural stress and hence necessary weight of its structure. Research into winglet technology for commercial aviation was pioneered by Richard Whitcomb in the mid 1970's. Small and nearly vertical fins were installed on a KC-135A and flights were tested in 1979 and 1980. Whitcomb revealed that in full size aircraft, winglets can provide improvements in efficiency of more than 7%. For airlines, this translates into millions of dollars in fuel costs. Winglets are being incorporated into most new transport aircraft, including business jets, the Boeing 747-400, airliners, and military transport. Many other researchers have investigated their behaviour, designing winglets for commercial and general aviation aircraft as well as for sailplanes. Furthermore, the added friction and interference drag has to be cancelled out by the forward thrust generated by the winglet lift. The upward angle (or cant) of the winglet, its inward or outward angle (or toe), as well as its size and shape are critical for correct performance and are

CHAPTER 6

An Analysis of CFD Simulations and Various Shapes of Winglets

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ABSTRACT

The objective of this research work is to reduce the lift induced drag generated due to wing tip vortices at the tip of the wing. The NACA-65(3)-218 is chosen as a clean wing and the computational results are validated with the experimental results. The experimental data is obtained from the journal drag analysis of an Aircraft Wing Model with and without bird feather like Winglet conducted by engineers. The unstructured mesh is constructed with the prism layer meshing using ICEMCFD and the grid independence study has conducted to know the optimum mesh size for all the three wing configuration of clean wing (NACA-65(3)-218), wing with rake winglet and the wing with L-winglet. The RANS (Reynolds averaged Navier stokes equation) numerical studies have conducted by the finite volume method to analyse the physical system modelled. Fluent is used as a common solver for analysing the physical model. The new design changes are implemented with two types of winglets attached at the end of the clean wing. The rake winglet and the L-winglet are used for the computational analysis. The analysis is carried out at the different angles of attack such as - 40, 00, +80, +160 and +180 at an inlet velocity of 32m/s with the adiabatic conditions. The obtained results shows that the rake winglet performs better than clean wing at the angles of attack of 80 with the L/D ratio of 8 and the L-winglets performs better than clean and rake winglet at the angles of attack of 8 with the L/D ratio of 10.

Keywords: Aerofoil; Winglets; AOA; NACA; CFD Nomenclature AOA Angle Of Attack L/D Lift to Drag ratio CL Coefficient of Lift NACA National Advisory Committee For Aeronautics I.etc

INTRODUCTION

Winglets are used to reduce the lift induced drag generated due to the formation of wingtip vortices from the third direction flow caused due to flow separation above the wing surface. Winglets are usually in vertical or in angled shapes and are attached to the tips of the main wing. By adding the winglets, it

CHAPTER 1

Cutting Parameters using RSM for High Speed Precision Machining of Titanium Alloys

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ABSTRACT

The aerospace, automotive and biomedical parts manufacturers use Titanium Metal matrix composites extensively because of their high specific strength and exceptional corrosion resistance. Machinability of Titanium Metal matrix composites poses biggest threat as their low thermal conductivity and elastic modulus are bigger challenges to be addressed; it also gets high hardness at elevated temperature with high chemical reactivity.

This research is to analyst Machinability parameters of machining of Titanium Metal matrix composites, and focuses on optimization of machining process. The possible parameters to be improved are cutting and machining forces, chip formation using alloying and reducing cutting temperature. The CNC milling process of Ti- 6Al-4V alloy parameters were identified and being studied in detail for optimization.

Keywords— *Titanium Metal matrix, high hardness, high chemical reactivity etc.*

INTRODUCTION

The Machinability of Titanium metal matrix composites is reportedly the biggest challenge to be resolved and the researchers of industry and academia reported many times in the journals of repute. The selection

CHAPTER 2

Numerical Study on the Mixing Characteristics of a Combustor Using Pulsed Fuel Injector for a Scramjet

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ABSTRACT

Today's fuel injection methods for scramjet engines are still an emerging topic. Usually, liquids or gases are used as the fuel for scramjets. To ensure effective and efficient combustion, the fuel and air need to be mixed exactly in stoichiometric proportions. Effective and efficient fuel-air mixing plays a critical role in the successful operation of scramjet engines. In this work, the pulsed fuel injection technique in a realistic scramjet combustor flow condition with five different geometries is numerically investigated to improve the fuel-air mixing in supersonic combustion systems with a short flow residence time. The time dependent sinusoidal pulse is achieved by using an mathematical expression given at the fuel inlet. For the investigation, the two equation $k-\omega$ SST turbulence model is implemented, and Reynolds-Averaged Navier-Stokes equations are solved using ANSYS FLUENT. The findings demonstrate that extremely high amounts of turbulent kinetic energy (TKE) are seen particularly in the downstream side of the fuel injectors and low percentage of unburnt hydrogen is observed at the outlet. Increased TKE and less percentage of unburnt hydrogen at the outlet is proven to improve mixing efficiency for all types of pulsed fuel injection.

Keywords: efficient combustion, ANSYS FLUENT, SST turbulence model etc

INTRODUCTION

The basic principle of the Computational Fluid Dynamics (CFD) is to reduce the cost of the experimental studies. Analysis and design of the Scramjet engines are not an exception to this trend. In order to reduce the number of experiments and so, reduce the costs of design and speed up this process, Computational Fluid Dynamics tools are being used. Different algorithms and methods are being improved and

Fundamentals of Big Data with Machine Learning



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In January 2023, Mr. Udhayakumar's achievements reached new heights with the release of "A Textbook on Data Analytics." This comprehensive work serves as a valuable guide for students, researchers, and professionals navigating the intricate world of data analytics. Mr. T. Udhayakumar M.E. is a multifaceted professional who has made an enduring impact on computer science, education, and research, positioning him as a thought leader and driving force in the realm of Computer Science and Engineering.

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ISSN 978-93-8938-304-0



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INTRODUCTION TO MACHINE LEARNING

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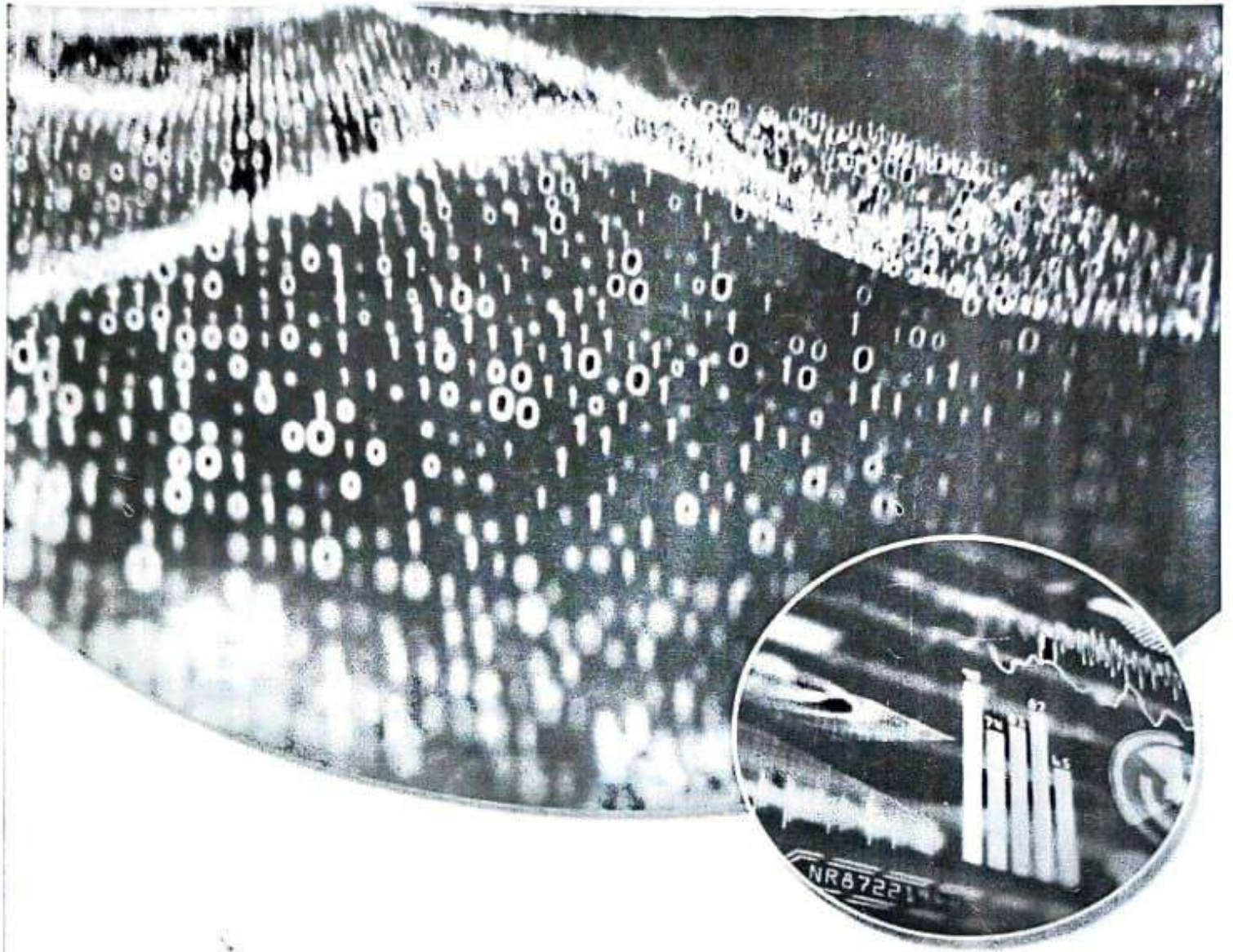


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MACHINE LEARNING AND DATA ANALYTICS

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3.4.4 Details of books and chapters in edited volumes / books per teacher during the year 2023-2024

Sl. No.	Name of the Teacher	Title of the Book published	Year and month of publication	ISBN of the Book/Conference Proceeding	Affiliating Institute of the teacher at the time of publication	Name of the Publisher
1	Mrs.J.Ruby Elizabeth	Cloud based security management	29.07.23	978-81-964397-8-1	AP/CS&BS	SAN International Publications
2	Mrs.Priyadharsini.P	Cloud Security and Privacy	10.09.2023	978-93-5757-530-0	AP/CS&BS	Sientific International Publishing House
3	Mrs.Sruthi.P.S	"Cloud Services Management"	09.10.2023	978-81-965070-9-1	AP/CS&BS	Vertex Research and Technology,Chennai
	Mr.M.Ragul Vignesh					
	Mrs.Priya.B					
	Mrs.Anju.P					

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CLOUD BASED SECURITY MANAGEMENT

CLOUD BASED SECURITY MANAGEMENT



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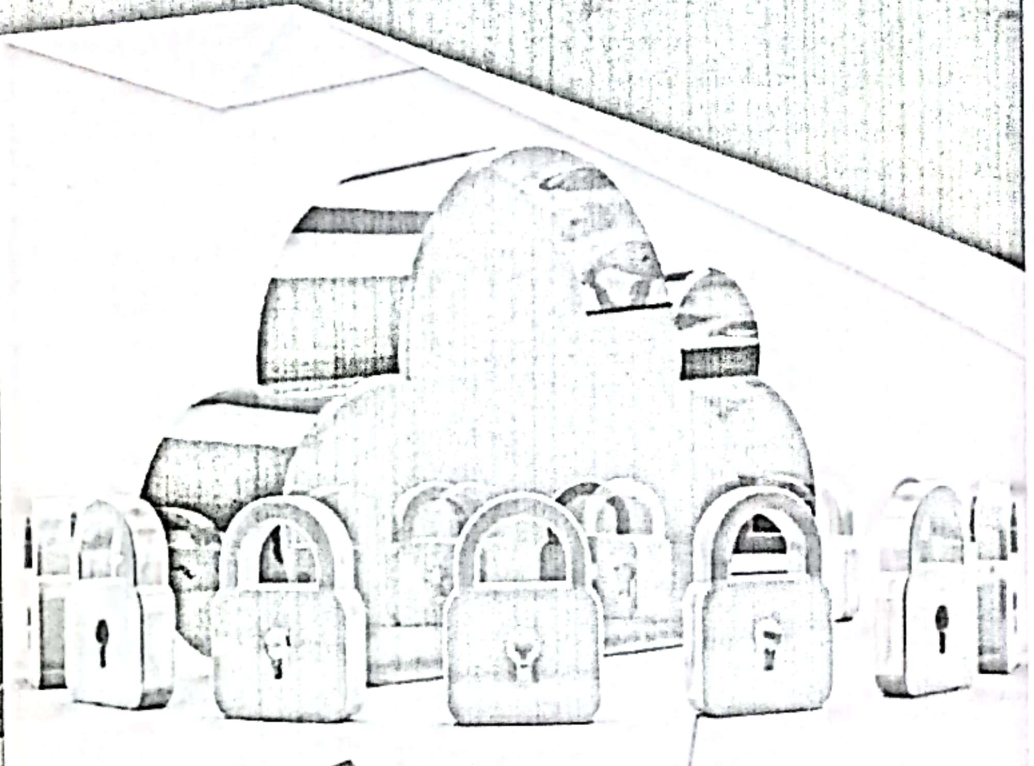
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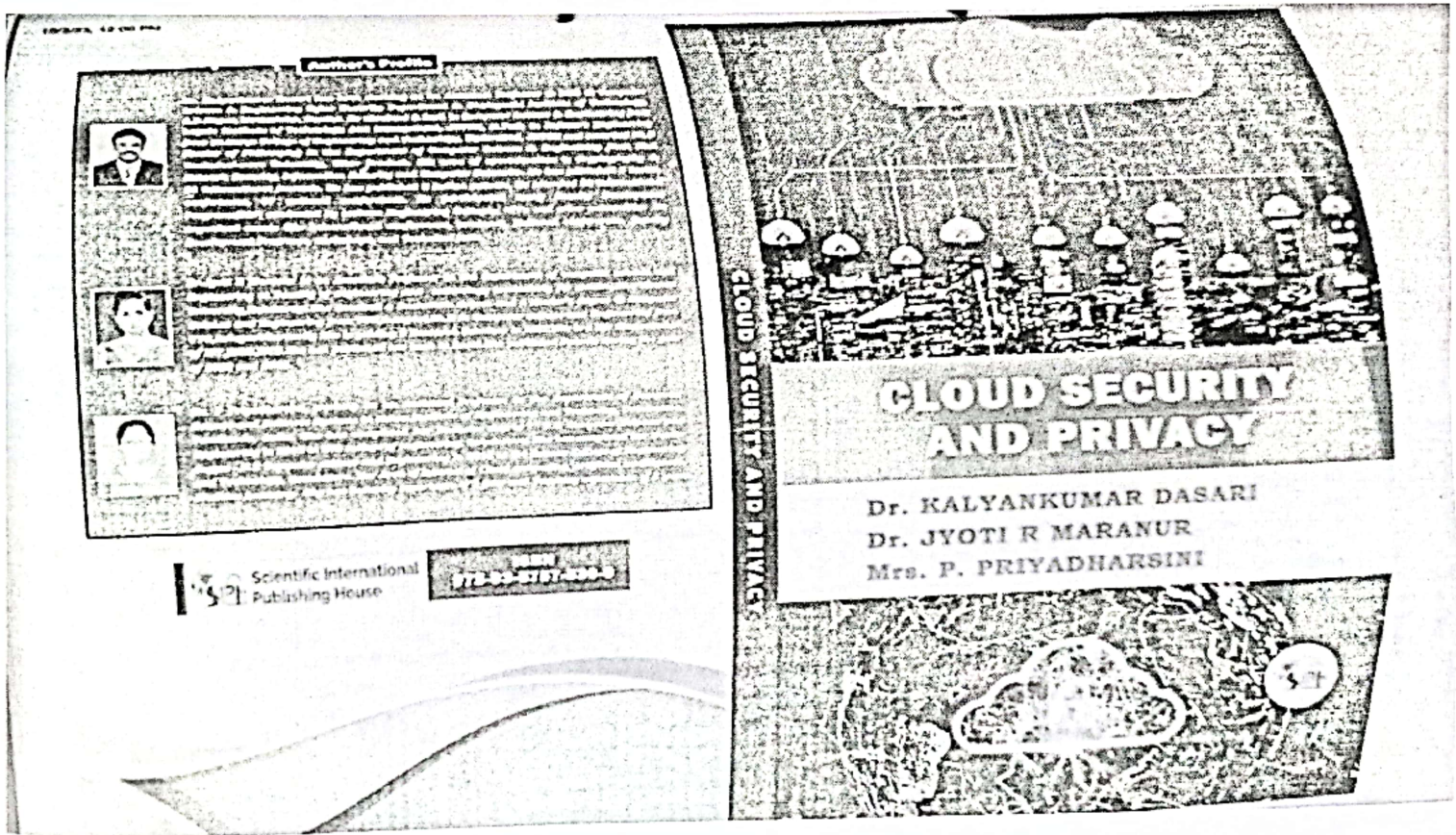
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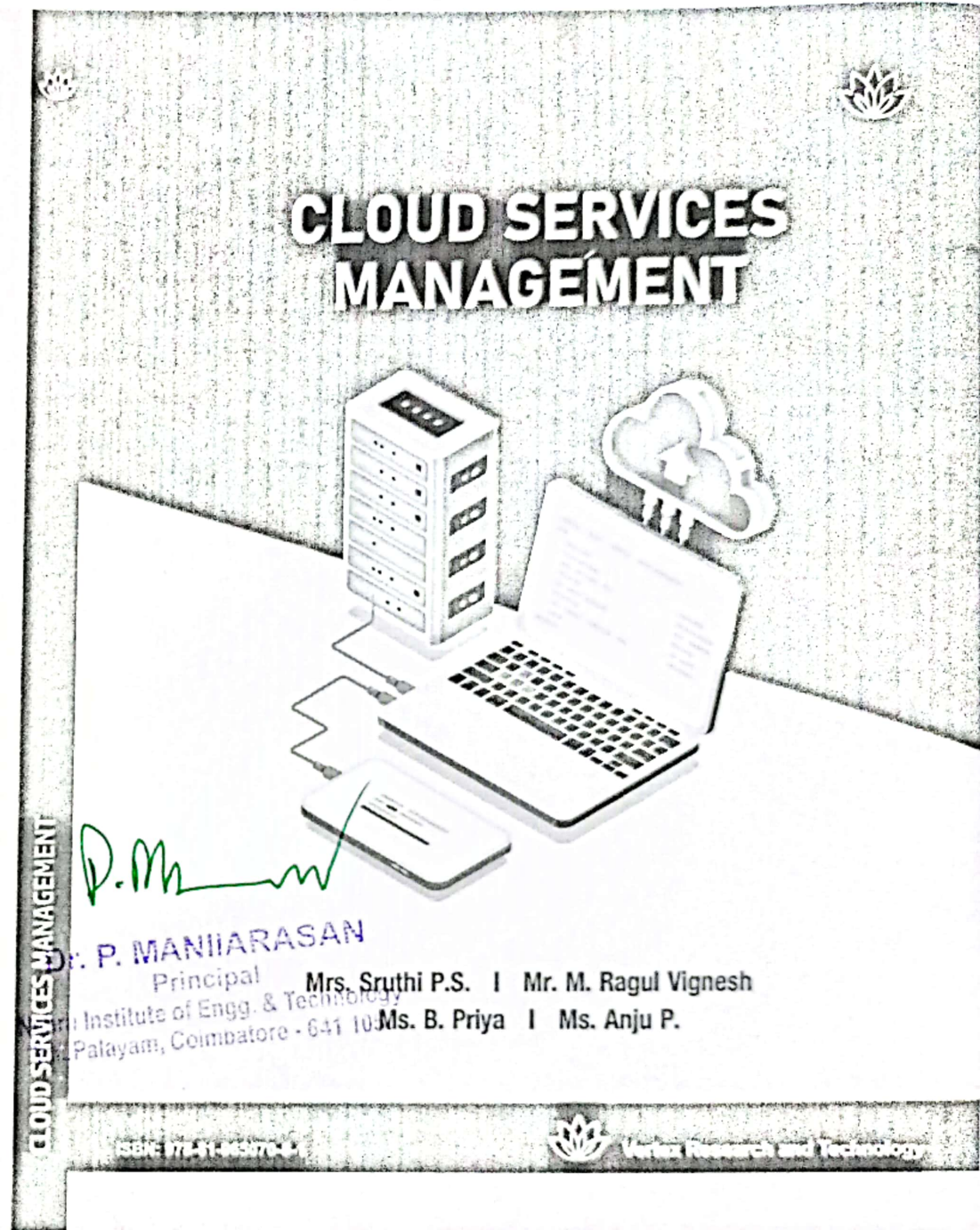


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CHAPTER 6

A NEW PROPOSED CASCADE DEEP LEARNING-BASED QUANTIZATION METHOD

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ABSTRACT

This work presents a novel cascade deep learning-based spatial and color attributes codec for 3D LiDAR (Light detection and ranging) point clouds. This cascade deep learning model performs the codec operation on more than one attribute of 3D LiDAR point clouds. This proposed algorithm consists of three steps. The first step is to split the spatial and color attribute data from the original raw point cloud data. The second step is to enhance the raw 3D LiDAR point cloud (PCD) data by using the combination of Nyquist sub sampling and bi-normalization methods. Finally, apply the cascade deep learning-based quantization method to reduce the number of bits for transmission and storage purposes. The experimental results show that the proposed algorithm outperforms the existing PCD compression algorithm by compressing the PCD into constant 128 bytes without considering the original size of a PCD and increases the quality of the decompressed PCD approximately by 25% than the existing discrete wavelet transformation based PCD compression algorithm.

