



NANDHA ENGINEERING COLLEGE

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(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

ERODE – 638 052 TAMILNADU

Email : principal@nandhaengg.org Mobile : 73737 12234

Criterion 3 – Research, Innovations and Extension

3.1

Promotion of Research and Facilities

3.1.2 The institution provides seed money to its teachers for research

3.1.2.1: The amount of seed money provided by the institution to its teachers for research during the year (INR in lakhs)

Minutes of Meeting-Seed Grant



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List of Teachers Received Seed Money from Institution during
Academic Year (2022-23)

S.No.	Name of the teacher provided with seed money	Amount of seed money	Month and Year of receiving	Department
1.	Dr. K. S. Mohan, K.S / Physics	5000	November, 2022	S&H
2.	Dr. M. Muthukumar /Mech	10000	November, 2022	Mech
3.	Dr. B. Ashok Kumar /MECH	10000	November, 2022	Mech
4.	Dr A.Murugesan/ Chemical	2000	November, 2022	Chemical
5.	Dr. P.Kavitha /English	2000	November, 2022	S&H
6.	Mr. G. S. Murugapandian /Maths	10000	November, 2022	S&H
7.	Mr. S. Pandiarajan /chemical	5000	November, 2022	Chemical
8.	Dr. D. Vanathi / AI&DS	5000	October, 2022	AI & DS
9.	Mrs. P. Kokila / ECE	5000	October, 2022	ECE
10.	Dr.C. Siva, / IT	5000	October, 2022	IT
11.	Dr. D. Arulanantham /ECE	10000	October, 2022	ECE
12.	Mr.T. Jayachandran /ECE	5000	October, 2022	ECE
13.	Mr.T. Jayachandran /ECE	5000	October, 2022	ECE
14.	Dr. E. K. Vellingiriraj /IT	5000	October, 2022	IT



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15.	Dr. R. Murugasami, / ECE	5000	October, 2022	ECE
16.	Dr C.N.Marimuthu/ECE	2000	October, 2022	ECE
17.	Dr C.N.Marimuthu/ECE	2000	October, 2022	ECE
18.	Dr C.N.Marimuthu/ECE	2000	October, 2022	ECE
19.	Dr S.Kavitha / ECE	2000	October, 2022	ECE
20.	Dr S.Kavitha / ECE	2000	October, 2022	ECE
21.	Dr. P. Sukumar,/ CSE	5000	October, 2022	CSE
22.	Mr. M Prabu, /EEE	5000	October, 2022	EEE
23.	Dr.M. K. Murthi /Mech	5000	October, 2022	MECH
24.	Dr.C. Siva, / IT	5000	August, 2022	IT

Total Granted Seed Money Amount : Rs 1,19,000

NANDHA ENGINEERING COLLEGE
(Autonomous)
ERODE-638 052, TAMILNADU

Request to receive Seed Money for Research

Application No. : NEC/Seed/108

Date: 01.11.2022

1. Name of the Faculty
Write in BLOCK LETTERS) : K.S.MOHAN
2. Name of the Department : PHYSICS
3. Reason for requesting the seed money : To develop the Research work of this field
4. The Requested amount under seed money in (Rs) : 5000/-
5. Whether the fund request is comes under Research policy : Yes or-Ne
6. If NO, justify how this request is useful For Research : Nil
7. Expected outcome of this request : It is help to increases the research skills from Students

K.S. Mohan
Name of the faculty

T. Jeyaraj
HOD

C. S. Srinivasan
Dean (R&D)

S. Jeyaraj
Principal



The deep investigation of structural and opto-electrical properties of Yb_2O_3 thin films and fabrication of Al/ Yb_2O_3 /p-Si (MIS) Schottky barrier diode

A. Panneerselvam¹ · K. S. Mohan² · R. Marnadu^{3,4} · J. Chandrasekaran³

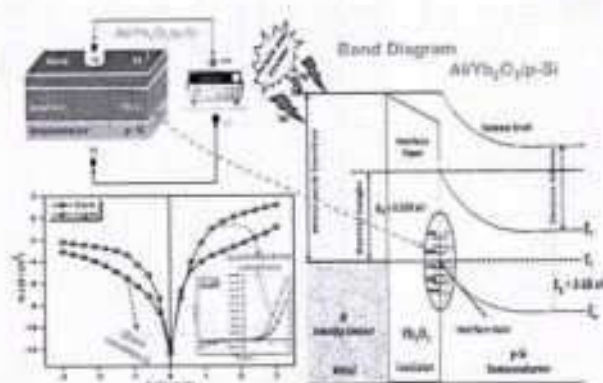
Received: 30 March 2021 / Accepted: 30 October 2021