Keywords: — 3D LiDAR point cloud, bi-normalization methods, Nyquist subsampling, cascade deep learning etc

INTRODUCTION

The point cloud is a massive collection of 3D points with attributes generated from the 3D scanners and LiDAR. It is a base component of the 3 D object model. Each point in a PCD carries multiple attributes,

Chapter 4

Comparison of Artificial Neural Network Techniques in Prediction of Wind Speed Using Combinations of Metrological Variables

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Abstract

In this study, wind speed is predicted using Feed Forward Neural Networks with a Backpropagation Algorithm (FFNNBA) and Generalized Regression Neural Network (GRNN) in 60 cities in India. The input variables used in this analysis are longitude, latitude, air temperature, elevation, relative humidity, cooling degree-days, heating degree-days, daily solar radiation-horizontal, earth temperature, and

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In: The Future of Wind Energy

Editors: M. Dhurgadevi, P. Sakthivel and K. Gunasekaran

ISBN: 979-8-88697-232-0

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CHAPTER 2

An Deep Learning based Emotion Detection using Convolution Neural Networks (CNN)

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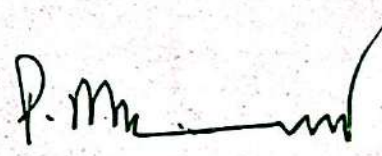
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ABSTRACT

Facial expressions convey non-verbal information between humans in face-to-face relations. Automatic facial expression recognition, which plays a vital part in mortal-machine interfaces, has attracted adding attention from experimenters since the early nineties. Classical machine learning approaches frequently bear a complex point birth process and produce poor results. In this paper, we apply recent advances in deep learning to propose effective deep Convolution Neural Networks (CNNs) that can directly interpret semantic information available in faces in an automated manner without hand-designing of features descriptors. We also apply different loss functions and training tricks in order to learn CNNs with a strong bracket power. The experimental results show that our proposed networks outperform state-of-the-art styles on the well-known FER-2013 dataset handed on the Kaggle facial expression recognition competition. In comparison to the winning model of this competition, the number of parameters in our

CHAPTER 44

Optical Wireless Communication and V2LC with Ad hoc Technologies

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ABSTRACT

The Optical Wireless Communication (OWC) technology envisages a variety of application scenarios ranging from chip-to-chip communication to inter-satellite communication links. The OWC technology plays an important role in massive device connectivity of Iota networks in terms of sensing, monitoring, and data resource sharing. The Visible light communication (VLC) is an emerging technology that is intended to enable high-speed data transmission. The visible light communication (VLCs) is a subset of OWC that utilizes electromagnetic waves in visible band (390 nm-700 nm) and uses an LED or LD as a transmitter. The OWC technologies are classified into visible light communication (VLC), light fidelity (Life), optical camera communication (OCC), and free space optics (FSO), are considered to be enabling technologies to meet the demands of 5G/6G and Iota networks for their advanced features. The OCC uses LED array as a transmitter and a CCD camera or image sensor as a receiver. OCC normally uses VL or IR as the communication medium. However, ultraviolet (UV) spectrum can also be used as the communication medium. The FSO technology uses LD and PD as the transmitter and the receiver, respectively. A two different setups are used for intelligent reflecting surfaces in the context of VLC systems, namely, intelligent met surface reflector (IMR) and intelligent mirror array (IMA). The vehicular services are offered by different OWC technologies in indoor, outdoor, and space communications.


Keywords: visible light communication, FSO technology, intelligent reflecting surfaces etc.

INTRODUCTION

OWC TECHNOLOGIES FOR THE 5G/6G AND IOT SYSTEMS:

(A) NEED FOR OPTICAL WIRELESS COMMUNICATION:

The RF band ranges from 3 kHz to 300 GHz of the electromagnetic spectrum. However, the range (3 kHz, 10 GHz) is widely used by the existing wireless technologies because of favorable communication


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CHAPTER 45

A Review of Convolution Neural Network (D-CNN) Models

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ABSTRACT

Abstract— *The timely identification and early prevention of plant diseases are essential for improving production. In this paper, deep convolutional neural network (CNN) models are implemented to identify and diagnose diseases in plants from their leaves, since CNNs have achieved impressive results in the field of machine vision. Standard CNN models require a large number of parameters and higher computation cost. In this paper, we replaced standard convolution with depth-separable convolution, which reduces the parameter number and computation cost. The implemented models were trained with an open dataset consisting of 14 different plant species, and 38 different categorical disease classes and healthy plant leaves. To evaluate the performance of the models, different parameters such as batch size, dropout, and different numbers of epochs were incorporated. The implemented models achieved a disease-classification accuracy rates of 98.42%, 99.11%, 97.02%, and 99.56% using InceptionV3, InceptionResNetV2, MobileNetV2, and EfficientNetB0, respectively, which were greater than that of traditional handcrafted-feature-based approaches. In comparison with other deep-learning models, the implemented model achieved better performance in terms of accuracy and it required less training time. Moreover, the MobileNetV2 architecture is compatible with mobile devices using the optimized parameter. The accuracy results in the identification of diseases showed that the deep CNN model is promising and can greatly impact the efficient identification of the diseases, and may have potential in the detection of diseases in real-time agricultural systems.*



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CHAPTER 11

An Introduction to set theory and its Applications in Engineering

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ABSTRACT

Set theory is the branch of mathematical logic that studies sets, which can be informally described as collections of objects. Although objects of any kind can be collected into a set, set theory — as a branch of mathematics — is mostly concerned with those that are relevant to mathematics as a whole. The modern study of set theory was initiated by the German mathematicians Richard Dedekind and Georg Cantor in the 1870s. In particular, Georg Cantor is commonly considered the founder of set theory. The non-formalized systems investigated during this early stage go under the name of naive set theory. After the discovery of paradoxes within naive set theory (such as Russell's paradox, Cantor's paradox and the Burali-Forti paradox), various axiomatic systems were proposed in the early twentieth century, of which Zermelo–Fraenkel set theory (with or without the axiom of choice) is still the best-known and most studied. Set theory is commonly employed as a foundational system for the whole of mathematics, particularly in the form of Zermelo–Fraenkel set theory with the axiom of choice. Besides its foundational role, set theory also provides the framework to develop a mathematical theory of infinity, and has various applications in computer science (such as in the theory of relational algebra), philosophy, formal semantics, and evolutionary dynamics[1]. Its foundational appeal, together with its paradoxes, its implications for the concept of infinity and its multiple applications, have made set theory an area of major interest for logicians and philosophers of mathematics. Contemporary research into set theory covers a vast array of topics, ranging from the structure of the real number line to the study of the consistency of large cardinals.

Keywords: *Set theory, Zermelo–Fraenkel set theory, Burali-Forti paradox etc*

INTRODUCTION


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Ms. Sunanda Ratna Kandavalli received her B.Tech in Electronics and Communication Engineering from Sri Padmanabi Mahila Veda Vidyalayam (Tirupati) as an honored undergraduate. She is currently based in Chennai, working as a Program analyst in Cognizant Technology Solutions. She began her research work on Internet of Things, Communication Systems, Integrated Circuits at the Sri Padmanabi Mahila Veda Vidyalayam (Tirupati), India in 2018. She has published over 5 peer-reviewed scientific papers, filed over 10 National Patent applications.

Alpha International Publication (AIP) ISBN 978-93-5762-976-8
www.alphainternational.in | alphaip@alphaip.com

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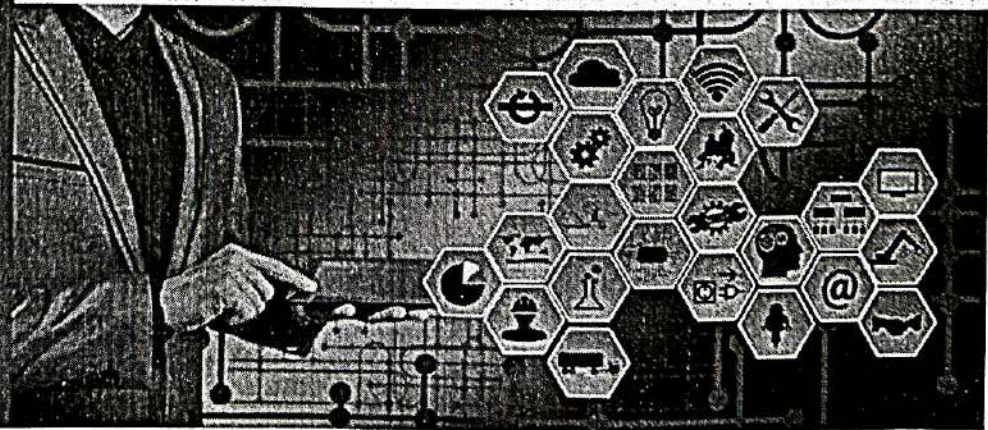
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INTERNET OF THINGS: A HANDS - ON APPROACH



**INTERNET OF THINGS
 : A HANDS - ON APPROACH**

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Dr. Navnath D. Kale working as Sr. Assistant Professor in the Department of Computer Engineering at MIT Academy of Engineering, Alandi, Pune. He completed Master of Technology in Computer Science and Engineering at VIT-Vellore Technological University, Vellore, India. He completed Ph.D. in the field of Wireless Sensor Networks at Koneru Lakshmaiah Education Foundation (K. J. Somaiya), Vijayawada, India. He is in teaching profession for more than 18 years. He has presented number of papers in National and International Journals, Conference and Symposia. His main area of interest includes Wireless sensor Networks, Computer Network and Information Security.

Alpha International Publication (AIP)

ISBN 978-93-5762-142-7

www.alphainternationalpublication.com | address@alphaip.com

A TEXTBOOK OF CRYPTOGRAPHY AND NETWORK SECURITY

A TEXTBOOK OF CRYPTOGRAPHY AND NETWORK SECURITY

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CHAPTER 10

Measurement of Power Area and Delay Efficient by using Approximate Multiplier

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ABSTRACT

For the energy-efficient multiply-accumulate (MAC) processing, we introduce a unique approximate computing approach in this study. In order to generate mistakes in the opposite direction while minimizing computing costs, we first develop approximate 4-2 compressors. Positive and negative multipliers are then meticulously built based on the probabilistic analysis to produce a comparable error distance. The proposed MAC processing provides the energy-efficient computing scenario by expanding the range of approximative portions, according to simulation results on various real-world applications. The low-energy, MAC-intensive algorithms are created by this work, which brand-new introduces the advanced interleaving technique for the balanced error accumulation. We created two different types of approximate multipliers with opposing error directions based on the previous compressor-based approximation. To be more specific, when designing compressors, we simply take into account the direction of the faults, and each approximative multiplier is built to have the lowest hardware cost possible. Verilog HDL is used to implement this design, and Model Sim 6.4 c is used to simulate it. The Synthesis Process tool from Xilinx measures performance.

Keywords— Approximation, Low power, Low error, Multiplier.

INTRODUCTION

Data mining and multimedia signal processing are some of the examples which are error tolerant. For this type of applications exactness of the output is not necessary. Their computational circuits can be replaced



Agri 4.0 and the Future of Cyber-Physical Agricultural Systems

2024, Pages 257-277

Chapter 14 - Automated diagnosis of disease in grape leaves using deep neural networks

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Available online 22 April 2024, Version of Record 22 April 2024.

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<https://doi.org/10.1016/B978-0-443-13185-1.00014-9>

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Abstract

Downy Mildew and Powdery diseases could cost grape farmers and growers a lot of money if they are not found and diagnosed early. With recent improvements in artificial intelligence, individuals are starting to utilize deep neural networks to discover and categorize Downy Mildew and Powdery diseases quickly and accurately. In this chapter, a grape leaf dataset is used to create four improved deep models for detecting and classifying grape leaf diseases. Transfer learning was used in this research, which was built on top of three machine learning models that had already been trained. Diseases like Leaf blight, black measles, black rot, and phylloxera were being fought. When compared to models that were already trained, the results of the fair evaluation show

that the new frameworks are more accurate and perform better. Moreover, an ensemble model made up of these four improved models improves the accuracy of absolute recognition and categorization. The assessment consequences display that there is a lot of potential use in grape growing. Downey mildew and powdery disease are more likely to happen during the rainy season when the humidity is high. When grape plants are cut down to make grapes, the leaves are still young and fragile for the first 40–65 days. The disease comes at that time. It can cut profits by up to 50%. Time should be taken to find the right person. A little delay in figuring out what the plant is can hurt it. Therefore this research has proven good results in identifying the diseases in grape leaves.

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Reversible Logic Toffoli Gate Priority Encoder for Effective Nano-Scale Application in QCA Paradigm

Conference paper | First Online: 18 April 2024

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Renewable Energy, Green Computing, and Sustainable Development

(REGS 2023)

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 13 Accesses



Reversible Logic Toffoli Gate Priority Encoder for Effective Nano-Scale Application in QCA Paradigm

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Abstract. Main objective of line of reversible priority encoder depends on QCA. Among important stages and processes. A cutting-edge kind of nanotechnology is known as quantum-dot cellular automata (QCA). It could be used as the foundation for reversible and digital circuit construction. In this study, a proposal for a simple, reversible, and encoders with the ratio of four inputs and two outputs are considered. It is possible to construct a reversible encoder circuit by making use of the Toffoli gate design, which is simple and very inexpensive. The simulation tool QCA Designer is used in order to evaluate the suggested designs for their level of structural soundness.

Keywords: Gate EXOR · Gate EXOR · Emitting power · Two-way circuit · Priority Encoder

J. M.

1 Introduction

The performance of devices built restricted since individual element sizes are so small, and these devices also use a large amount of power. Based on many researchers what they are thinking about how to construct complicated logic circuits at the nanoscale utilizing technologies that use very little power. A lower design with higher switching speed, it is required to consider alternatives to CMOS. The quantum-dot cellular automaton (QCA) is introduced as an innovative framework for fabricating a nanoscale apparatus that exhibits exceptional density and operates at terahertz speeds. This paradigm does not need the use of transistors. There are a number of sources [1–3] that provide an in-depth discussion of the experimental characteristics and physical implementations (including metal-island, semiconductor, magnetic, and molecular QCA). [4] Just recently, the world's first functioning on a fundamental product was successfully created. The CMOS technology has a propensity to waste a great deal of power, which is one of its drawbacks. It is possible to avoid the waste of energy that occurs during calculations by making use of the reversible computation, which has been described in [5]. Research back up assertion. The reversible gate is an essential component logic. The scientific community has

CHAPTER 46

Analysis of Accident Detection and Alert System Using IOT and Mobile Applications

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ABSTRACT

As the usage of vehicles is increasing drastically, the hazards due to vehicles is also increased. The main cause for accidents is high speed, drunk and drive, diverting minds, over stress and due to electronic gadgets. This paper deals with accident detection system that occurs due to carelessness of the person who is driving the vehicle. This introduces accident alerting system which alerts the person who is driving the vehicle. If the person is not in a position to control the vehicle, then the accident occurs. Once the accident occurs to the vehicle this system will send information to registered mobile number. Initially the GPS continuously takes input data from the satellite and stores the latitude and longitude values in AT89s52 microcontroller's buffer. If we have to track the vehicle, we need to send a message to GSM device, by which it gets activated. It also gets activated by detecting accident on the shock sensor connected to vehicle. Parallel deactivates GPS with the help of relay. Once GSM gets activated it takes the last received latitude and longitude positions values from the buffer and sends a message to the particular number or laptop which is predefined in the program. Once message has been sent to the predefined device the GSM gets deactivated and GPS gets activated.

Keywords: AI based medical Chabot, government hospitals, ultimately results etc.

INTRODUCTION

The development of a transportation system has been the generative power for human beings to have the highest civilization above creatures in the earth. Automobile has a great importance in our daily life. We utilize it to go to our work place, keep in touch with our friends and family, and deliver our goods. But it can also bring disaster to us and even can kill us through accidents. Speed is one of the most important and basic risk factors in driving. It not only affects the severity of a crash, but also increases risk of being

CHAPTER 39

Implementation of Advanced E-Voting Application Using Android Platform

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ABSTRACT

The project is to develop an Online E-Voting prototype system utilizing the Paillier Threshold Cryptosystem (PTC) web services and applying MESE processes to it in an attempt to find possible solutions to further improve existing PTC web services. Online voting (e-voting) would be more convenient, relatively secure and utilize fewer resources. To be able to access e-voting system from a personal, business or even a public library computer may be more convenient for many people needing to vote. This could potentially be a solution for the low voter turnout at the polls. However, it is still questionable whether elections can be conducted online or over the internet due to the high level of concern over security. Systems considered to be apart of e-voting are Machine readable (create, read, count) ballot systems, Direct Recording Electronic (DRE) systems, voting using mobile devices and internet voting .As part of this project, an online e-voting prototype system has been constructed using the demonstration windows application tool created for PTC web services. A pre-computation process is applied due to efficiency improvements. The details of this optimization and improvement in the web services process will be explained in the subsequent sections. In addition to the application of the pre-computation to the process, the Chinese Remainder Theorem can be applied during the decryption process. This change might not be as noticeable as the pre-computation, however it will make it more efficient as the calculation gets easier.

Keywords: Relatively secure and utilize fewer resources, Ballot systems, Direct Recording Electronic (DRE) systems,

INTRODUCTION

In this project, PTC Web services are used. In this section, I will explain how the PTC web services work. Efficiency improvement that will be applied to the PTC web services required some changes on some of

CHAPTER 38

A Review of Advanced E-Voting Application Using Android Platform

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ABSTRACT

The proper execution of democratic rights has become linked to the availability and reliable functioning of advanced information and communication technology (ICT). While modern societies fully rely on ICT for business, work and leisure time activities, the use of ICT for democratic decision making is still in its infancy. Countries all over the World are examining e-voting for it has some striking advantages over traditional paper voting, including security for casting votes, accuracy of counting and analyzing votes, options to conduct voting in a centralized and decentralized manner etc.

Another issue with e-voting is educating the voters. We cannot consider that all the users are computer gurus and they will use the e-voting systems easily. When e-voting is designed it needs to be easy to use. We should consider the fact that a large portion of the voting public has a very little knowledge about the computers. According to some of the research done by the Public Policy Institute of California over 50% of 18-44 years of age voters prefers Internet voting. Some recent studies have focused on e-voting, its security concerns and making it more secure. Below is the list of related literature about e-voting:

Keywords: *information and communication technology, e-voting, California etc*

INTRODUCTION

In traditional elections, a voter usually goes to the voting stations. After direct person-person verification with some IDs, the voter is allowed to vote. The voter is then given a ballot which allows a single vote. Once the ballot is used, it cannot be used again. However, this ballot must also be anonymous. The ballot must identify the voter as being permitted to vote, but not reveal their actual identity, and the voter must also be given assurances of this. Traditional polling methods trust a lot of parties during the election. The current methods require an attacker interact directly with the voting process to disrupt it. There is a greater chance of getting caught as there will be physical evidence in the traditional polling. On the other end, internet is harder to control and manage the security as Network and internet related attacks are more

CHAPTER 30

Design of Internet of things–based human–computer interface system

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ABSTRACT

Visual memory and particularly eye tracking systems have been a significant subject of examination. Making a human point of view visual memory by eye tracking will assist with laying out a more normal and further developed human-computer interface (HCI). A minimized head-mounted gadget is made for a similar reason. Eye tracking system distinguishes student and produce center directions utilizing which human point of view vision is made. This counterfeit human viewpoint vision is recorded and store shaping a visual memory. This system is a continuous system. With its great speed, extraordinary exactness and reduced system it brings about an incredible generally item working on human and machine interface.

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Keywords: *human-computer interface (HCI), raspberry pi*

INTRODUCTION

Interest for more sensible human-computer interface have been an extraordinary concentration from a few decades. Fast development in innovation make it more straightforward to make reduced, basic and non-meddlesome eye tracking systems. Eyes being most significant facial organ, the more we can make innovation utilizing it the better interface we will have among human and machine. Making a constant tracking system have been an extraordinary accomplishment in field of innovation [1]. The utilization of eye tracking have an incredible chance to work on the nature of regular human-computer interfaces. The model of one more postulation is partitioned into two sections — hardware and software execution. Eye-GUIDE centers on video-based look tracking, which comprise Hannah camera that records the eye of the client and a computer. The webcam can be utilized regardless of infrared (IR) enlightenment. For the software execution the defenders involved three distinct software's for eye gazing, eye clicking and informing system. Eye however being a little organ, can speak with cerebrum at a speed of 10 million bps

CHAPTER 29

A Review on prediction techniques using Artificial Neural Networks (ANNs)

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ABSTRACT

A neural network is a perplexing construction which comprise a gathering of interconnected neurons which gives an extremely thrilling options in contrast to complex critical thinking and other application which can assume significant part in the present software engineering field so specialists from the different discipline are planning the fake neural networks to take care of the issues of pattern recognition, prediction, optimization, cooperative memory and control. The essential advances utilized in MATLAB are accounted for alongside various ANN phases of preparation. The reason for the preparation is to limit mean square mistake. ANN model can be utilized effectively for prediction of result boundaries which helps in ideal determination of machining boundaries with the end goal of cycle arranging and optimization of machining boundaries.

Keywords— neural network, Artificial Neural Network

INTRODUCTION

ANN is an interconnected gathering of nodes, a family to the tremendous network of neurons in a cerebrum. ANN are computational models propelled by creature's central nervous systems (specifically the cerebrum) that are fit for AI and pattern recognition. They are normally introduced as systems of interconnected "neurons" that can register values from inputs by taking care of data through the network [1]. An ANN is designed for a particular application, for example, pattern recognition or information characterization, through an educational experience. Learning in organic systems includes acclimations to the synaptic associations that exist between the neurons. There are sure benefits of ANN by and large, a neural network can perform undertakings that a direct result cannot. In gadgets designing and related fields, artificial neural networks (ANNs) are numerical or computational models that are propelled by a

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CHAPTER 1

A review on Enabling vehicular visible light communication (V2LC) networks

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ABSTRACT

We first develop a custom V2LC research platform on which we experimentally evaluate the feasibility of a V2LC system under working conditions in relation to link resilience to visible light noise and interference. Our experiments show that a receiver's narrow field-of-view angle makes V2LC resilient to visible light noise from sunlight and legacy lighting sources as well as to interference from active VLC transmitters. Then, by leveraging our experimental characterization as the basis of modifications to our simulator, we examine V2LC's performance in providing network services for vehicular applications. Our key findings include: (i) in dense vehicular traffic conditions (e.g., urban highway during peak hours), V2LC takes advantage of multiple available paths to reach vehicles and overcomes the effects of packet collisions; (ii) in the presence of a visible light blockage in traffic, V2LC can still have a significant number of successful transmissions by opportunistically using dynamic inter-vehicle gaps.

Keywords: VLC, FSO technology, intelligent reflecting surfaces, V2LC etc.

INTRODUCTION

Visible Light Communication (VLC) is a fast-growing technology to provide data communication using low-cost and omni-present LEDs and photodiodes. In this paper, we examine the key properties in enabling vehicular VLC (V2LC) networks as follows.

Next-generation mobility trends such as autonomous driving and ride sharing necessitate various vehicular connectivity schemes. On the other hand, intelligent transportation systems (ITS) harmonized with vehicular communications aim to reduce traffic congestion, accidents, air pollution, energy, and time wastage. Upto date, vehicular communications are expected to provide timely and efficient data dissemination regarding accidents, traffic jams, and road conditions beyond the drivers' knowledge.

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CHAPTER 37

Sign Language into Text and Speech Translation in Real Time

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ABSTRACT

This project aims to develop a sign language translation system using an Arduino microcontroller, LCD display, two flex sensors, a speaker, and a power supply. The system will be designed to translate hand gestures made in sign language into text and speech in real-time. The project will utilize two flex sensors to detect the hand gestures made by the user. These sensors will be attached to a glove worn by the user. The flex sensors will measure the bending of the fingers and transmit this data to the Arduino microcontroller. The microcontroller will then process this data and interpret the gestures made by the user. The interpreted gestures will be displayed on an LCD screen, and the system will also produce speech output using a speaker. The system will be powered using a power supply. The proposed system will be particularly useful for individuals who are deaf or hard of hearing and rely on sign language to communicate. The system will enable them to communicate more easily with individuals who do not understand sign language, allowing for greater inclusion and accessibility. The project will involve designing and building the hardware components, programming the microcontroller, and testing the system's functionality. Overall, this project will contribute to the development of assistive technologies that can enhance communication and promote accessibility for individuals with disabilities.

Keywords: *sign language translation, sign language to communicate, assistive technologies etc*

INTRODUCTION

Sign language is a primary mode of communication for individuals with hearing impairments, and bridging the communication gap between deaf and hearing individuals is crucial for fostering inclusivity and accessibility. The Glove, equipped with advanced sensors and technology, enables the translation of sign language gestures into written text and spoken words, facilitating effective communication between deaf and hearing individuals. This project aims to harness the power of artificial intelligence and machine learning techniques to accurately recognize and interpret sign language gestures, providing real-time

CHAPTER 8

Design an approximate multiplier with efficient Delay and Area

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ABSTRACT

For the energy-efficient multiply-accumulate (MAC) processing, we introduce a unique approximate computing approach in this study. In order to generate mistakes in the opposite direction while minimizing computing costs, we first develop approximate 4-2 compressors. Positive and negative multipliers are then meticulously built based on the probabilistic analysis to produce a comparable error distance. The proposed MAC processing provides the energy-efficient computing scenario by expanding the range of approximative portions, according to simulation results on various real-world applications. The low-energy, MAC-intensive algorithms are created by this work, which brand-new introduces the advanced interleaving technique for the balanced error accumulation. We created two different types of approximate multipliers with opposing error directions based on the previous compressor-based approximation. To be more specific, when designing compressors, we simply take into account the direction of the faults, and each approximative multiplier is built to have the lowest hardware cost possible. Verilog HDL is used to implement this design, and Model Sim 6.4 c is used to simulate it. The Synthesis Process tool from Xilinx measures performance.

Keywords— Approximation, Low power, Low error, Multiplier.

INTRODUCTION

Data mining and multimedia signal processing are some of the examples which are error tolerant. For this type of applications exactness of the output is not necessary. Their computational circuits can be replaced by their approximate counter parts in order to improve performance. This gives the rise to designing of approximate adders and multipliers which are very essential for digital circuits. In [1], approximate multiplier is designed with a mechanism of removing partial product generation and accumulation for lower order input operands. Depending upon the input operands the non-multiplication part will produce the output. For higher order input operands normal multiplication is performed. Truncating output [2] by

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Abstract

The evolution of computer networks and Internet of Things (IoT) in various fields increases the privacy, and security concerns. The increased usage of network-related applications demands a cost-efficient cyber security framework to protect the system from attackers. In this article, an optimized neural-based cyber security model named Golden Eagle-based Dense Neural System (GEbDNS) was designed to detect the intrusion in the network. Initially, the network dataset

CICIDS 2017 was collected and imported into the network. The dataset contains both normal and abnormal data. The raw dataset was pre-processed to eliminate the training flaws and errors and the important data features are extracted. Further, the optimal data features are selected for detection phase using the optimal solution of golden eagle optimization. Then, the selected data features are matched with the trained attack data for attack classification. Finally, the results are evaluated and verified with existing techniques in terms of accuracy, true-positive rate, and false-positive rate. The experimental analysis states that the developed security framework outperforms the traditional schemes with greater accuracy of 98.45%.

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Fuzzy-Based Cluster Head Selection for Wireless Sensor Networks

Conference paper | First Online: 26 November 2023


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Abstract

Selecting the cluster head over the WSN is a challenge. In the existing methodologies, the CHs require high residual energy and also reduce the quality of the system. So, to keep the system more efficient as well as to enhance the system quality a novel fuzzy-based sea lion optimization (FbSLO) mechanism has been developed in this research. Here, the cluster head selection is completely based on a fuzzy algorithm. Moreover, based on sea lion optimization shortest transmission path is measured to transmit the collected node information to the Base

CHAPTER 2

An Analysis of Convolutional Neural Network (CNN) and Transfer-Learning Approach

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ABSTRACT

Agricultural production is extremely important to the economy. This is one of the reasons why disease detection in plants is vital in the agricultural area, as illness in plants is fairly natural. If sufficient care is not taken in this region, it has major consequences for plants, affecting product quality, quantity, or productivity. Plant disease detection using any automated technology is advantageous since it eliminates a considerable amount of monitoring work in large crop farms and detects disease signs at an early stage, i.e. when they occur on plant leaves. This study provides an image segmentation system for automated identification and categorization of plant leaf diseases. It also includes an overview of several disease categorization systems that may be used to detect plant leaf disease. Convolutional neural networks are used for image segmentation, which is vital for disease detection in plant leaf disease.

Keywords: Convolutional neural networks, Deep Learning, Transfer Learning

INTRODUCTION

Plant disease can directly lead to stunted growth causing bad effects on yields. An economic loss of up to \$20 billion per year is estimated all over the world. Diverse conditions are the most difficult challenge for researchers due to the geographic differences that may hinder the accurate identification. In addition, traditional methods mainly rely on specialists, experience, and manuals, but the majority of them are expensive, time-consuming, and labour-intensive with difficulty detecting precisely. Therefore, a rapid and accurate approach to identify plant diseases seems so urgent for the benefit of business and ecology to agriculture. Internet technologies, in particular the availability of multimodality data from various sensors including the Internet of things and sensor networks, have developed rapidly. Agricultural productivity is something on which economy highly depends. This is the one of the reasons that disease detection in plants plays an important role in agriculture field, as having disease in plants are quite natural. If proper care is not taken in this area then it causes serious effects on plants and due to which respective product quality, quantity or productivity is affected. For instance a disease named little leaf disease is a hazardous disease

THE ROLE OF INDIAN CONSTITUTION EDUCATION AND MASS MEDIA IN FOSTERING CIVIC AWARENESS AND DEMOCRATIC VALUES: A RESEARCH PAPER

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Abstract

This research paper delves into the vital role of Indian Constitution Education and Mass Media in nurturing civic awareness and fostering democratic values among the citizens of India. By investigating how constitutional knowledge is disseminated through education and media channels, we aim to comprehend their combined impact on shaping an informed and participatory citizenry. Through a comprehensive review of existing literature, case studies, and qualitative analysis, we explore the correlation between constitutional literacy and democratic engagement. Our study examines the historical context of Indian Constitution Education, the significance of Mass Media in shaping public opinion, and the relationship between education, media, and democratic values. The findings provide valuable insights for policymakers, educators, media professionals, and all stakeholders to strengthen civic awareness and democratic ideals in India.

Keywords: Indian Constitution, Education, Mass Media, Civic Awareness, Democratic Values

1. INTRODUCTION

1.1 Background and context of Indian Constitution Education and Mass Media:

The background and context of Indian Constitution Education and Mass Media are crucial aspects that have shaped the democratic landscape of India. Indian Constitution Education refers to the systematic efforts to educate citizens about the fundamental principles, rights, and responsibilities enshrined in the Indian Constitution. It traces its roots back to the adoption of the Constitution in 1950, which marked the beginning of a new era for the world's largest democracy. The framers of the Constitution envisioned an informed citizenry, aware of their rights and duties, as the cornerstone of a thriving democratic society. To achieve this goal, various educational initiatives and programs have been developed over the years to impart constitutional knowledge to students at different levels of education.

Mass Media, on the other hand, has emerged as a potent force in shaping public opinion and political consciousness in India. The proliferation of print media, television, and digital platforms has brought information and news right into the living rooms of millions of citizens. Media, often referred to as the fourth estate, plays a critical role in informing the public about constitutional matters, political developments, and government policies. The interaction between Indian Constitution Education and Mass Media has become increasingly significant in recent times. As technology advances and media platforms diversify, the dissemination of constitutional knowledge has been further facilitated. Educational institutions collaborate with media organizations to develop content that enhances civic awareness and fosters democratic values. At the same time, media outlets aim to offer accurate and balanced coverage of constitutional issues, helping citizens stay informed and engaged in politics.

1.2 Statement of the research problem:

The research aims to understand how Indian Constitution Education and Mass Media influence people's awareness and participation in democracy.

1.3 Objectives and scope of the research

This research will focus on studying the relationship between Indian Constitution Education and Mass Media in the context of promoting civic awareness and democratic values among the citizens of India. The study will involve analyzing existing educational initiatives, media coverage of constitutional matters, and their impact on citizen participation. The research will include interviews, surveys, and case studies to gather insights from educators, media professionals, students, and the general public. However, the research will not delve into broader political, social, or economic aspects unrelated to the specific objectives mentioned above.

2. LITERATURE REVIEW

Historical Perspective on Indian Constitution Education: Exploring the historical aspect of Indian Constitution Education takes us back to the year 1950 when India adopted its Constitution. Scholars have delved into how the framers of the Constitution envisioned an informed citizenry, and the importance they placed on civic awareness and democratic values. Early efforts to incorporate constitutional principles into school curricula and educational initiatives have been examined to understand their impact on shaping citizens' understanding of their rights and responsibilities.

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PKS PUBLICATION

ISBN: 978-81-964693-2-0

RECENT TRENDS AND APPLICATIONS OF ARTIFICIAL INTELLIGENCE

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RECENT TRENDS AND APPLICATIONS OF ARTIFICIAL INTELLIGENCE

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Protecting Data from DDOS Attack in a Cloud Based Intrusion Detection System Security through Enhanced RSA Algorithm

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Abstract—Since cloud computing platforms have become an essential component in a range of different industries, it is still challenging to ensure that user data and system resources will remain secure inside these settings. This paper proposes a methodology to identify and mitigate unwanted traffic and packets, specifically duplicate packets, in cloud computing environments. The procedure requires the creation of an Intrusion-Finder and Detector (IF-AD) system that allots secondary storage and keeps user information in a secure manner. This technique does a comparison between the sizes of downloaded files and the sizes of the original files, searching for any variations between the two that would suggest a probable distributed denial of service assault (DDoS). The RSA cryptography procedure is employed in order to further strengthen the degree of security that is provided by any future file transfers that may take place. The problem that has been identified and a potential solution for has been proposed with the intention of enhancing the safety of cloud-based systems by identifying and preventing unauthorised access to files as well as modifications to them.

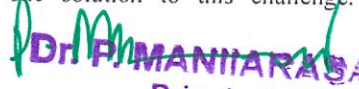
Keywords— Cloud computing, duplicate packets, Intrusion-Finder and Detector, encryption, decryption, RSA

I. INTRODUCTION

The term "cloud computing" (CC) refers to a new architecture that is built on the internet and gives users access to a broad variety of information technology (IT) resources in a manner that is both cost-effective and convenient. These resources may consist of software services, hardware services, storage services, network infrastructure, operating system services, and other similar services [1]. This technology has many benefits, including scalability, little management effort, cost efficiency, and rapid development [2]. Scalability is one of the benefits. Academics and researchers are becoming more concerned with the problem of data security as a direct consequence of the substantial changes that cloud computing has brought to the information processing sector. It is necessary to ensure the safety of the information processing that takes place inside any system if one wishes for a knowledge procurement system to be effective. Grid computing and cloud computing make it feasible to process information fast

and independently of location; nonetheless, this has given rise to trust difficulties among cloud users who make use of shared resources [3, 4]. Grid computing and cloud computing make it possible to process information quickly and independently of location. Grid computing and cloud computing both allow location-independent information processing. The CC's complex architecture makes it susceptible to various types of attacks, and employing a cooperative Intrusion Detection System (IDS) enhances detection accuracy compared to a single IDS due to limited knowledge of attack patterns [5].

As a consequence of this, the development of effective IDS is critical to the process of minimising the impacts of such dangers [6]. IDS employs two main approaches for attack detection: signature-based and behavior-based. Even if it is a valid system, the one that depends on signatures is vulnerable to new forms of attacks since it is dependent on those signatures. Nevertheless, the performance of the behavior-based IDS is superior when it comes to finding new damaging attack types, which makes it a more desirable deployment alternative [9]. In addition, IDS may be broken down into host-based IDS (HIDS) and network-based IDS (NIDS) depending on where it is implemented [10]. Host-based intrusion detection system is what is meant by the abbreviation HIDS. HIDS is installed nearer to the host and more capable of capturing intrusions than NIDS, intended to identify intrusions at the network level. Because of the enlarged surface area that is vulnerable to hostile attacks, software-defined technology is commonly used in contemporary cloud settings to improve the accessibility and dependability of application services. However, this raises the likelihood of a high intake of hostile assaults due to the fact that the surface area has been raised. By comparing the present system to a previously established normal profile, anomaly-based intrusion detection systems are able to identify any deviations from the regular behaviour of the system. False alarms, on the other hand, make it difficult to put these kinds of systems into practise in the real world. Hybrid intrusion detection systems (IDS), which mix signature-based and anomaly-based detection approaches, are one solution to this challenge. These systems use


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DESIGN AND PERFORMANCE ANALYSIS OF RECONFIGURABLE APPROXIMATE CARRY LOOK AHEAD ADDER USING MODIFIED BOOTH MULTIPLIER

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ABSTRACT

Adders are an essential component of the arithmetic and logic unit (ALU), the fundamental component of the central processing unit (CPU) in computers. By computing the carry signal in advance with respect to the input values provided to the adders, the carry look ahead adder is employed in this study to solve the drawback of ripple carry adders. When approximative findings are sufficient for the systems, reconfigurable adders are utilized to process the media signals. For the effective design of any system with low power, area, and high operation speed, approximate adders are used. Using Xilinx ISE design version 12, the precise and approximate operating modes were compared, and the findings showed a speed improvement of between 70 to 75 percent.

Keywords: Approximate computing, Configurability, Fast adders, Exact and Approximate Operating Modes

AREA-DELAY-POWER-EFFICIENT GDI ARCHITECTURE SELECT ADDER TO CARRY

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ABSTRACT

The signal processing system is extremely popular in this day and age. All of the primary circuits in the digital signal processing system are built around the adder, which is the fundamental building block. Today's needs for lowering the delay, space, and power consumption of adder circuits boost the overall efficiency of the system, propelling it to the next stage of technological development. Despite the fact that the Carry Select Adder (CSLA) takes up more space, it is being utilised in place of the ripple carry adder in order to reduce propagation delays. In other models, a Carry Select Adder based on a Binary to Excess-I Converter (BEC) was utilised, which required fewer logic resources than a standard CSLA and was hence more energy efficient. As a result, the delay was not significantly decreased. It is necessary to apply the reduced logic CSLA in order to overcome this challenge. However, by employing the Gate Diffusion Input (GDI) Technique, it is possible to achieve a lower delay than the previously suggested reduced logic CSLA. The suggested technique consumes less power and has a shorter propagation latency than existing techniques. In addition, the number of transistors necessary for the circuit was reduced by implementing this GDI-based CSLA. It is possible to create an efficient adder using this technique, as seen above.