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Abstract

The present research explores the fabrication of a metal insulator semiconductor Schottky barrier diode (SBD) with rare earth metal oxide (Yb_2O_3) thin films as insulators that are effectively developed on a large scale using the low-cost jet nebulizer spray pyrolysis technique (JNSP). The Yb_2O_3 thin films are deposited at various substrate temperatures (350 °C–550 °C) to ascertain its influence on the characteristic properties of the material. The structural, morphological and opto-electrical properties are investigated using various characterization techniques. Here, X-ray diffraction (XRD) analysis revealed the single crystalline cubic crystal structure of Yb_2O_3 thin films. Field emission scanning electron microscope (FESEM) images show the presence of uniformly distributed cage and globular like structures spread over the entire surface of the Yb_2O_3 films. The elemental composition study demonstrates the presence of Yb and O. The optical direct energy band gap of Yb_2O_3 thin films have been analyzed through UV-Visible spectra. Current – voltage measurements were analyzed in dark and light conditions for the Al/ Yb_2O_3 /p-Si structured Schottky barrier diodes (SBDs) which are fabricated with interfacial layers at different substrate temperatures. Further, the functionality of the SBDs was tested at different temperatures ranging from 30 °C to 150 °C. The experimental results of all SBDs indicate a linear reduction in the ideality factor (n) up to 2.537 and 2.059 with a slight increase in the effective barrier height (Φ_B) of 0.789 eV & 0.638 in dark and light conditions, respectively. The SBD fabricated at 550 °C recorded good performance, which will be suitable for thermal dependent electronic device applications.

Graphical Abstract



✉ K. S. Mohan
moham.scm.phil@gmail.com

¹ Department of Physics, Vivekanandha College of Engineering for Women (Autonomous), Elayampalayam, Tiruchengode, Namakkal 637 205 Tamil Nadu, India


² Department of Physics, Nandha Engineering College (Autonomous), Erode 638 052 Tamil Nadu, India

³ Department of Physics, Sri Ramakrishna Mission Vidyalaya College of Arts and Science (Autonomous), Coimbatore 641020 Tamil Nadu, India

⁴ Present address: PG Department of Physics, G.T.N. Arts College, Dindigul 624005 Tamil Nadu, India

Original Paper: Functional coatings, thin films and membranes (including deposition techniques) |
Published: 09 January 2022

The deep investigation of structural and opto-electrical properties of Yb_2O_3 thin films and fabrication of Al/ Yb_2O_3 /p-Si (MIS) Schottky barrier diode