Keywords: Adder; Carry Select; GDI Architecture



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IOT BASED TOXIC ENVIRONMENT MONITORING ROBOT

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ABSTRACT

Generally industries are located in the outside cities vehicle use, industrialization and urbanization which results in harmful effects on human wellbeing by directly influencing health of population exposed to it. Poor environmental conditions can lead to severe health problems. Nowadays people are affected by harmful gases in perilous environment. The important of this paper is observing harmful environmental conditions for safety applications. In this paper we detailed a survey on toxic environment monitoring based on different technologies using sensors. This work is used for monitoring and controlling hazardous environment, chemical industries, industries area. Controlling & monitoring purposes using internet of things. Industrial safety industrial working people safety & industries surrounding living people safety to avoid major industries accident or any industries accident occurring time give alert warning to fire station, police station, hospital etc.

ECOEDGE: SUSTAINABLE AGRICULTURE REVOLUTION THROUGH IOT-ENABLED EDGE COMPUTING

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ABSTRACT

The agricultural industry is currently at the forefront of a significant transformation, marked by the integration of advanced technologies driving sustainable progress. The implementation of the Internet of Things (IoT) has ushered in a data-driven era in agriculture, enabling precise and cost-effective farm management while upholding environmental sustainability. Conventional agricultural technologies, such as IoT and cloud computing, hold the potential to revolutionize the agriculture sector by introducing robotics and artificial intelligence. While these developments hold great promise, they also come with their unique set of challenges like redundant data and latency problems within wireless sensor networks (WSNs). These challenges not only lead to increased time and energy consumption but also pose impediments to the advancement of our farming community. In response, this paper introduces , which leverages IoT-enabled edge computing to provide real-time data processing and decision-making capabilities at the farm level. The key focus areas include precision agriculture, resource optimization, and improved data analytics, leading to minimized waste, reduced environmental impact, and maximized crop yield and quality. represents a significant step forward in advancing sustainable agriculture practices, aligning with the growing need for innovative solutions in the face of increasing global food demand and environmental challenges. underscores the potential of IoT-enabled edge computing as a catalyst for transformation in agriculture, providing a multitude of benefits to both individual farmers and the agricultural industry as a whole as such advancements are pivotal in our collective pursuit of a more environmentally responsible world and a sustainable future.

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Abstract

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In many hospitals, doctors attend to patients either once or twice per day. A situation may arise in which the patient's health worsens during the time if a doctor is una... [View more](#)

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In many hospitals, doctors attend to patients either once or twice per day. A situation may arise in which the patient's health worsens during the time if a doctor is unavailable to the patient, and the patient may die as a result. Most problems in today's world are caused by a lack of efficient therapy and appropriate monitoring within the required time period. To solve these issues with the current method, this research study proposes a health monitoring framework using wireless technology, in which the patient's health is followed and communicated to the physician throughout the entire day. The Internet of Things (IoT) is an emergent technology that uses wireless networking phenomenon to transmit data. The advantage of using IoT-based healthcare monitoring systems is that they can assess many physiological characteristics of the human body and is simpler, more accurate, and more precise than traditional methods. Sensors are utilized to measure the patient's bodily functions over a wireless network. The data from the sensors is gathered and communicated to the cloud through a Wi-Fi module linked to the microprocessor. The data is stored in the cloud, and feedback mechanisms are done on the stored data, which may be analyzed distantly by a physician. Virtual monitoring relieves doctors' workload and offers patients accurate health conditions. The proposed system results suggest that the physiological sensor is more effective in terms of availability and portability. The proposed system is easy to use, will save money, and will change how hospitals work in the future.

Published in: 2023 International Conference on Inventive Computation Technologies (ICICT)

Date of Conference: 26-28 April 2023

DOI: 10.1109/ICICT57646.2023.10134482

Date Added to IEEE Xplore: 01 June 2023

Publisher: IEEE

► **ISBN Information:**

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Document Sections

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Abstract

Abstract: This article elaborates on the quadruple-band Toyota logo-shaped wideband antenna with a limited Ground Plane that is suited for a range of wireless applications. The ant... [View more](#)

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This article elaborates on the quadruple-band Toyota logo-shaped wideband antenna with a limited Ground Plane that is suited for a range of wireless applications. The antenna is made of a readily accessible and inexpensive FR4 (Flame Retardant) substrate. The complete dimension of this antenna is $45 \times 34 \times 1.6 \text{ mm}^3$. The antenna patch portion resembles the logo of Toyota. The recommended antenna design has started with two outer circular rings initially. Subsequently, the inner two rings are formed and merged with outer circular rings. Oval-shaped two rings are formed and merged with the outer ring structure. This design aims to provide wide-band operation between 2 GHz and 6.4 GHz. The resonating frequencies are 2.4 GHz, 3.88 GHz, 5.7 GHz, and 9.66 GHz. "Advanced Design Software" (ADS) is used to perform the antenna design and various important parameters like gain, directivity, and return loss are explored.

Published in: 2023 3rd International Conference on Pervasive Computing and Social Networking (ICPCSN)

Date of Conference: 19-20 June 2023

INSPEC Accession Number: 23822458

Date Added to IEEE Xplore: 04 October 2023

DOI: 10.1109/ICPCSN58827.2023.00211

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Image Denoising Using Modified Singular Value Decomposition Method

Mohan S¹, T Prabu², Mohammed Kasim M³

1,2,3 - Assistant Professor/ECE, Nehru Institute of Engineering and Technology, India

Abstract - Noises in the image leads to pixels degradation and the quality of the image will be reduced. Removal of noises (Gaussian, Poisson and Speckle) from the image leads to develop the better image. Lowering of radiation dose leads to deterioration of quality of the image. Hence, we proposed the new modified Singular Value Decomposition Method for image denoising. In addition to that Inverse Discrete Wavelet Transform and Singular Value Decomposition is applied at the post processing step to remove the noise in the filtered image. Parameters are carefully formulated and evaluated. Experimental results show the better improvement in image denoising.

Index Terms – Modified Singular Value Decomposition, Peak Signal to Noise Ratio (PSNR), Root Means Square Error (RMSE), Structural Similarity Index (SSIM).

1. INTRODUCTION

Computer Tomography (CT) is widely used in diagnostic, industrial and other applications. One of the challenging tasks in image processing is noise removal. Noises are affecting the visual appearance of the images. Poor generation of transmission in electronic circuits leads to generation of gaussian noise. Poisson noise originates due to movement of packets (Photons). Speckle

noise is generated by backscattered signals which affect the image interpretation. Noises will be introduced in the image during transmission or acquisition or hardware issues. General methods of reducing the radiation dose are reducing tube voltage, tube current and scanning time. Quantification of the noise will be determined by the corrupted pixel in the image. If the pixel range becomes high then the quality of image increases and it reduces the noise. The image quality has been represented by distance between the pixels. Over the past decades, many algorithms and techniques were proposed: Fractional Integral filtering^{[1]-[3]}, KSVD^[4], BM3D^{[5][6]}, Convolutional Neural Network (CNN)^[7], etc. Various noise detectors are also introduced for the removal of noise i.e., DWM^[8], RILD-EPR^[9], ROR-NLM^[10]. Existing algorithms are having less PSNR value, high RMSE and during filtering process additional pixels will be neglected i.e., loss of original information. To overcome these problems, a modified algorithm is proposed. This proposed algorithm shows improved Peak Signal to Noise Ratio (PSNR) and reduced Root Means Square Error (RMSE).

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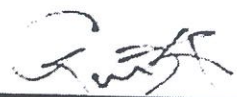
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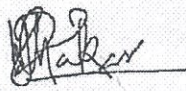



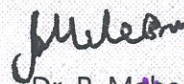
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Design of Intelligent Wireless Networks for Optimized Spectrum Utilization with Cognitive Radio

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^{2*}Assistant Professor, Department of ECE, Erode Sengunthar Engineering College, Erode.
³Professor, Department of ECE, Akshaya College of Engineering and Technology, Coimbatore.
Professor, Department of ECE, Nehru Institute of Engineering and Technology, Coimbatore.
Assistant Professor, Department of ECE, KIT-Kalaingar Karunanidhi Institute of Technology, Coimbatore-641002.

Abstract— Cognitive Radio technology represents a breakthrough in radio and network technologies by enabling adaptive and intelligent operations. Unlike traditional radios, Cognitive Radio has the capability to automatically detect available channels within the wireless spectrum and adjust transmission parameters accordingly. This adaptability allows for increased concurrent communications and improved radio operating behavior. Operating within its electromagnetic environment, Cognitive Radio senses the surrounding conditions and autonomously adjusts crucial parameters such as throughput, interference, and interoperability, thereby modifying system operations.

These challenges include managing fluctuations in spectrum resources, accounting for channel quality variations due to frequency selectivity, and mitigating interference resulting from different transmit power levels. To address these issues, Lagrangian Multipliers are utilized to enhance frequency sensing capabilities. Additionally, the system's throughput is improved through the employment of Proportional Fair scheduling algorithms. By integrating Cognitive Radio into the design of wireless networks, a new paradigm emerges, facilitating intelligent and efficient spectrum utilization. This abstract highlights the transformative potential of Cognitive Radio technology in optimizing wireless network performance while addressing the emerging challenges of the modern wireless landscape.

Keywords— Cognitive Radio, Intelligent Wireless Networks, Optimized Spectrum Utilization, Adaptive Radio Technology, Frequency Sensing, Proportional Fair Scheduling Algorithms

I. INTRODUCTION

Wireless communication, utilizing technologies such as radio waves, enables the transfer of information over varying distances, from short-range applications like television to long-range deep-space radio communications. It encompasses a wide range of devices and systems, including two-way radios, cellular phones, GPS units, and wireless networks. Wireless operations offer the advantage of enabling long-distance communication without the need for physical wires, making it a crucial component of modern telecommunications. However, the availability of radio spectrum, the essential resource for wireless communication, is limited and regulated by governments. The utilization of spectrum resources is often imbalanced, with certain frequency bands being underutilized. Addressing this issue, Cognitive Radio technology emerges as a means to maximize spectrum utility. By dynamically adapting to the available spectrum, Cognitive Radio optimizes resource utilization and enhances spectrum efficiency.

The concept of Cognitive Radio extends its applications to various advanced techniques like WiMAX, Long Term Evolution (LTE), and future 3G and 4G networks. The architecture of a CRN consists of primary and secondary networks, with Cognitive Radio aiming to utilize unused spectrum resources allocated to TV bands. It allows secondary users to access unoccupied spectrum portions, improving overall spectrum efficiency. A Cognitive Radio possesses intelligence and adaptability, capable of dynamically programming and configuring its transceiver to utilize the best wireless channels.

The architecture of a Cognitive Radio system comprises two major subsystems: the cognitive unit and the flexible Software-Defined Radio (SDR) unit. The cognitive unit utilizes inputs from the radio's internal state and operating environment to make decisions and optimize performance. The policy engine ensures that the cognitive engine's solutions comply with regulatory rules and external policies. It is important to note that a cognitive radio system may include distributed components across a network rather than being confined to a single device. This comprehensive architecture, incorporating cognitive and policy engines, enables intelligent decision-making and efficient spectrum management in Cognitive Radio systems.

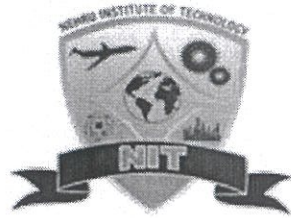
In summary, Cognitive Radio technology represents a promising approach to optimize spectrum utilization and enhance wireless communication systems. By leveraging its intelligence and adaptability, Cognitive Radio aims to address the challenges of limited spectrum resources and improve overall spectrum efficiency in the ever-evolving wireless landscape.

II. LITERATURE SURVEY

In recent years, the increasing demand for wireless applications has highlighted the issue of spectrum insufficiency, while certain licensed spectrum bands remain underutilized [11]. Cognitive radio technology has emerged as a solution to enhance spectrum utilization by allowing unlicensed users to access unoccupied spectrum portions [2]. The concept of cognitive radio and its language for cognitive functions have been investigated, along with detailed expositions of signal processing and adaptive procedures.

This literature survey explores unique characteristics across different layers, including the physics layer, transport layer, and cross-layer design [9]. The spectrum of cognitive radio presents new challenges that need to be addressed. Consequently, cognitive radio is a prominent research topic in recent years, and various models have been proposed to study wireless communication systems with cognitive radio [6]. The main objective of cognitive radio is to enable intelligent communication technology through processes such as observation, orientation, planning, learning, decision-making, and action. Receivers gather channel quality and interference information from the surrounding radio environment through observation, while

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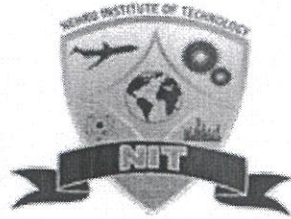
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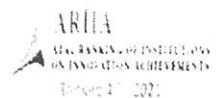
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Abstract



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- III. Methods
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Abstract:

Noise cancellation and abnormality detection in ECG signal is a tedious task in real time environment. These noises arise due to power line interference and human movements. There are various digital filters readily available to reduce noise in ECG signal but the computational cost and complexity is high. To overcome this drawback, adaptive filters are introduced and abnormal ECG signal is also detected using adaptive algorithms. This paper talks about multilevel pipelining and cutest retiming techniques in adaptive filters, for example, LMS (Least mean square), BLMS (Block LMS), NLMS (Normalized LMS), BNLMS (Block NLMS), VSLMS (Variable advance size LMS) and BVSLMS (Block VSLMS) calculations. This paper also classifies various abnormal ECG signal and detects the type of disease. It is observed that there is 15% increase in SNR and 3% reduction in MSE compared to the conventional algorithms.

Published in: 2023 International Conference on Applied Intelligence and Sustainable Computing (ICAISC)

Date of Conference: 16-17 June 2023

INSPEC Accession Number: 23547617

Date Added to IEEE Xplore: 09 August 2023

DOI: 10.1109/ICAISC58445.2023.10199232

ISBN Information:

Publisher: IEEE

Conference Location: Dharwad, India



AUTOMATED HEALTH NURSING SYSTEMS FOR ELDERLY CARE

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ABSTRACT

People's inherent ability tends to deteriorate as they get older, and their health problems get more complicated and chronic. As people get older, multimorbidity—the simultaneous occurrence of many chronic conditions—becomes more common. Health systems around the world struggle to adapt to the great range of physical and mental abilities of older people and to encourage good trajectories of healthy aging from an early age. The abilities of an older person can change quickly—in some circumstances, over the course of hours. Care systems struggle to adapt rapidly enough to meet a person's changing demands. As a result of the impending lack of healthcare workers qualified to provide for senior citizens, adopting elder-friendly technologies may level the playing field

Keywords: Decision support systems, IoT methods, smart homes, machine learning, artificial intelligence, data mining

AUTOMATIC DISEASE DETECTION OF POWDERY AND DOWNY MILDEW USING IMAGE RECOGNITION BASED ON CONVOLUTIONAL NEURAL NETWORKS FOR IMAGE PROCESSING

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ABSTRACT

Agriculture contributes significantly to the economy and is regarded as the backbone of the economy in developing nations. Maharashtra, Karnataka, Tamil Nadu, and Mizoram are the principal grape-growing states. This study uses digital image processing techniques to locate and classify downy and powdery mildew diseases in grape plants. Using a high resolution digital camera, normal grape leaf photographs as well as images of diseased grape leaves affected by powdery mildew are taken from several grape plants and stored in JPEG format. Utilizing MATLAB, the digital photographs of the grape leaves are analyzed. The RGB components of the grape leaves are separated using the RGB encoding technique.

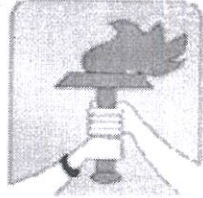
Keywords: Digital Image, Diseases, Grape Plants, High Resolution, Encoding Technique

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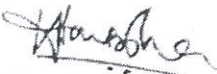
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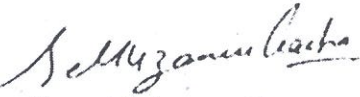
Analysis of Electromyography Signals for Control of Mechanical Prosthesis using Machine Learning Techniques

at the

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A NOVEL AREA EFFICIENT TEO BASED REVERSIBLE LOGIC GATES IN
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D.P. MANIARASAN
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at the 7th International Conference on I-SMAC (IoT in Social, Mobile, Analytics, and Cloud) -I-SMAC 2023 held at Purwanchal Campus, Institute of Engineering, Tribhuvan University, Nepal, from 11th to 13th October 2023. This certificate acknowledges your valuable contribution to the conference and your commitment to advancing the fields of IoT in Social, Mobile, Analytics, and Cloud.

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A Novel Area Efficient TIEO based Reversible Logic Gates in QCA Paradigm

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Abstract— One of the novel emerging nanotechnologies that appear to be excellent replacements for CMOS(Complementary Metal Oxide Semiconductor) technology is the QCA(Quantum dot Cellular Automata). There are many aspects of QCA technology that can be optimized, including the extremely low power consumption, quick switching times, and dense structures. In this work an area efficient QCA design of a reversible gate is introduced and to examine the usefulness of the suggested XOR gate. A revolutionary exclusive-OR (XOR) gate with eight cells introduced in this work. A novel plan of reversible gate is designed based on novel three input EXOR gate. Compared to foregoing QCA plans, the suggested layout design are applied with the least amount of QCA cells and occupies less with minimum delay. The submitted plan does not use of any wire crossing techniques. The proposed design accuracy and functionality is verified using QCADesigner Tool. The proposed design power analysis was done by QCADesigner E tool.

Keywords— Two input EXOR gate, Three input EXOR Gate, QCA designer Tool, QCA Designer E tool, Reversible Circuits, Reversible gates

I. INTRODUCTION

The physical precincts of CMOS skill will be get hold of in the modern era, and this technology faces multiple scale issues in Nano-scale design. Numerous studies have been conducted to identify potential replacements for conventional CMOS technology that are also suited for constructing nanoscale circuits. Numerous QCA-based XOR gates' power consumption for the newly created, three-input XOR gate has been evaluated. Efficiency loss must be taken into account while designing a digital framework. R.Landauer[1] demonstrated energy loss caused by data loss in circuits and systems built utilizing irreversible logic circuits. Bennett demonstrates that reversible circuits must be used when

building a circuit in order to prevent the loss of $kT \ln 2$ joules of energy. Information fall is not possible in reversible logic circuits, hence combinational circuits are preferred.

II. RELATED WORKS

QCA have been suggested as an alternative for CMOS technology [2]. Its fundamental unit is the QCA cell. At the vertices of every QCA chamber are four quantum dots and dual electrons are settled in a rectangular [3, 4, 5]. Traditional interconnects are not required for the QCA design. Nano structures known as quantum dots are made from common semiconductive materials. Models of these structures resemble quantum wells. Three components are essential to QCA-based designs: the inverter gate, majority gate and QCA wire. Information can be transmitted from one end to the other using a collection of QCA cells acting as a cable [6, 7]. The cell, wire, inverter, and majority gate are the QCA devices that are most frequently utilised. One of the basic and necessary element is QCA wire. A group of QCA cells make up the QCA wire. These QCA cells are arranged in a row for aesthetic purposes. Information is transmitted through the wire by the grouping of QCA cells from one terminal point to the other point [8]. Three inputs, one output, and five cells make up the majority gate with three inputs. The scheme cell that executes the design is known as the centre cell [9]. Some of the greatest crucial fundamental logic components in QCA is an inverter gate. The inverter gate has been used by QCA technology to create a variety of circuits [4, 9, 10].

Reversible logic has been shown in various researches [11, 12] to be a potential work out model for quantum computing. The primary benefit of reversible logic circuits is that there is no information loss. There are several reversible logic gates,

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Protek Publications
F3, Saswatha Block, No.39, Nethaji Street,
Kamarajapuram
Chennai – 600073
E-mail: protekpublications@gmail.com

Industrial IoT and Automation Technologies

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First Edition: May 2024

ISBN : 978-93-6228-254-5

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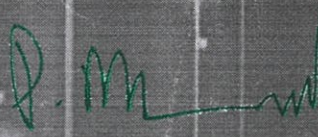
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EMBEDDED NETWORKING AND AUTOMATION TECHNOLOGY


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F3, Saswatha Block, No.39, Nethaji Street,
Kamarajapuram
Chennai – 600073
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Embedded Networking and Automation Technology

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First Edition: May 2024

ISBN : 978-93-6228-317-7

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CHAPTER 39

Implementation of Advanced E-Voting Application Using Android Platform

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ABSTRACT

The project is to develop an Online E-Voting prototype system utilizing the Paillier Threshold Cryptosystem (PTC) web services and applying MESE processes to it in an attempt to find possible solutions to further improve existing PTC web services. Online voting (e-voting) would be more convenient, relatively secure and utilize fewer resources. To be able to access e-voting system from a personal, business or even a public library computer may be more convenient for many people needing to vote. This could potentially be a solution for the low voter turnout at the polls. However, it is still questionable whether elections can be conducted online or over the internet due to the high level of concern over security. Systems considered to be apart of e-voting are Machine readable (create, read, count) ballot systems, Direct Recording Electronic (DRE) systems, voting using mobile devices and internet voting. As part of this project, an online e-voting prototype system has been constructed using the demonstration windows application tool created for PTC web services. A pre-computation process is applied due to efficiency improvements. The details of this optimization and improvement in the web services process will be explained in the subsequent sections. In addition to the application of the pre-computation to the process, the Chinese Remainder Theorem can be applied during the decryption process. This change might not be as noticeable as the pre-computation, however it will make it more efficient as the calculation gets easier.

Keywords: *Relatively secure and utilize fewer resources, Ballot systems, Direct Recording Electronic (DRE) systems,*

INTRODUCTION

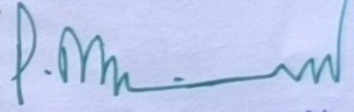
In this project, PTC Web services are used. In this section, I will explain how the PTC web services work. Efficiency improvement that will be applied to the PTC web services required some changes on some of

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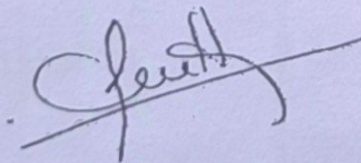
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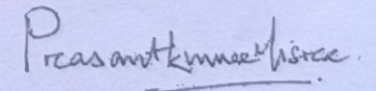
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presented the paper titled Designing of Hybrid Renewable Energy Systems using Adaptive Switched Z-Source Converter and Prediction with AGO-RNN authored by R Kannan (Nehru Institute of Engineering and Technology); Karthik D Prabhu (Ramco Institute of Technology); Krishnapriya S (Sri Eshwar College of Engineering, Coimbatore); Arumuga Babu M (Christ the King Engineering College, Coimbatore); Bhuvanesh Ananthan (PSN College of Engineering and Technology); Prabhakaran D (PSN College of Engineering and Technology) in the 2024 IEEE International Conference on Contemporary Computing and Communications (InC4) Organised by the Department of Computer Science and Engineering, CHRIST (Deemed to be University), Kengeri Campus, Bangalore -560 074 during March 15-16, 2024.



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ENERGY, EXERGY, AND ECONOMIC ANALYSIS OF SOLAR STILLS

An Experimental
Investigation


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DR. R. KANNAN
PROF. V. RAMKUMAR
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CHAPTER - VII

SMART AUTOMATION: IOT BASED ENERGY CONSERVING ELECTRICAL SYSTEM FOR BIG HALLS THROUGH SMART SURVEILLANCE

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ABSTRACT

Electricity has become the fundamental requirement of human life. One of the major problems in the most populated and developing countries like India, is Energy or Power crisis. Hence, there is a pressing need to conserve power. There are many simple ways to save electricity, like using the electric and electronic gadgets whenever and wherever needed and switching them off, while not in use. But in places such as large auditoriums and meeting halls, there will be a fan or an Air-conditioner keeps running in unmanned area too, even before the people arrive. This contributes to a considerable amount of electricity wastage. There are many ways to prevent this wastage, like, installing IR sensors to detect people etc. These methods are quite costlier and complex for larger areas. Hence, here it proposes a new method of controlling the power supply of auditoriums using, Image Processing. Here first it takes a reference image of an empty auditorium and any change in that reference image is detected and then according to that change respective equipments alone are turned on. Thus, power wastage is controlled. This is dual usage system in which a camera is used for detecting people as well as surveillance purposes. This is very simple, efficient, and cheaper technique to save energy. Another big advantage is it can extend this up to applications like home automation etc.

ISBN: 978-81-963865-2-8
<https://doi.org/10.54368/qpb.2023.1.7>

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CHAPTER 2

An experimental investigation on CI engine using biodiesel blends as fuel

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ABSTRACT

*Biodiesel developed from non-edible oils promise to be a very important prospective alternative fuel for diesel engines in India. Vegetable oil has slightly lower calorific value than diesel fuel. This can be attributed to presence of oxygen in the molecules of vegetable oils. Vegetable oil has cetane number about 35 to 40 depending upon the composition where as diesel fuel has a cetane number around 45. Certain functional groups and poor volatility is responsible for their comparatively low cetane number. Increasing the cetane number of diesel fuel, either by lowering aromatic content of the fuel through hydro treating and by addition of chemical cetane improvers, is a cost-effective option to reduce diesel engine emissions. *Jatropha - curcas* as a non-edible methyl ester biodiesel fuel source is used to run single cylinder, four-stroke diesel engine. An attempt has been made in this paper to give an overview by comparing its performance and emission characteristics with diesel – biodiesel blend of B20 & B50. The blends of *Jatropha* methyl ester and diesel could be successfully used in diesel engines without any modification with acceptable performance and better emissions.*

Keywords: Biodiesel, Jatropha, Emission etc

INTRODUCTION

The ever increasing number of automobiles has lead to increase in demand of fossil fuels (petroleum). The increasing cost of petroleum is another concern for developing countries as it will increase their import bill. The world is also presently confronted with the twin crisis of fossil fuel depletion and environmental degradation. Fossil fuels have limited life and the ever increasing cost of these fuels has led to the search of alternative renewable fuels for ensuring energy security and environmental protection. For developing countries fuels of bio-origin can provide a feasible solution to this crisis. Certain edible oils such as cottonseed, palm, sunflower, rapeseed can be used in diesel engines. For longer life of the engines these oils cannot be used straightway. The viscosity (more than 10 times that of diesel fuel)





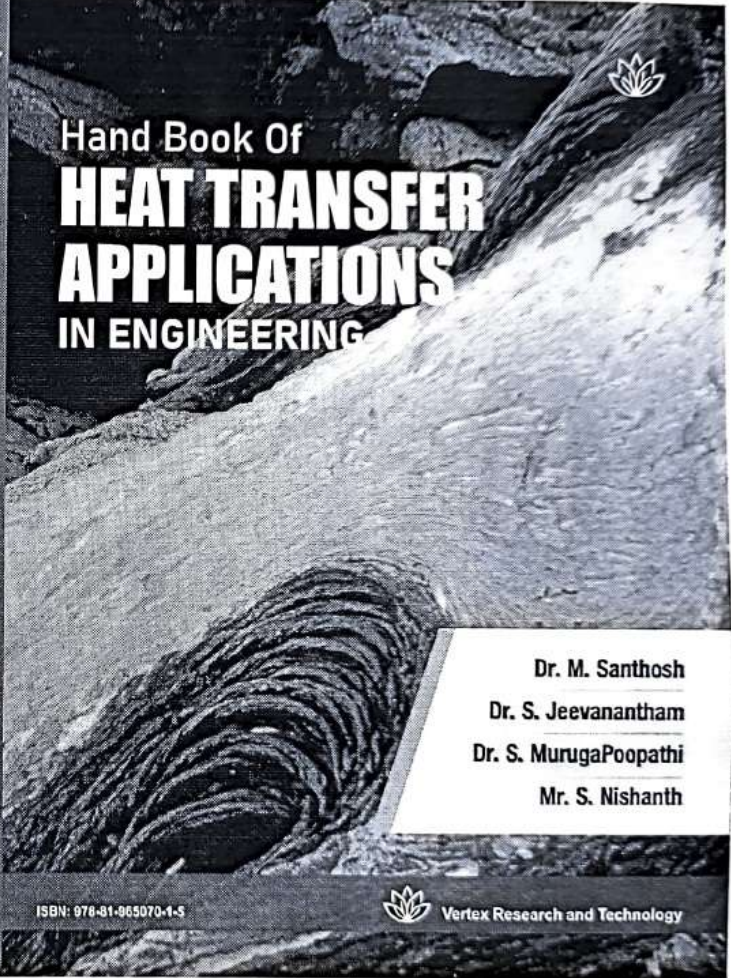
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CHAPTER 3

Aircrafts Winglets Analysis in CFD

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ABSTRACT

The main purpose of this project is learning and analysing the aerodynamics performance of Wing and different types of winglets with wings. The aerofoils BAC 449/450/451 designed in solid works and gone through flow simulation in solid works. The best aerodynamically performed aerofoil NACA BAC 449/450/451 in terms of aerodynamic efficiency chosen for wing construction which has dimensions of Boeing 737. The three wing models with different winglets were carried out. Wing with Blended winglet, Ranked winglet and Twin wing simulated to find the aerodynamic efficiency. In order to found more efficient wing with winglets, designs of Blended, Twin and Ranked winglets modified. Blended winglet and Twin winglet with Ranked winglet designed. These 3 wings with winglets studied and simulated in STAR CCM+. As a result of this project it has found that adding the winglet to the wing increase the aerodynamic efficiency of wing in terms of CI/Cd.

Keywords: *aerofoils, Twin and Ranked winglets, Ranked winglets, Twin wing simulated etc*

INTRODUCTION

A winglet is a device used to improve the efficiency of aircraft by lowering the lift induced drag caused by wingtip vortices. It is a vertical or angled extension at the tips of each wing. Winglets improve efficiency by diffusing the shed wingtip vortex, which in turn reduces the drag due to lift and improves the wing's lift over drag ratio. Winglets increase the effective aspect ratio of a wing without adding greatly to the structural stress and hence necessary weight of its structure. Research into winglet technology for commercial aviation was pioneered by Richard Whitcomb in the mid 1970's. Small and nearly vertical fins were installed on a KC-135A and flights were tested in 1979 and 1980. Whitcomb revealed that in full size aircraft, winglets can provide improvements in efficiency of more than 7%. For airlines, this translates into millions of dollars in fuel costs. Winglets are being incorporated into most new transport aircraft, including business jets, the Boeing 747-400, airliners, and military transport. Many other researchers have investigated their behaviour, designing winglets for commercial and general aviation aircraft as well as for sailplanes. Furthermore, the added friction and interference drag has to be cancelled out by the forward thrust generated by the winglet lift. The upward angle (or cant) of the winglet, its inward or outward angle (or toe), as well as its size and shape are critical for correct performance and are

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CHAPTER 37

IOT Based Man to Machine Communication for Suffrage System

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ABSTRACT

In every election, the election commission is facing a lot of troubles and different type of problems throughout the election. The most familiar issue faced by the election commission is the confirmation with respect to the arrangement of casting the votes, duplication or illegal casting of votes. Currently used Electronic Voter Machines [EVM], which led to many cases that testified the security of both Electronic Voter Machine (EVM) and the Voter Verified Paper Audit (VVPAT) system. Some cases infer that these machines are tampered and the votes are hacked from one party to another. In this paper, a secure and new voting system is developed to improve the existing voting system using iris recognition. Iris one of the most secure biometric of person identification. The main goal of this article is to avoid duplication of casting votes. This project focuses on sophisticated voting system using finger print and iris. This project focuses on sophisticated voting system using iris and Finger print technologies. The voting process is carried out only if the finger print matches with the stored value and We are scanning individual's iris and storing it in a voter's database by giving appropriate AADHAR card no. If a person comes for voting, then his or her iris is detected and this detected image is compared to image in voter's database. When the iris is detected we get the information about the voter in our PC, then that information is compared to the voter's finger print. If both the details get matched, then the person is allowed to vote. The current voting system is not secure, there are some individuals who give dummy votes or they are registered at more than one place. In this paper the Security of the voter is discussed and in general and the focus is on making the voting system more robust and reliable by eliminating dummy voters. After successful completion of voting the details of voting is stored in cloud using IoT. The data are collected and calculated automatically. The total voting and data are calculated automatically and the result is shown in IoT at the End of the Day itself. It will reduce the storage of voting machine for certain no of days and also reduce change of voting machine by illegal person

Keywords: *E-Voter Machine, Internet of Things (IoT), Cloud Server, Biometric Authentication. etc*

CHAPTER 6

An Analysis of Cryptographic Role Based Access Control Mechanism for Cloud Using ESMTP

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ABSTRACT

Cloud computing has been envisioned as the next generation information technology (IT) infrastructure for enterprises, due to its long list of unprecedented advantages in the IT history, on-demand self-services, ubiquitous network access, location independent resource pooling, rapid response, elastic, Coimbatore-641 105. pricing and transference of risk. In this project, we propose a secure data sharing scheme, which can achieve secure key distribution and data sharing for dynamic group. The main contributions of our scheme include: We provide a secure way for key distribution without any secure communication channels. The users can securely obtain their private keys from group manager without any Certificate Authorities due to the verification for the public key of the user. Our scheme can achieve fine-grained access control, with the help of the group user list, any user in the group can use the source in the cloud and revoked users cannot access the cloud again after they are revoked. We propose a secure data sharing scheme which can be protected from collusion attack. The revoked users can not be able to get the original data files once they are revoked even if they conspire with the un-trusted cloud. Our scheme can achieve secure user revocation with the help of polynomial function. Our scheme is able to support dynamic groups efficiently, when a new user joins in the group or a user is revoked from the group, the private keys of the other users do not need to be recomputed and updated.

Keywords: Cloud Computing, Security, Data sharing, Multi-Start Anti-Collusion, ESTMP..

INTRODUCTION

Distributed computing, or something being in the cloud, is an expression used to depict an assortment of various sorts of processing ideas

CHAPTER 38

A Review of Advanced E-Voting Application Using Android Platform

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ABSTRACT

The proper execution of democratic rights has become linked to the availability and reliable functioning of advanced information and communication technology (ICT). While modern societies fully rely on ICT for business, work and leisure time activities, the use of ICT for democratic decision making is still in its infancy. Countries all over the World are examining e-voting for it has some striking advantages over traditional paper voting, including security for casting votes, accuracy of counting and analysing votes, options to conduct voting in a centralized and decentralized manner etc.

Another issue with e-voting is educating the voters. We cannot consider that all the users are computer gurus and they will use the e-voting systems easily. When e-voting is designed it needs to be easy to use. We should consider the fact that a large portion of the voting public has a very little knowledge about the computers. According to some of the research done by the Public Policy Institute of California over 50% of 18-44 years of age voters prefers Internet voting. Some recent studies have focused on e-voting, its security concerns and making it more secure. Below is the list of related literature about e-voting:

Keywords: *information and communication technology, e-voting, California etc*

INTRODUCTION

In traditional elections, a voter usually goes to the voting stations. After direct person-person verification with some IDs, the voter is allowed to vote. The voter is then given a ballot which allows a single vote. Once the ballot is used, it cannot be used again. However, this ballot must also be anonymous. The ballot must identify the voter as being permitted to vote, but not reveal their actual identity, and the voter must also be given assurances of this. Traditional polling methods trust a lot of parties during the election. The current methods require an attacker interact directly with the voting process to disrupt it. There is a greater chance of getting caught as there will be physical evidence in the traditional polling. On the other end, internet is harder to control and manage the security as Network and internet related attacks are more

CHAPTER 2

An experimental investigation on CI engine using biodiesel blends as fuel

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ABSTRACT

Biodiesel developed from non-edible oils promise to be a very important prospect for diesel engines in India. Vegetable oil has slightly lower calorific value than diesel fuel. This is attributed to presence of oxygen in the molecules of vegetable oils. Vegetable oil has a cetane number about 35 to 40 depending upon the composition where as diesel fuel has a cetane number about 40 to 50. Certain functional groups and poor volatility is responsible for their comparatively low cetane number. Increasing the cetane number of diesel fuel, either by lowering aromatic content of the fuel through hydro treating and by addition of chemical cetane improvers, is a cost-effective option to reduce diesel engine emissions. *Jatropha - curcas* as a non-edible methyl ester biodiesel fuel source is used to run single cylinder, four-stroke diesel engine. An attempt has been made in this paper to give an overview by comparing its performance and emission characteristics with diesel - biodiesel blend of B20 & B50. The blends of *Jatropha* methyl ester and diesel could be successfully used in diesel engines without any modification with acceptable performance and better emissions.

Keywords: Biodiesel, *Jatropha*, Emission etc

INTRODUCTION

The ever increasing number of automobiles has lead to increase in demand of fossil fuels (petroleum). The increasing cost of petroleum is another concern for developing countries as it will increase their import bill. The world is also presently confronted with the twin crisis of fossil fuel depletion and environmental degradation. Fossil fuels have limited life and the ever increasing cost of these fuels has led to the search of alternative renewable fuels for ensuring energy security and environmental protection. For developing countries fuels of bio-origin can provide a feasible solution to this crisis. Certain edible oils such as cottonseed, palm, sunflower, rapeseed can be used in diesel engines. For longer life of the engines these oils cannot be used straightway. The viscosity (more than 10 times that of diesel fuel)

CHAPTER 14

A study on Model Driven Security for Previous Decade

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ABSTRACT

Demonstrating support for state diagrams security issue. New documentation set that broadens UML state diagram documentation. Semantics required in state based security. Model driven security has turned into a dynamic range of exploration amid the previous decade. While numerous examination works have contributed fundamentally to this goal by stretching out famous demonstrating documentations to model security angles, there has been small displaying support for state-based perspectives of security issues. This framework attempts an investigative way to deal with propose another notational set that augments the UML (Unified Modeling Language) statecharts documentation. An online mechanical review was led to gauge the view of the new documentation as for its semantic straightforwardness and also its scope of demonstrating state based security viewpoints. The overview results show that the new documentation incorporates the arrangement of semantics required in a state based security displaying dialect and were to a great extent instinctive to utilize and comprehend gave next to no preparation. A subject-based observational assessment utilizing programming building experts was additionally directed to assess the psychological adequacy of the proposed documentation. The fundamental finding was that the new documentation is psychologically more powerful than the first notational set of UML statecharts as it permitted the subjects to peruse models made utilizing the new documentation much snappier.

Key words: State charts, Security modeling, Extended notation, Industrial survey, Subject-based experiment

CHAPTER 15

An Improved System for Heart Disease Prediction Using Artificial Neural Networks

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ABSTRACT

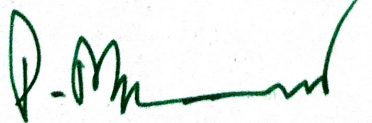
Heart disease is one of the most hazardous diseases to human which shows the world to lead all over the world since 15 years. Many researchers have been done with the techniques of knowledge discovery in various fields for Heart Disease prediction and have shown the acceptable accuracy levels. By investigating the survey of those accuracy levels, this research paper is proposed to not only to diagnose and predict the heart disease by achieving accuracy levels but also helps to prescribe the medicine successfully according to the predicted disease. In this paper assessment is done by two methodologies, Artificial Neural Network (ANN) by testing the datasets, Case Based Reasoning (CBR) image similarity search by mapping the similarities of images of old patients that are stored in database for heart disease prediction. The result of the evaluation of CBR is also implemented for prescribing medicine from the history of old patients with GRNN and RBF successfully.

Keywords— Artificial neural network (ANN), Case Based Reasoning (CBR), Generalized Regression Neural network (GRNN) and Radial basis function (RBF).