A. Panneerselvam, [K. S. Mohan](#) , B. Marnadu & J. Chandrasekaran

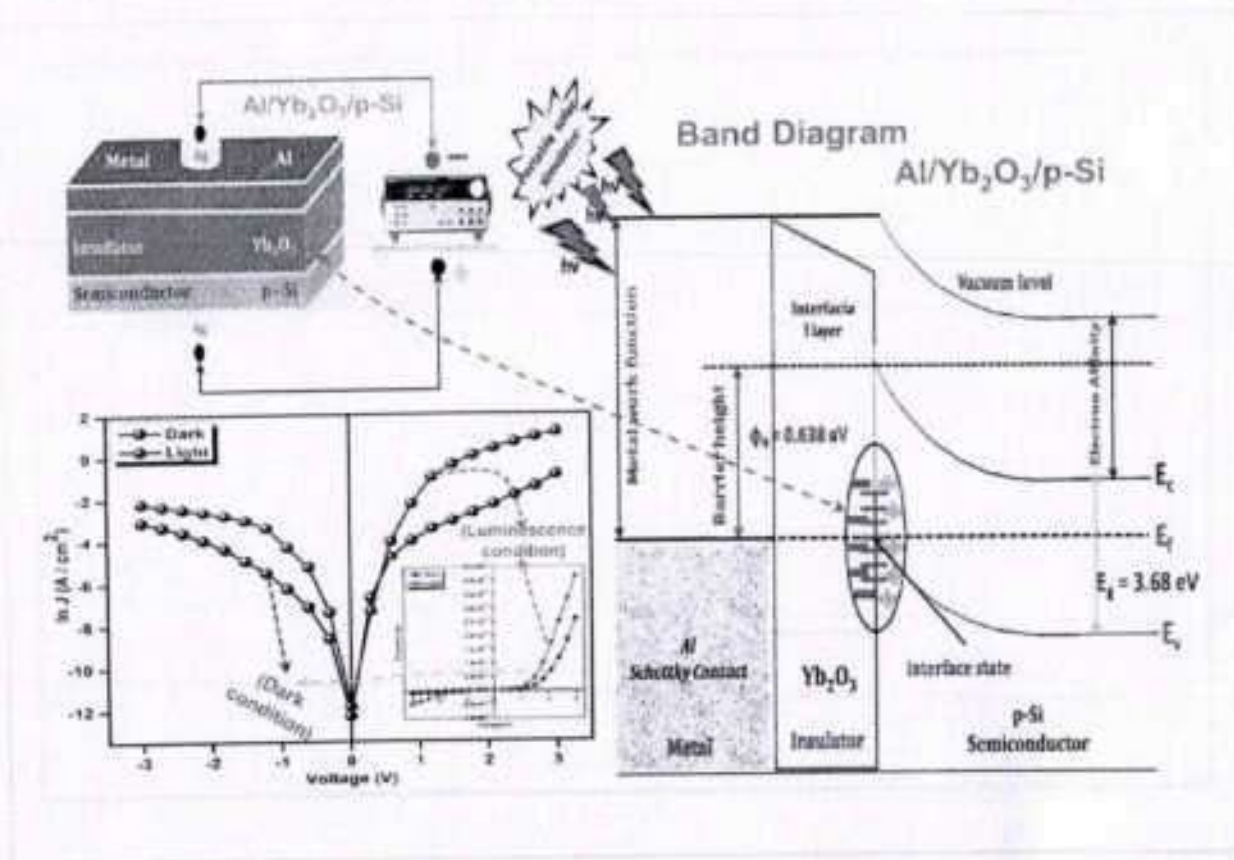
Journal of Sol-Gel Science and Technology **102**, 597–613 (2022)

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Abstract

The present research explores the fabrication of a metal insulator semiconductor Schottky barrier diode (SBD) with rare earth metal oxide (Yb_2O_3) thin films as insulators that are effectively developed on a large scale using the low-cost jet nebulizer spray pyrolysis technique (JNSP). The Yb_2O_3 thin films are deposited at various substrate temperatures (350 °C–550 °C) to ascertain its influence on the characteristic properties of the material. The structural, morphological and opto-electrical properties are investigated using various characterization techniques. Here, X-ray diffraction (XRD) analysis revealed the single crystalline cubic crystal structure of Yb_2O_3 thin films. Field emission scanning electron microscope (FESEM) images show the presence of uniformly distributed cage and globular like structures spread over the entire surface of the Yb_2O_3 films. The elemental composition study demonstrates the presence of Yb and O. The optical direct energy band gap of Yb_2O_3 thin films have been analyzed through UV-Visible spectra. Current – voltage

measurements were analyzed in dark and light conditions for the Al/Yb₂O₃/p-Si structured Schottky barrier diodes (SBDs) which are fabricated with interfacial layers at different substrate temperatures. Further, the functionality of the SBDs was tested at different temperatures ranging from 30 °C to 150 °C. The experimental results of all SBDs indicate a linear reduction in the ideality factor (n) up to 2.537 and 2.059 with a slight increase in the effective barrier height (Φ_B) of 0.789 eV & 0.638 in dark and light conditions, respectively. The SBD fabricated at 550 °C recorded good performance, which will be suitable for thermal dependent electronic device applications.