INTRODUCTION

Cardiovascular disease has become the major challenge for health care unit (doctors, medical centers, hospitals). Cardiovascular disease is a disease class which involves heart and blood vessels [21]. The American heart association has estimated that 17.3 million people are losing their life because of cardiovascular disease per year, particularly heart attacks, strokes, coronary heart disease, pulmonary heart disease etc. [22]. This global cause of death can increase the number to grow more than 23.6 million

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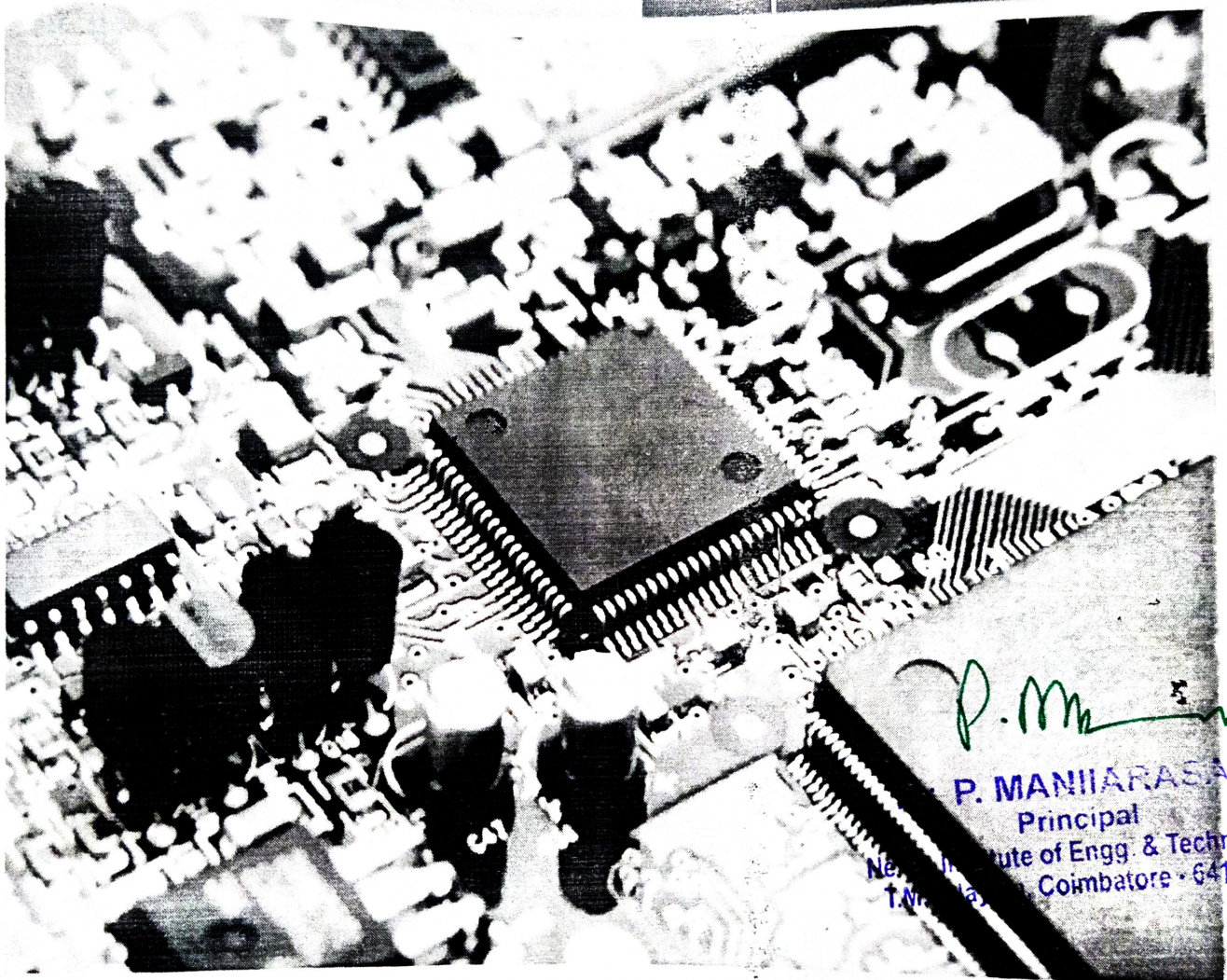


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and Robotics**



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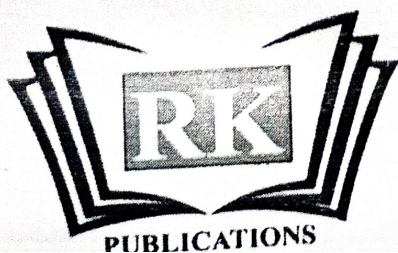
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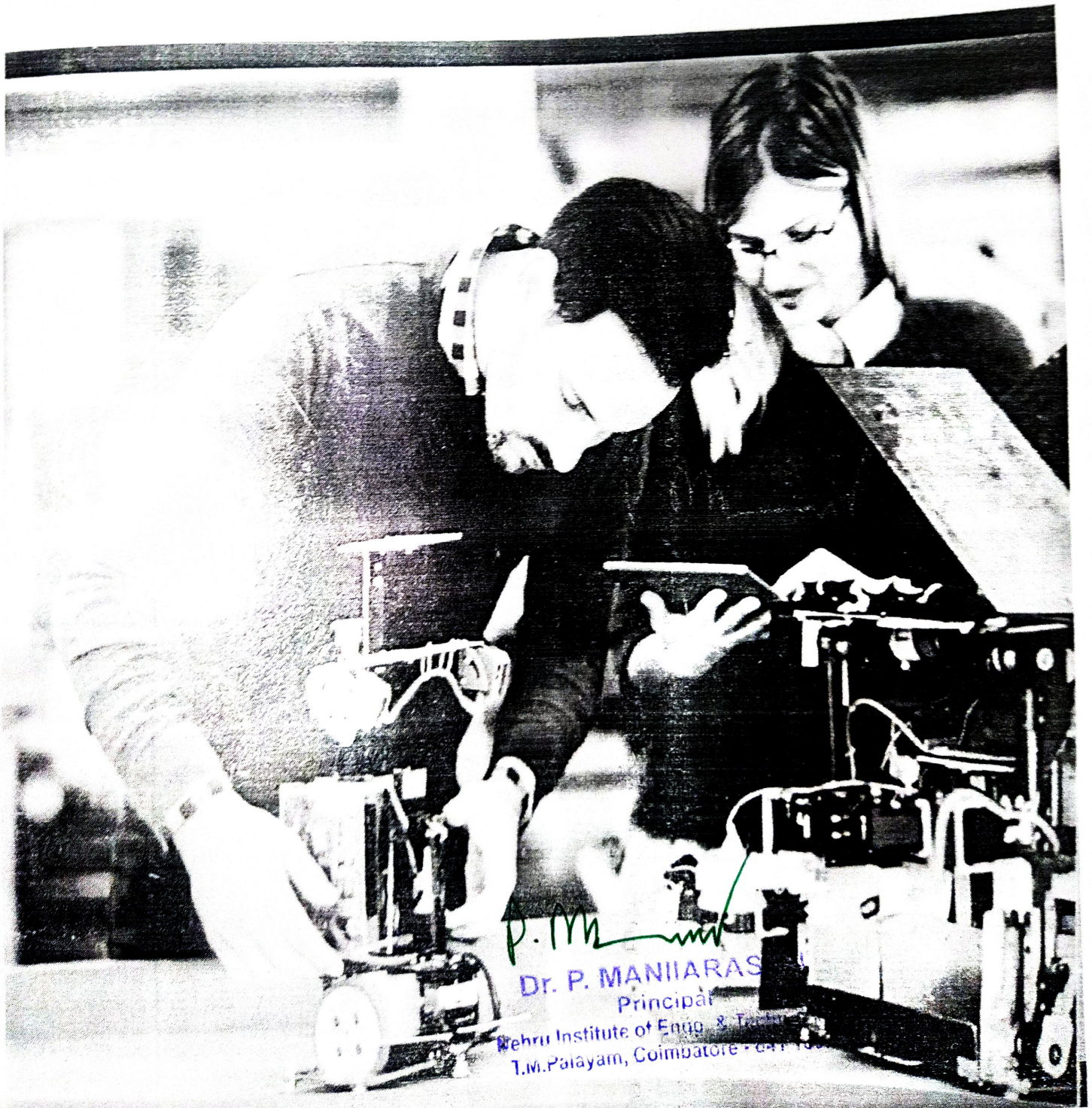


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ISBN 978-81-955656-5-8

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978-81-963836-2-6

Fundamentals of Management

Fundamentals of MANAGEMENT

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ISBN: 978-81-963836-2-6



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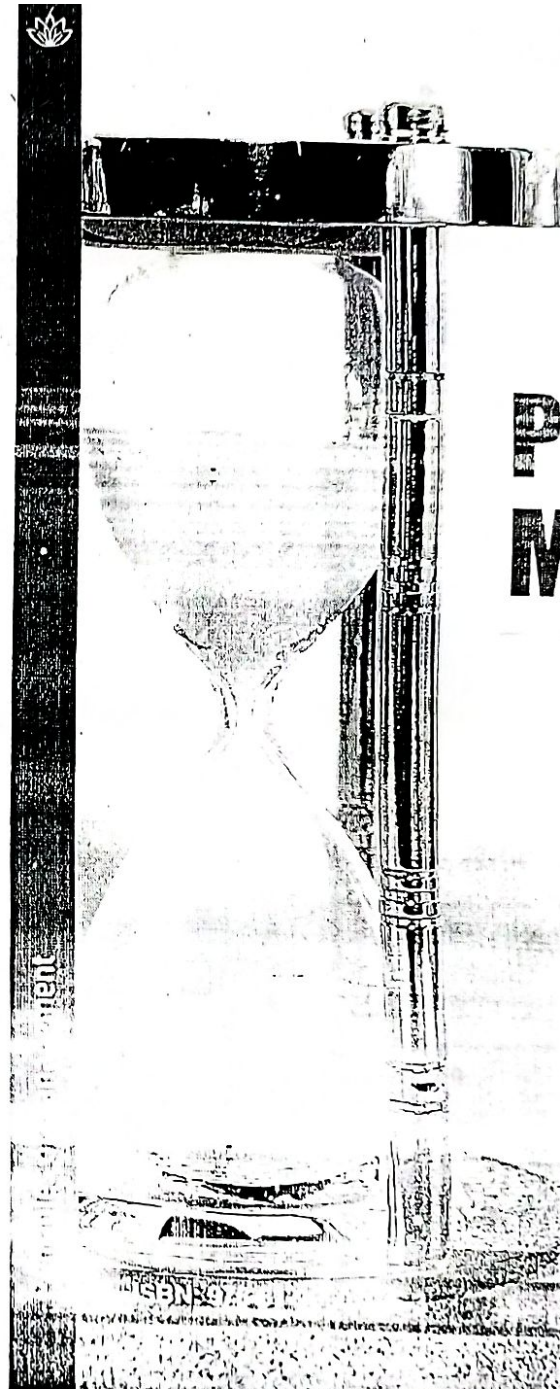


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கே.பி.ஆர் பொறியியல் மற்றும் தொழில்நுட்பக் கல்லூரி

கே.பி.ஆர் பொறியியல் மற்றும் தொழில்நுட்பக் கல்லூரி, 2009 ஆம் ஆண்டு, ஜவுளி, காற்றாலை மற்றும் சர்க்கரை உற்பத்தியில் இந்தியாவின் முன்னணி வணிக நிறுவனமான KPR குழுமத்தால் நிறுவப்பட்டது. பொறியியல் மற்றும் தொழில்நுட்பத் துறையில் நமது நாட்டை வலுப்படுத்த இளைய தலைமுறையினருக்கு தரமான கல்வியை வழங்குவதே இந்நிறுவனத்தின் முக்கிய நோக்கம். இந்த நிறுவனம் அகில இந்திய தொழில்நுட்பக் கல்விக் குழுவால் (AICTE) அங்கீகரிக்கப்பட்டு, சென்னை அண்ணா பல்கலைக்கழகத்தின் கீழ் தன்னாட்சி அந்தஸ்து பெற்றுள்ளது. மேலும் NAAC தரவரிசையில் 'A' மதிப்பு பெற்றுள்ளது.



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7th INTERNATIONAL CONFERENCE ON RECENT INNOVATIONS IN
MODERN SCIENCE AND TECHNOLOGY

(ICRIMST-2024)

09-11, ஜனவரி 2024

அமைப்பாளர்கள்

முனைவர். ஹ. சங்கர், முனைவர். ஆனந்த் ஸ்டீபன்,
முனைவர். ஈ. ரஞ்சித்குமார், முனைவர். மா. சிவானந்தம்,

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and morphology of electrode materials were examined by SEM and HRTEM images and rod shape morphology was observed. The thermal analysis (TGA & DTA) showed that as-prepared electrode materials were thermally stable. The electrochemical analysis exhibited that the highest capacitance of 246 F/g, 650 F/g and 172 F/g respectively for the pure WO₃ and Cd-S, Zn-S nanostructures. Their capacitance retention was also excellent (more than 90%). Finally, CdS loaded WO₃ nanocomposite was recommended as excellent electrode material for practical fabrication of supercapacitor devices

Keywords: Microwave, nanostructures, Tungsten, CdS and ZnS nanoparticles.

நுண்ணலை பயன்படுத்தி தயாரிக்கப்பட்ட நானோ கட்டமைப்புகளின்

மீதேக்கு திறன் பயன்பாடுகள்

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ஆய்வுச் சுருக்கம்

தற்போதைய ஆய்வு அறிக்கையானது நுண்ணலை உதவியுடன் ஈரமான வேதியியல் நுட்பத்தால் தூய மற்றும் CdS, ZnS சேர்த்து தயாரிக்கப்பட்ட நானோ கட்டமைப்புகளை குறித்து ஆராய்கிறது. அவ்வாறு தயாரிக்கப்பட்ட மின்முனை பொருட்களின் துகள் அளவானது ±20 நானோமீட்டர் என மதித்திடப்பட்டுள்ளது. மேலும் மின்முனை பொருட்களில் இருக்கக்கூடிய ரசாயன மூலகங்களை அதாவது WO₃, Cd-S மற்றும் Zn-S தொடர்புடையவைகளை அகசிவப்பு கதிர்களை கொண்டு ஆராயப்பட்டது. ஒளிப்படம் இடைவெளியானது மின்பகுளிகளுக்கு சாதகமானது என்று கண்டறியப்பட்டுள்ளது. மின்முனை பொருட்களின் மேற்பரப்பு மற்றும் உருவியல் படங்களானது தயாரிக்கப்பட்ட நானோ கட்டமைப்புகளின் தடி வடிவ உருவியலை தெளிவாக காட்டுகிறது. வெப்ப பகுப்பாய்வு முடிவானது தயாரிக்கப்பட்ட நானோ கட்டமைப்புகளின் வெப்ப நிலைத்தன்மையை எடுத்துக்காட்டுகிறது. மின்வேதியியல் பகுப்பாய்வானது தூய மற்றும் Cd-S, Zn-S நானோ கட்டமைப்புகளின் அதிகபட்ச மின் கொள்ளளவு முறையே 246 F/g, 650 F/g மற்றும் 172 F/g என்பதை வெளிப்படுத்தியது. மேலும் தயாரிக்கப்பட்ட மின்முனை பொருட்களின் மின் கொள்ளளவு தன்மையானது தோராயமாக 90 % க்கும் அதிகமாக இருப்பதை கண்டறியப்பட்டுள்ளது. இறுதியாக, CdS ஏற்றப்பட்ட WO₃ நானோ கலப்பு மின்முனை பொருட்கள் நடைமுறை மின் சாதனங்களின் மீதேக்கு பயன்பாட்டுக்கு சிறந்ததாக பரிந்துரைக்கப்படுகிறது.



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சுருக்கம்

ஆபத்தான கரிம மாசுபடுத்திகளின் சீரழிவில் நிறந்த செயல்திறன் காரணமாக ஒளிச்சேர்க்கைக்கு அதிக கவனம் செலுத்தப்பட்டது. இந்த ஆய்வில், CuO நானோ துகள்களின் நீர்வெப்பத் தொகுப்பை வெப்பநிலை (80°C, 100°C, 120°C) மாற்றுவதன் மூலம் தெரிவிக்கிறோம். கட்டமைப்பு, ஒளியியல் மற்றும் ஒளிச்சேர்க்கை பண்புகளில் CuO nps இன் வெப்பநிலையில் ஏற்படும் மாற்றங்களின் விளைவை நாங்கள் ஆய்வு செய்துள்ளோம். XRD இலிருந்து, $2\theta = 35.2^\circ$ மற்றும் 38.4° இல் உள்ள முக்கிய உச்ச தோள்கள் மோனோக்ளினிக் CuO இன் (-111) மற்றும் (111) படிகத் தளங்களுக்கு ஒத்திருக்கிறது. CuO nps இன் சராசரி தானிய அளவுகள் ஷெரின் உறவைப் பயன்படுத்தி மதிப்பிடப்பட்டது மற்றும் முறையே CuO-80 °C, CuO-100 °C மற்றும் CuO-120 °C மாதிரிகளுக்கு 21.4, 28.2 மற்றும் 37.9 nm என கண்டறியப்பட்டது. படிக அமைப்பு, CuO-120 மாதிரி கடினமான இடைவெளிகளுடன் அடர்த்தியான வளர்ச்சியைக் காட்டுகிறது. XPS, Cu 3p, Cu 3s, Cu 2p மற்றும் O 1s ஆகியவற்றுடன் தொடர்புடைய முக்கிய சிகரங்களை வெளிப்படுத்துகிறது. CuO இல் உள்ள செயற்கைக்கோள் சிகரங்களுடன் தொடர்புடைய 942.15, 944.31 மற்றும் 957.72 eV இல் மூன்று வலுவான சிகரங்கள் காணப்பட்டன. CuO nps இன் பேண்ட்கேப் ஆற்றல் மதிப்புகள் 2.4 eV (CuO-80), 2.2 eV (CuO-100) மற்றும் 1.8 eV (CuO-120) என கண்டறியப்பட்டது. MB சாயம் CuO-120 nps [1] க்கு அதிகபட்ச செயல்திறன் 76 % க்கு சிதைந்துள்ளது. இறுதியாக, CuO-120 இன் புகைப்பட செயல்பாடு ஐந்து சுழற்சிகளுக்குப் பிறகும் மாறாது என்று முடிவு செய்யலாம்.

முக்கிய வார்த்தைகள்: CuO நானோ துகள்கள், நீர் வெப்ப முறை, மெத்திலீன் நீல சாயம், புகைப்பட வினையூக்கி சாயம் சிதைவு.

331.

Cu-CdO/Starch NANOSTRUCTURES PREPARED BY GREEN SYNTHESIS APPROACH

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சுருக்கம்

பொதுவாக, அசுத்தமான நீர் மாசுபாட்டிற்கு பல நோய்களை ஏற்படுத்துகிறது மற்றும் சுற்றுச்சூழல் அமைப்பைக் கெடுக்கிறது. உலகெங்கிலும் உள்ள சுற்றுச்சூழல் நீர் மாசுபாட்டின் முக்கிய ஆதாரமாக தொழிற்சாலைகள் உள்ளன. நாமக்கல் மாவட்டத்தில் அமைந்துள்ள எங்கள் நிறுவனம், எதிர்பாராத அபாயத்தை ஏற்படுத்தும் பல சாயத் தொழில்களைக் கொண்டுள்ளது. சிக்கலைத் தீர்க்க, யூரியில் ஏராளமான, குறைந்த நச்சு உலோக ஆக்சைடு நானோ துகள்களை (NPs) அறிமுகப்படுத்துகிறோம். வெவ்வேறு வெப்பநிலை நானோ துகள்களின் செல்வாக்கு நீர் வெப்ப தொகுப்பு முறையைப் பயன்படுத்தி ஒருங்கிணைக்கப்பட்டது. CuO மெத்திலீன் நீல சாயத்தின் செயல்திறனைக் குறைக்கும் திறனைக் கொண்டுள்ளது.

முக்கிய வார்த்தைகள்: ஃபோட்டோகேடலிடிக்க, CuO NPs, மெத்திலீன் நீல சாயம், ஹைட்ரோதெர்மல் முறை.

333

ZnS:Zr/STARCH HYBRID NANOSTRUCTURE For BIOAPPLICATIONS

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Abstract:

Semiconductor based hybrid nanostructures getting more attention due to their efficient properties which leads to multifunctional applications. Herewith we are reporting a novel synthesis route to prepare inorganic-organic hybrid nanostructure (ZnS:Zr/Starch). The prepared sample was characterized by XRD, FTIR, HRTEM, UV and PL techniques to know their structural, morphological and optical properties. Further, to know their toxic effect as well as biocompatibility nature, we have investigated the antimicrobial activity. From both investigations, we have observed a significant results from ZnS:Zr/Starch hybrid nanostructure than ZnS and ZnS:Zr nanoparticles, which was due to the interaction nature between ZnS:Zr NP-Starch molecule and leads the radical formation rate. Hence, this hybrid nanostructure believed to suitable for bio-medical applications.

Keywords: Hybrid nanostructure, Starch molecule, Bacterial activity.



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7th International Conference on Recent Innovations in Modern
Science and Technology (ICRIMST-2024), 9th -11th January 2024

பண்புகளை அறிய XRD, SEM, FTIR, UV மற்றும் PL போன்ற பல்வேறு குணாதிசயங்களுக்குப் பயன்படுத்தப்பட்டன. XRD முடிவுகள், அறுகோண-மோனோகிளினிக் படிகக் கட்டமைப்பின் கலவையான படிகத் தன்மையைக் காட்டுகிறது, இது படிக அளவுகள் 50 nm க்கும் குறைவாக இருப்பதைக் காட்டுகிறது மற்றும் அவற்றின் SEM படங்கள் கம்பி/தடி/பாறை வடிவ மேற்பரப்பு உருவ அமைப்பைக் காட்டுகின்றன. FTIR முடிவுகள் உலோக ஆக்சைடு சேர்மங்களுக்கிடையில் வேதியியல் பிணைப்பு உருவாக்கும் தன்மையை அவற்றின் தொடர்புடைய செயல்பாட்டுக் குழுக்களுடன் உறுதிப்படுத்துகின்றன. UV ஸ்பெக்ட்ரம் மேம்படுத்தப்பட்ட ஆப்டிகல் நடத்தையுடன் நீல நிறமாக மாற்றப்பட்டதைக் காட்டுகிறது மற்றும் PL எரிவுகள் ஸ்பெக்ட்ரம் அவற்றின் நானோ கிரிஸ்டலின் தன்மை காரணமாக குறைபாடு குறைக்கப்பட்ட உமிழ்வு நடத்தையையும் காட்டுகிறது.

முக்கிய வார்த்தைகள்: WO₃, ஹைட்ரோதெர்மல் முறை மற்றும் உருவவியல், கட்டுப்பாடு.

335

CuO-CdO/Starch NANOSTRUCTURES FOR PHOTOCATALYTIC APPLICATIONS BY GREEN SYNTHESIS APPROACH

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Abstract

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Recent years, researchers are exploring the use of nanostructured material based catalysts as alternatives to conventional techniques. The unique characteristics of nanoscale materials have led to their use as catalysts for the degradation of pollutants into benign compounds, especially, metal oxide based nanostructure. To this, the green synthesis is a better choice which has eco-friendly and can produces biocompatible nature compared to other methods. Therefore, we have used a novelty approach to synthesis CuO-CdO/Starch nanostructures with starch molecule as capping/stabilizing/reducing agent using simple chemical method modified as green synthesis approach. Further their properties were investigated by XRD, SEM, EDAX, FTIR, UL, PL techniques. A monoclinic crystal structure was observed from XRD patterns with crystalline sizes approximately 30 nm confirms formation of CuO-CdO nature. The surface morphology of NSs observed using SEM images which show spherical/plate shaped nature. The interaction nature of CuO-CdO NP with Starch molecule was confirmed using FTIR analysis. The combined presence of CuO-CdO is responsible for

ஆசிரியர் வார்த்தைகள்: CdO/CuO, சூழல் நட்பு தொகுப்பு, ஆய்வுகள் பண்புகள்

336.

CdO NANOPARTICLE-BIOMOLECULE COMPOSITE BY NOVELTY GREEN SYNTHESIS APPROACH

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Abstract

In general, the nanoparticles are synthesised using physical, chemical, biological synthesis. The green synthesis processes can produces a biocompatible nature compared to other methods. Therefore; in the present work we have used novelty green synthesis approach to prepare CdO nanoparticles-Organic molecule (Starch and Glucose molecule) composite form. The prepared powder samples were used for various characterizations to know their structural, morphological and optical properties such as XRD, SEM, EDAX, FTIR, UL, PL techniques. The powder XRD analysis showed monoclinic crystal structure with their crystalline sizes 20-30 nm, and SEM images shows spindle/bud shaped surface morphology due to their crystalline/amorphous combination. FTIR analysis confirms the interaction nature between inorganic-organic counterparts. UV optical spectrum exhibits blue-shifted absorption band/increased bandgap nature due to their crystalline formation. PL emission spectrum shows an enhanced greenish-yellow emission band which indicates the defects reduced/size controlled nature by the presence of organic molecule. Further their reduced toxicity was observed by bacterial analysis.

Key Words: CdO, Biomolecule, Eco-friendly, Optical properties, Biocompatibility

CdO நானோ துகள்கள்-உயிரணு கலவை புதுமை பசுமை தொகுப்பு

அணுகுமுறை

மதுமிதா கே¹, தேவராஜன் வி பி^{1*}, பெரியசாமி ப²

1. இயற்பியல் துறை, கே.எஸ்.ஆர் மகளிர் கலை மற்றும் அறிவியல் கல்லூரி, திருச்செங்கோடு,
நாமக்கல் - 637 215, தமிழ்நாடு, இந்தியா.
2. இயற்பியல் துறை, நேரு பொறியியல் மற்றும் தொழில்நுட்பக் கல்லூரி, கோயம்புத்தூர்,
தமிழ்நாடு, இந்தியா.

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உறுதிப்படுத்துகின்றன. UV ஸ்பெக்ட்ரம் மேம்படுத்தப்பட்ட ஆப்டிகல் நடத்தையுடன் நீல நிறமாக மாற்றப்பட்டதைக் காட்டுகிறது மற்றும் PL எமிஷன் ஸ்பெக்ட்ரம் அவற்றின் நானோ கிரிஸ்டலின் தன்மை காரணமாக குறைபாடு குறைக்கப்பட்ட உமிழ்வு நடத்தையையும் காட்டுகிறது.

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338.

ZnO-CuO/Starch NANOSTRUCTURES BY GREEN SYNTHESIS APPROACH: SYNTHESIS, CHARACTERIZATION AND BIOAPPLICATIONS

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Abstract

Recently bimetallic and multimetallic NPs have shown unique physicochemical properties, synergistic effects and high functionality which are used for bioapplications. The synthesis of multimetallic and bimetallic NPs is costly and time-consuming and may include hazardous substances. ZnO and CuO NPs demonstrated diverse biological applications due to their highly compatible with normal cells in the body. To this, the green synthesis is a better choice which has eco-friendly and can produce biocompatible nature compared to other methods. Therefore, we have used a novelty approach to synthesis ZnO-CuO/Starch nanostructures with starch molecule as capping/stabilizing/reducing agent using simple chemical method modified as green synthesis approach. Further their properties were investigated by XRD, SEM, EDAX, FTIR, UV, PL techniques. A hexagonal-monoclinic crystal structure was observed from XRD patterns with crystalline sizes approximately 30-35 nm confirms formation of ZnO-CuO nature. The surface morphology of NSs observed using SEM images which show spherical/plate shaped nature. The interaction nature of ZnO-CuO NP with Starch molecule was confirmed using FTIR analysis. The combined presence of ZnO-CuO is responsible for a broader absorbance in the visible region from optical UV analysis. PL analysis shows strong emission band and relatively weaker emission band around violet-blue-green emission

முக்கிய வார்த்தைகள்: ZnO-CuO, சுற்றுச்சூழல் நட்பு தொகுப்பு, உயிரியல் பயன்பாடுகள்

339.

TEMPERATURE DEPENDENT CdO NANOSTRUCTURES BY HYDROTHERMAL METHOD

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Abstract

In the present work, we have prepared temperature dependent CdO nanostructures using hydrothermal method. The prepared NSs properties were investigated using various analyses (XRD, SEM, EDAX, FTIR, UL, PL techniques). XRD patterns shows a monoclinic crystal structure with crystalline sizes 30-40 nm and their SEM images shows spindle to rod shaped surface morphology during increased temperature range. From FTIR analysis, nature of interaction between Cd-O was determined and it was slightly differed during increased temperature from 100-200°C. The optical UV and PL analysis shows blue-shifted absorption and enhanced greenish-yellow emission behaviors, respectively. Further, their photocatalytic performances were observed against methylene blue dye.

Key Words: CdO, Hydrothermal method, Morphological nature, Photocatalysis

ஹைட்ரோதெர்மல் முறை மூலம் வெப்பநிலை சார்ந்த CdO நானோ கட்டமைப்புகள்

முகிழரசி இ1, தேவராஜன் வி பி1*, பெரியசாமி ப2,



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இயற்பியல் துறை, கே.எஸ்.ஆர் பெண்களுக்கான கலை மற்றும் அறிவியல் கல்லூரி, திருப்பாவை, திருப்பாவை,

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சுருக்கம்

தற்போதைய வேலையில், நீர் வெப்ப முறையைப் பயன்படுத்தி வெப்பநிலை சார்ந்த CdO நானோ கட்டமைப்புகளைத் தயாரித்துள்ளோம். தயாரிக்கப்பட்ட NSs பண்புகள் பல்வேறு பகுப்பாய்வுகளைப்

A STUDY ON PLACING ARTICLES AND ITS DIFFICULTIES EXPERIENCED BY THE L₂ LEARNERS OF FIRST YEAR ENGINEERING STUDENTS

Abstract

This study is about placing the Articles at right place by identifying the consonants and vowel sound and also by following the rules and its functions for constructive learning platform for the L₂ learners because placing the Articles at right place reveals the thorough knowledge in Grammar.

For this study the data has been collected from the first year Mechatronics Engineering Students to identify their knowledge in placing the articles and the difficulties experienced by the L₂ learners.

The total target of the students for this study is 35.

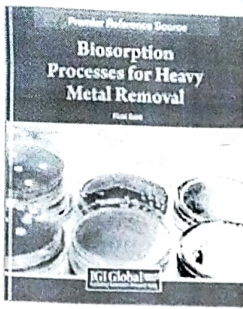
Keywords: Pronunciation, Comprehending, Conscious, Practice, Knowledge.

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Biogenic Sorption: An Intelligent and Sustainable Approach to Reclaiming and Reutilizing Heavy Metals in the Modern Era

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Source Title: Biosorption Processes for Heavy Metal Removal (/book/biosorption-processes-heavy-metal-removal/329222)

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Pages: 19

DOI: 10.4018/979-8-3693-1618-4.ch007

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Abstract

The treatment of heavy-metal-bearing wastewaters is a critical environmental challenge, as access to clean drinking water becomes increasingly difficult due to pollution and rising water treatment costs. Traditional adsorbents derived from fossil fuels are not sustainable and can contribute to secondary pollution. To address this issue, researchers have turned to biogenic sorbents made from modern biomass as a promising alternative. These biosorbents utilize biological waste materials that would otherwise contaminate water systems, promoting a circular economy and sustainable water treatment practices. This chapter explores the potential of biogenic sorbents for water decontamination, focusing on their use in the removal of heavy metals from contaminated waters. Further, this chapter delves into the preparation methods, adsorbent types, adsorption mechanisms, and regeneration techniques employed with these biosorbents.

Chapter Preview

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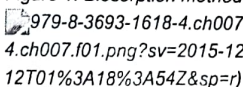
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1. Introduction To Biosorbents For Heavy Metal Removal

Heavy metal pollution is a substantial environmental distress, from the industries particularly mining, metallurgy, and energy harvesting. Large quantities of toxic metals into the environment (Vardhan et al., 2019). Those heavy metals, including mercury (Hg), lead (Pb), cadmium (Cd), cause a serious menace to living bodies' health and ecosystems (Vardhan et al., 2019). Conventional methods for eradicating heavy metal ions from aqueous solutions, such as chemical precipitation and electrochemical treatment, are habitually unproductive and produce large amounts of slurry. Therefore, different approaches are being required to address this persistent concern. One such methodology is biosorption, which utilizes biological materials to remove heavy metals from aqueous solution (Eccles, 1995; Sheng et al., 2004). Biosorption is the method in which living or dead biomass as well as cellular products like polysaccharides, sequesters metal ions through various physicochemical mechanisms (Veglio & Beolchini, 1997; Volesky & Holan, 1995; Witek-Krowiak et al., 2011). It provides numerous advantages over traditional methods, comprising high efficiency, quick metal removal, and cost-effectiveness. Biosorption has multiplied its significant attention in recent years as a prospective solution for the treatment of high volume, low-concentration complex waste waters having heavy metals (Zouboulis et al., 2002).

The background mechanisms accountable for biosorption are not yet fully understood but are supposed to involve ion exchange, complexation, coordination, adsorption, electrostatic interaction, chelation, and micro precipitation. Biomass materials for example bacteria, fungi, yeast, and algae have been comprehensively experimented as potential biosorbents owing to their metal-binding capabilities. These biosorbents can meritoriously sequester heavy metal ions from dilute complex solutions, making them energetic candidates for the treatment of wastewater. Biosorption can take place through both metabolic and non-metabolic pathways (Reddy et al., 2012). Metabolic biosorption includes the active uptake of metal ions by living biomass. Non-metabolic biosorption, in contrast, take place through impulsive physicochemical processes and does not necessitate the expenditure of ATP. Both living and deceased biomass have been found to demonstration of biosorption properties which making them suitable for metal removal applications (Vijayaraghavan & Yun, 2008; Witek-Krowiak & Harikishore Kumar Reddy, 2013).

Figure 1. Biosorption method for heavy metal removal (adopted from Elgarahy et al., 2021 under creative common license)

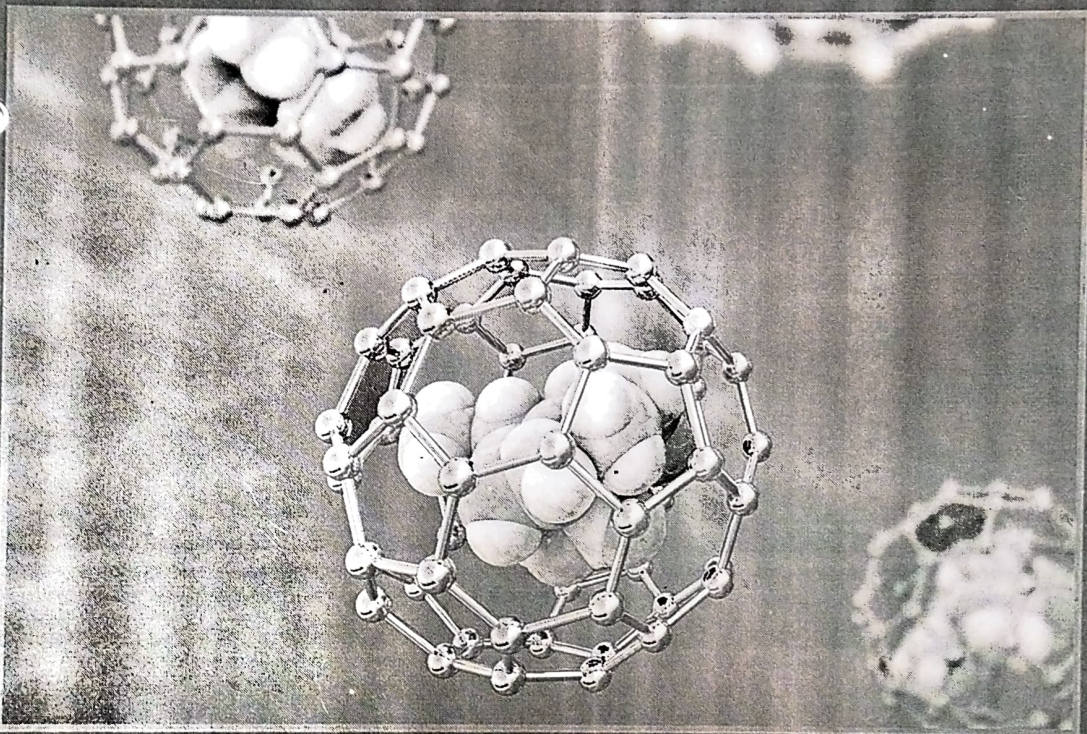
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A several varieties of biomaterials has been studied for their biosorption capabilities. These biomaterials can be categorized into several categories, including bacteria, fungi, yeast, algae, industrial wastes, and agricultural wastes (Aksu, 2005; Tran et al., 2019; Vijayaraghavan & Yun, 2008). Bacteria, in particular, have been broadly experimented for their metal-binding capacities. Certain species of bacteria, such as *Bacillus subtilis*, have ascertained

Progress in Biochemistry and Biotechnology

CARBON-BASED NANOMATERIALS IN BIOSYSTEMS

Biophysical Interface at Lower Dimensions



Edited by
**Kunal Biswas, Yugal Kishore Mohanta,
Tapan Kumar Mohanta, and Muthupandian Saravanan**



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Role and development of unique 2-dimensional graphene-based nanomaterials in antimicrobial and molecular theranostics applications

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12.1 Introduction

Over the last three decades, the study of nanomaterials has developed into an essential component of the materials research field. Over the past few decades, carbon nanomaterials have emerged as a significant technological breakthrough in nanotechnology. Smalley's discovery of fullerenes (C_{60}) in 1985 established them as one of the earliest acknowledged nanomaterials and catalyzed the emergence of the fields of nanoscience [1]. After its discovery in the 1990s by S. Iijima and others, carbon nanotubes (also known as CNTs) quickly rose to prominence as one of the nanomaterials subjected to the most significant scientific scrutiny. In more recent times, graphene has attracted a substantial amount of research and has emerged as one of the most explored materials. Graphene science and technology have become significant study areas in recent years. Graphene is a honeycomb lattice made up of individual atomic layers of carbon atoms arranged in an sp^2 hexagonal bonding configuration (Fig. 12.1). It is an allotrope of sp^2 carbon that exists in two dimensions and takes the shape of a planar monolayer. Graphene can potentially be regarded as the fundamental atomic structural element for various carbon nanomaterials. By adding a pentagonal arrangement of carbon atoms, and hence curvature, in the shape of a spherical structure, C_{60} , which has zero dimensions, may be considered graphene [1,3].

Graphene is the fundamental building block of carbon nanotubes (CNTs), simply graphene sheets rolled into cylinders with a wide range of chiralities depending on the rolling direction relative to the hexagonal lattice. Carbon's allotropic form has significantly different physical characteristics. Graphene, CNTs, and C_{60}

Carbon-Based Nanomaterials in Biosystems. DOI: <https://doi.org/10.1016/B978-0-443-15508-6.00015-4>
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331

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Green Nanomaterials in Energy Conversion and Storage Applications

Ishani Chakrabarty
Khalid Rehman Hakeem
Editors

 **CRC Press**
Taylor & Francis Group
APPLE ACADEMIC PRESS

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CHAPTER 3

Global Energy Crisis: Need for Energy Conversion and Storage

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ABSTRACT

Unpardonable consumption of fossil fuels not only drains the natural sources but also causes a constant rise in carbon dioxide discharges, which is responsible for the rising world average temperatures. The natural cyclic phenomenon is fluctuating across the regional and global climates that do exist now, which is agreed upon by scientific research. All nations' governments now realize that the recent climate change is speeding up as a result of human influence. Therefore, drastic and immediate action will be necessary to mitigate negative consequences.

3.1 INTRODUCTION

Everything is powered by energy, which is found everywhere across the globe. Our individual and societal life has become reliant on its availability, accessibility, and capacity. Besides, this is a driving force of physical appliances, propels our automobiles, and illuminates our surroundings.