NANDHA ENGINEERING COLLEGE
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Request to receive Seed Money for Research

Application No. : NEC/SEED/189,110

Date: 1-11-2022

1. Name of the Faculty
Write in BLOCK LETTERS)

: Dr.M.MUTHUKUMAR

2. Name of the Department

MECHANICAL ENGINEERING

3. Reason for requesting the seed money

: Journal paper publications (2 nos.)

4. The Requested amount under seed money in (Rs) : Yes

RS. 10000/-

5. Whether the fund request is comes under
Research policy

: Yes or No

6. If NO, justify how this request is useful
For Research

:

7. Expected outcome of this request

: Knowledge on recent technology and new
product development

M.M.
Name of the faculty

Dr. M. MUTHUKUMAR

Dr.
HOD

C.N.M.
Dean (R&D)

Principal

1/11/2022



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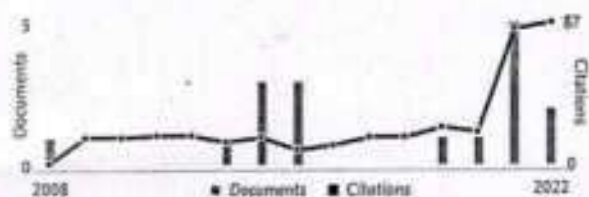
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Article

Intensification of proton conductivity through polymer electrolytic membrane using novel electrode pattern

Praveenkumar, S., Baskar, S., Muthukumar, M.
Journal of the Indian Chemical Society, 2022, 99(3), 100383

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Conference Paper

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Certain studies on influence of nano catalysts Co_3O_4 , SiO_2 blended with CME-diesel in combustion

Yuvaraj, S., Senthil Kumar, A.P., Muthukumar, M., Jadesh, K., Janaki, S.
Materials Today: Proceedings, 2022, 51, pp. 2812-2818

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Citations

Article

Effect of nanoparticles on the droplet combustion of rice bran oil biodiesel

Muthukumar, M., Senthil Kumar, A.P., Sasikumar, C., Yuvaraj, S., Singh, T.S.
Biomass Conversion and Biorefinery, 2021, 11(4), pp. 1375-1393

Show abstract [Related documents](#)

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Citations

Article

Performance and ecological parameters of a diesel engine fueled with diesel and plastic pyrolyzed oil (PPO) at variable working parameters

Singh, T.S., Rajak, U., Dasore, A., Muthukumar, M., Verma, T.N.
Environmental Technology and Innovation, 2021, 22, 101491

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Conference Paper • Open access

Analysis of Shrinkage Defect in Sand Casting by Using Six Sigma Method with Taguchi Technique

Omprakas, M.A., Muthukumar, M., Saran, S.P., ---Thirupathi Venkatesh, S., Sengottuvelan, M.
IOP Conference Series: Materials Science and Engineering, 2021, 1059(1), 012047

Show abstract [Related documents](#)

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Citations

Conference Paper

The development of fuel cell electric vehicles - A review

Muthukumar, M., Rengarajan, N., Vellyangiri, B., ---Rohit, C.B., Raja, U.K.
Materials Today: Proceedings, 2021, 45, pp. 1181-1187

Show abstract [Related documents](#)

36
Citations

Conference Paper

Effects of Different Membranes on the Performance of PEM Fuel Cell

Muthukumar, M., Ragul Aadithya, A., Rengarajan, N., Shanm, K., Karthikeyan, P.
Lecture Notes in Mechanical Engineering, 2021, pp. 113-125

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0
Citations

Article

Adoption of novel porous inserts in the flow channel of pem fuel cell for the mitigation of cathodic flooding

Karthikeyan, M., Karthikeyan, P., Muthukumar, M., ---Jothi, V.R., Sung-Chul Yi
International Journal of Hydrogen Energy, 2020, 45(13), pp. 7863-7872

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28
Citations

Article

Optimization of active area of proton exchange membrane fuel cell with better water management

Karthikeyan, M., Muthukumar, M., Karthikeyan, P., Mathan, C.
Journal of Ceramic Processing Research, 2019, 20(5), pp. 490-498

Show abstract [Related documents](#)

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Citations

Article

Influence of pressure and temperature on the performance of pem fuel cell with taper flow channel design

Praveenkumar, S., Muthukumar, M., Muruganathan, S.
International Journal of Applied Chemistry, 2015, 11(4), pp. 505-513