Green Nanomaterials in Energy Conversion and Storage Applications.
Ishani Chakrabarty & Khalid Rehman Hakcem, (Eds.)
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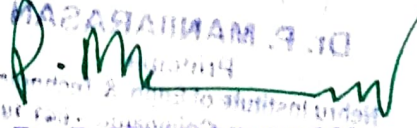
Graphene-Based Nanomaterials

Applications in Food, Agriculture and Healthcare

Edited by
Yugal Kishore Mohanta, Kunal Biswas,
Saurov Mahanta, and Saravanan Muthupandian

 **CRC Press**
Taylor & Francis Group
Boca Raton London New York

CRC Press is an imprint of the
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Cover image: Shutterstock

First edition published 2024
by CRC Press

2385 NW Executive Center Drive, Suite 320, Boca Raton FL 33431

and by CRC Press

4 Park Square, Milton Park, Abingdon, Oxon, OX14 4RN

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ISBN: 978-1-032-29236-6 (hbk)

ISBN: 978-1-032-29237-3 (pbk)

ISBN: 978-1-003-30054-0 (ebk)

DOI: 10.1201/9781003300540

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by Apex CoVantage, LLC

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9 Application of Green Graphene-Based Nanomaterials in Agri-Biotechnological Sensors for Surveillance and Prevention of Agricultural Productivity

P. Periasamy, C. Gowtham, B. Selvakumar, Maria Plamenova Nikolova, Mohamed Bououdina, Azzuliani Supangat, Atef Y. Shenouda, and V. P. Devarajan

9.1 INTRODUCTION TO GRAPHENE

Nanotechnology has proved its advantageousness in a variety of promising disciplines for more than half a century after its breakout performance. Graphene has become a rising star as well as a key enabler in revolutionary condensed-matter physics and material science. The finding of graphene has been thought to be the substance with the smallest thickness on the planet. In the 1940s and 1950s, key advances toward a better scientific knowledge of graphite and graphene have already been addressed. Earlier studies that focused on the synthesis and basic characteristics of nanocarbon give a basic and vital understanding of the subject. Since its first breakthrough in 2004, when Novoselov [1] published their findings, graphene material has been effectively industrialized. Graphene, which is an interesting or evolutionary transition from a two-dimensional to a three-dimensional structure, has the propensity to possess certain features. The carbon atoms in those kinds of three-dimensional materials may be functionalized by incorporating heteroatoms or whole functional groups. These two-dimensional nanocarbon-based conducting nanomaterials (NMs) offer excellent features such as electrical, physical, and chemical processability and good crystal integrity as shown in Figure 9.1 [2]. Graphene is indeed the architectural father of all carbon allotropes, such as graphite, carbon fibres, fullerenes, nano rings, nanobuds, single-walled, double-walled, and multiwalled carbon nanotubes (CNTs). The researchers have successfully synthesized nanohybrids with varied nanocomposite forms that may be developed by integrating distinct nanoparticles (NPs). In order to rationally develop novel multifunctional materials, mediated NPs are used and construct relatively sophisticated innovative methods, which can be employed in a variety of applications.

9.1.1 AGRICULTURAL PROCESS AND FACTORS AFFECTING THE AGRICULTURAL PRODUCTIONS

Agriculture has a long and glorious history that stretches back thousands of years. Agriculture serves as a substantial economic driver in many nations and has a considerable role in the growth

DOI: 10.1201/9781003300540-11

109



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4 Graphene-Based Nanomaterials as Biomaterials in Stem Cell Differentiation, Tissue Regeneration and Cell Growth Studies

P. Periasamy, Nayak C Madhusudan, G. Gowtham, Maria Plamenova Nikolova, Mohamed Bououdina, Azzuliani Supangat, Atef Y. Shenouda, and V. P. Devarajan

4.1 INTRODUCTION

Graphene is a two-dimensional (2-D) nanomaterial that has one and ten layers of Sp^2 hybridized carbon atoms arranged in six-membered rings. Graphene research has been successfully capitalized on after its discovery in 2004 [1]. Graphene is an intriguing material (Figure 4.1) for highly controlled systems, for example, evolution from 2-D to 3-D topology having new properties. These 3-D materials can be engendered by substituting the carbon atoms with selected heteroatoms or entire functional groups, as reported by [2]. Graphene has high thermal conductivity, current, density,

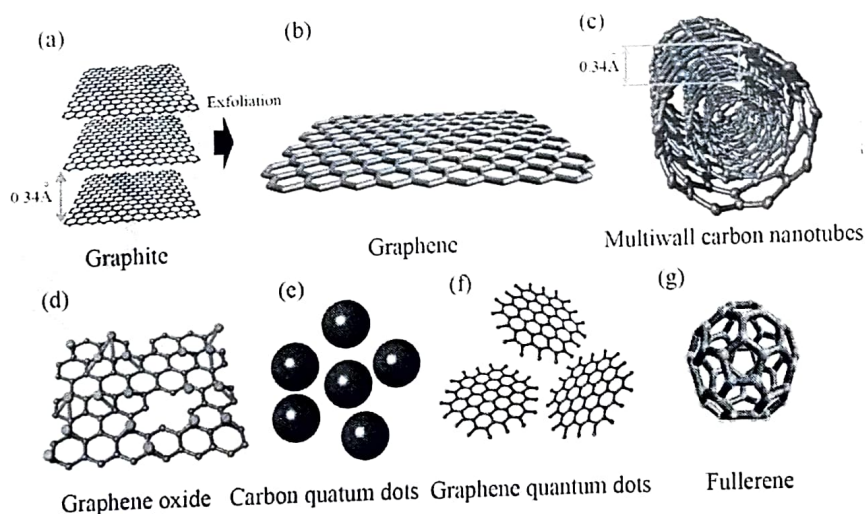


FIGURE 4.1 Graphene-based nanomaterials as biomaterials in stem cell differentiation, tissue regeneration, and cell growth studies.

DOI: 10.1201/9781003300540-5

47

Facts and Communication Technology in Present Circumstances of Teaching and Learning Process

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Abstract

Information and Communication Technology (ICT) are being used as a medium through which teachers can teach and learners can learn. ICT is also used as an assisting tool for making assignments, collecting data and documentation, communicating and conducting research. The ability to link written with audio and visual material can enrich the learner's senses. Apart from books, journals and reports, learners can make available for themselves electronic and web resources like Digital library, SWAYAM - NPTEL, EDUSAT, EKLAVYA, LMS and others. These technologies provide a qualitative expansion in delivering knowledge and make it more participatory. These resources would empower the learners in learning process, education, further occupation and social life. This paper focuses on effective usage of ICT tools for teaching and learning of science education in today's situation.

Key words: ICT, Science Education, E-Learning

1. Introduction

Information and Communication Technology (ICT) is a medium for teaching and learning. ICT enables communication to happen one-to-one, one-to-many, many-to-many and many-to-one. ICT is defined as a diverse set of technological tools and resources used to communicate, to create, disseminate, store, and manage information [1]. It provides learners with new media and sources of information. Information and communication technology can accommodate different learning styles and learning preferences with the features of interactive multimedia and the opportunity to combine various media resources. Apart from printed resources like books, journals and reports, learners can make available the electronic and web resources. The expanded resources of information would provide learners flexibility with access to knowledge from others which will be helpful to construct and organize one's knowledge. Individuals may differ in their ability to learn different types of communication, learning process and materials; they also have different purpose of learning. Information and communication technology has expanded the cleaner's capacities to bridge time and space. The changes that ICT has made in the form of communications are improving interactive communications between participants and facilitators in learning process. In the view of changing world scenario with economy becoming knowledge based, globalization of knowledge, speed of data transmission, rising stake of students in educational intuitions, and the modern approaches to learning, all play a dominant role and is the need of the hour.



RECENT SCENARIO OF DIGITAL TRANSFORMATION IN HEALTH SECTOR

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Abstract:

The influence of digital transformation in the health care industry is huge development for greater patient accessibility and flexibility, and it includes the readiness of data on health-related information such as treatments, challenges, and the current state of the biomedical sector and research. Also, it is crucial for the healthcare industry to provide the finest patient care digitally, and regardless of where they are, the health care sector is utilising cutting-edge technologies. In order to address the society's concerns, this chapter discusses the recent state of the digital revolution in the health sector and deliberates on its practical applications, such as how to analyse data and determine the veracity of large data sets using telemedicine, block-chain platforms, artificial intelligence, and small tools.

Key words: Digital information, Health care, AI, telemedicine, Diagnosis

Introduction

Digital information is the incorporation of digital technology into all the area of business, education and service oriented fields like medical, basically changes used to profit people and the healthcare field. Digital technology is used in healthcare system for innovative solutions to develop healthcare provision and to attain progress in health issues [Maksut Senbekov, et al., 2020] . The excellence of the health facility be contingent on several aspects like the qualification of medical employees, hospital amenities, and the convenience of conversant equipment. The model may differ from one place to another place. Nevertheless, the main values remain the same. In current eras, such a typical platform has been undergoing new tasks due to the speedy progress of technologies and the demand of the populace in first-class medical facility. Furthermore, new digital technologies provide the opportunity of quick-tempered growth of the possible of numerous diagnostic and therapeutic tools and systems [Mitchell and Kan, 2019.]. Telemedicine gives an opportunity for people who from rustic AN Publications March 2023



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18 Impact of Micronutrients on Obsession-Compulsion Disorders During Adolescence

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18.1 INTRODUCTION

Adolescence is a point of conversion which consists of physical, psychological, cognitive, and social changes. Physically, they are entering puberty, and there is a change in brain organization. They are embarking on the stage of sexual interest. Furthermore, psychologically, adolescents' cognitive abilities are budding. Finally, adolescents are receiving social conversion through the school environment and other transitions like roles to play in the family and community (National Research Council [NRC], 2002). These evolutions happen concurrently and at various paces for every adolescent within each sexual category. Adolescents' development is being impacted frequently by structural and environmental factors (Victor, 2005).

Adolescents' disappointment to not having expectations met, and as they are not accustomed to these transitions, direct to pessimistic health behaviors. Adolescence is the most challenging stage of life, and it is quite common for teens to cultivate their own traits and eccentricities as they make an effort to steer the turmoil. These habits and uncommon attitudes are signs of a possible psychological health issue among young adults, and one of these is obsessive-compulsive disorder (OCD). This psychiatric mess can lead to noteworthy anguish, and OCD may become devastating in more serious cases of the disorder.

Perhaps these changes will create stress and anxiety among them, and they will get obsessive thoughts and compulsion behaviors. For example, nail biting, skin picking, hair pulling, writing and rewriting assignment, checking and rechecking, and etc. The keystone of physical health is good nutrition; however many researches report diet's upshot on psychological health as well. One of the special sections in clinical psychological science indicates the various approaches that psychological studies are taking to know some ways in which nutrition and mental health interconnect (Asle & Sverre, 2020).

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Essential Techniques Unveiled: A Novice Researcher's Guide to Fundamental Characterization

First Edition

Editors

Dr. K. P. V. Sabareesh

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Associate Editors

Dr. N. Bhuvaneshwari

K. Kousalya

Published by

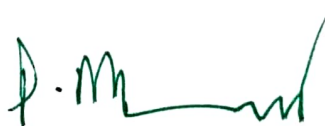
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ISBN 978-81-966948-1-4

This book is printed in 70 gsm papers.

Printed in India by Mahasagar Technologies.

Price: 800/-

Coimbatore Institute of Information Technology.

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ii


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Chapter- IV

FT-IR, Raman Spectral Investigation: Computed Frequency Estimation Analysis and Electronic Structure Calculations on 5-Chloro Isatin using HF and DFT

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Abstract

The Vibrational Spectral analysis was carried out by using FT-Raman and FT-IR Spectroscopy in the range of 4000-100 cm^{-1} respectively, for the title molecule. The molecular structure, fundamental vibrational frequencies and intensity of the vibrational bands are interpreted with the aid of structure optimizations based on Hartree-Fock (HF) and density functional theory (DFT) method and different basis sets combination. The results as the calculated values of sphere were applied to stimulated spectra of the title compound, which show good agreement with achieved spectra.

Key words: FTIR, Raman, DFT, Vibrational spectral analysis, Hartree-Fock (HF)

4.1 Introduction

Isatin, possessing an indole nucleus having both the keto and lactam moiety has aroused tremendous curiosity due to its diverse biological and pharmacological studies. The particular attention on the structural perturbations caused by 5-substitution is due to the findings that such derivatives are oftentimes strongly biologically activated in respect to respective parent molecules. An illustrating analogy can be made here with the uracil derivatives: while uracil itself is a common cell constituent, 5-halogenouracils exhibit a variety of pharmacological activities



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Chapter- XV

Quantum Chemical Report of 2,6 -Bis Thieno Benzene -3 Enyl-3,5 Dimethyl-
N Methyl Piperidine -4-One Molecule

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Abstract

The current study examines quantum chemical calculation and vibrational study of 2,6 -Bis thieno Benzene -3-enyl-3,5-dimethyl- N- Methyl Piperidine -4-one was reconnoitred with the DFT correlation functional B3LYP method 6-311G and 6-311++G base sets under HF and DFT theoretical method. The molecular structure, the geometric parameters are calculated on the basis of the position of each atom. In the analysis of molecular vibrations, the frequency under HF / DFT method and the periodic motion of atoms are also compiled. The UV analysis examines the electronic molecular transition in solvent and compares excitation, wavelength of absorption and strength of oscillation in variable excitation conditions. The energy gap is deliberated in the HOMO-LUMO analysis. The NBO analysis prepense the stabilizing energy, which elucidates the inter-molecular hydrogen interconnection, the transmission of intermolecular charge and electron density relocation. The different color code has been used to differentiate the mapped ESP and ETD of selected molecule.

Keywords: Density Functional Theory, Hartree Fock, Molecular electrostatic potential, Natural Bonding orbital, HOMO-LUMO

15.1 Introduction

Piperidine is an important precursor to natural alkaloids which are biologically active in the chiral property. Black pepper is a familiar dried fruit-based condiment

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LIVING CONCRETE AS A LOW CARBON DESIGNER : A FUTURE OF SUSTAINABLE CONSTRUCTION PRACTICES

Abstract

It is well known that the key component of the modern world is 'Cement'. But the Cement production and its composite 'Concrete' formation result into the emission of around 8% carbon dioxide to the environment. There is a need to invest in reducing the catastrophic effect of carbon emission and the best way is to develop sustainable construction practices. The present chapter deals with a concept of developing concrete that is live and grow to reduce the environmental effect of the construction sectors. This chapter suggests the need of 'Living Concrete' as a low carbon designer for developing sustainable construction practices in the near future.

Keywords: Living Concrete; Sustainability; Self-Healing; Low Carbon Designer.

Graphical Abstract: Schematic Representation of the Concept of 'Living

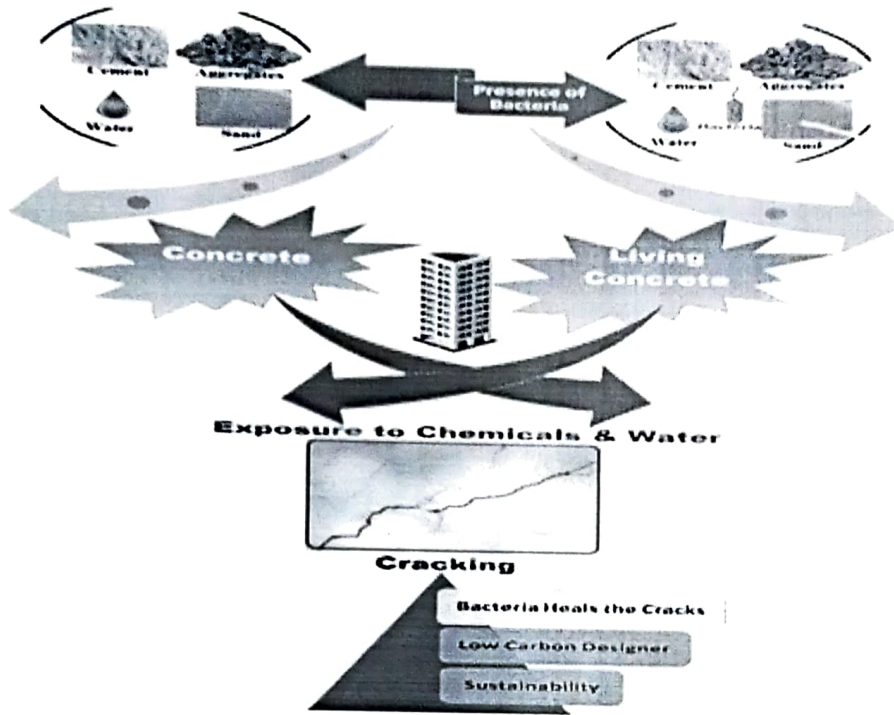
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I. INTRODUCTION

1. **The Inevitable Components of Urban Infrastructure:** 'Cement' is the most common and a significant engineering material utilized worldwide [1]. Figure 1 highlights the significance of cement as an inevitable component of urban infrastructure. It is a chemical material used to set, hardens and bind other construction materials like sand, gravel etc together. The word cement derived from 'Opus Caementicium' which represented 'Roman Concrete' [2]. As the name implies, cement consists of calcined lime and clay with the presence of principal constituents such as CaO , SiO_2 , Al_2O_3 , Fe_2O_3 , MgO , SO_3 and alkalis [3]. The principal constituents and its proportions are responsible for the unique properties of cement and are discussed as follows:

- CaO (60-65%) majorly control strength and soundness of construction,
- SiO_2 (17-25%) gives strength to cement and its excess presence results into slow setting of cement,
- Al_2O_3 (3-8%) allows quick setting of construction materials,
- Fe_2O_3 (0.5-6%) imparts the colour and the fusion of various constituents presents in the cement material,
- MgO (1-3%) imparts hardness and if it exceeds, it causes cracks in concrete,

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Home > [Engineered Biomaterials](#) > Chapter


Gold Nanoparticles: Clinical Applications


Chapter | First Online: 27 November 2023


pp 563–578 | [Cite this chapter](#)



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Abstract

Global Cancer Therapy (GLOBOCAN) estimates that there are around 18 million new cancer cases each year. Various techniques have been used for cancer therapy. Innovation of the nano approach will be signed in to locate one of the chief concerns while using chemotherapy and radiation. Targeting the gold nanoparticle (GNP)-based systems to the tumor can increase local radiation dosage while also enhancing treatment through controlled releases of chemotherapeutics. In the last 20 years, more than 20 medicinal items based on nanotechnology have received clinical use accreditation. This review article's goal is to determine ways to employ GNP-based therapy systems more quickly in clinical settings while still reducing normal tissue toxicity and improving treatment

CHAPTER 5

Feminist Sensibility in the novel. The Mistress of Spices by Chitra Divakaruni

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ABSTRACT

The term "feminism" refers to a woman's right to be free from constraints. The issues that women experience in the world are addressed by feminist authors, who also advocate for the advancement of the feminine. The marginalization of women is a common theme in feminist writing. Literally, feminism was focused on the politics surrounding female authorship and the portrayal of the condition of women in writing. In India, the term "feminism" refers to a group of movements that are focused on establishing and defending women's political and economic parity and giving rising females a new perspective. The involvement of women in the fight for liberation helped to strengthen their critical understanding of their place and independent women's organizations. Chitra Banerjee Divakaruni is a writer from the feminist diaspora in this regard. Divakaruni is an Irish-born poet who has received recognition for her work. *Arranged Marriage*, a collection of her short stories, was the 1995 American Book Award winner. *Sister of My Heart* and *Mistress of Spices*, two of her books, were made into movies. Feminism and fantasy are major themes in her books. The focus of the narrative is Tilo. Tilo manages a business in San Francisco as an elderly woman. The clients believed she had magical abilities, but Tilo's magic truly comes from her understanding of spices. She was abducted when she was a youngster, but she managed to escape and find her mother, who taught her about the Spices and their magical properties. Among the novel's significant characters are Haroun, a car driver, and a grandfather, Geetha, an American-born granddaughter, Kwesi, Jagjit.

Keywords: Chitra Banerjee Divakaruni is , Tilo manages , Geetha , Kwesi, Jagjit etc

INTRODUCTION

One day, a handsome man on a motorcycle got smashed outside of Tilo's store, completely altering her life. He received care from Tilo, and over time their deep love for one another began. Her desire for him grows when he touches her. However, my love for him had negative effects. Her relationship with the