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4
Citations



Intensification of proton conductivity through polymer electrolytic membrane using novel electrode pattern

S. Praveenkumar^a, S. Baskar^{a,*}, M. Muthukumar^b

^a Centre for Excellence in Energy and Nanotechnology, Department of Mechanical Engineering, S.A. Engineering College, Chennai, 77, Tamilnadu, India

^b Fuel Cell Research Lab, Department of Mechanical Engineering, Mandra Engineering College, Erode, 32, Tamilnadu, India

ARTICLE INFO

Keywords:
PEMFC
Proton conductivity
Flow field
Electrode pattern
Mass flow rate
Operating pressure

ABSTRACT

The performance of a polymer electrolyte membrane fuel cell is contingent on the local property of the protonic conductivity to accelerate the electrochemical reaction based on the membrane activity or on the uniform and even distribution of the reactants. For the even distribution, novel Flow Fields (FF) of the electrode pattern are obligatory to maintain the distribution for a long period for the conversion of protons from the anode reactant. In this study, a novel X Flow Field (XFF) electrode pattern is developed and compared with the conventional serpentine Flow Field (SFF) electrode pattern numerically and experimentally. The performance of the cell through the XFF electrode pattern has shown an improvement of 14.89% numerically and 14.61% experimentally as it distributes the reactants evenly to accelerate the electrochemical reaction, and induce a lower pressure drop and lower water saturation. The effect of pressure and Mass Flow Rate (MFR) of the reactants on the cell performance is discussed and it is found that the increment in Power Density (PD) of the cell is proportional to the increment of the MFR and the pressure because of the even distribution of the reactants, better membrane protonic conductivity, enhancement of the electrode kinetics and improvement in the mass transfer.

1. Introduction

The electrochemical fuel cell is one of the most promising technologies to change the climate greener and a better replacement for the power generating device in the event of the unavailability of fossil fuels in the future. It is a device that produces electricity and consists of an anode, a cathode, Gas Diffusion Layers (GDLs), Catalyst Layers (CLs), and an electrolyte [1].

Solid Oxide fuel cells, Polymer electrolyte membrane fuel cells (PEMFCs), Phosphoric Acid fuel cells, alkaline fuel cells, and molten carbonate fuel cells are the five categories based on the electrolyte used in the fuel cell. PEMFCs have the advantages of the solid electrolyte membrane, low functioning operating temperature, a high density of power, simple scalability, and zero-emission. Water and heat are produced as by-products of the electrochemical reaction between the H₂ in the anode and O₂ in the cathode [2]. However, high manufacturing costs, thermal issues, water flooding, and a low level of consistency make them hard for general use. So, the performance characteristics of the cell are to be enhanced. The current challenges on Proton Exchange Membrane fuel cells are focused on PD, performance, cost, reliability, and lifetime of the components. So, in this present study, the

performance and PD of the cell are explained in detail.

The reactant diffusion via the GDL and the circulations of the reactants in the CL are significant factors while considering the PEMFC performance. The FF path inside the cell does an energetic role in the transportation and the distribution of species over the entire cell. Therefore, modifying the entire shape of the FF configuration is a significant feature of improving the performance.

Huseyin Kahramaner et al. have studied and compared the performance of the cell for multiple FF configurations [3]. The geometric parameters influenced the performance by the design factors of the FFs, flow path directions, several gas channels, and dimensions of the channel [4]. The effects of geometrical shapes of the reactant FF on the cell performance of the electrochemical fuel cell for 25 channels were investigated by Youcef Kerhaub et al. [5]. From the results, the SFF design produced 4.6% more power and 39.1% more power when compared to interdigitated and parallel electrode patterns respectively. Abouzar Azarfa et al. [6] studied a comparative analysis for the multi-flow path designs of a cathode. A metal foam FF produces a 50% increment in peak PD when compared to parallel FFs and 10% increment linked to SFF, interdigitated and parallel electrode pattern with blocks because of the low water saturation, more even contribution of the CD, and the temperature with medium pressure drop.

* Corresponding author.

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<https://doi.org/10.1016/j.jicis.2022.100383>

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Certain studies on influence of nano catalysts Co_3O_4 , SiO_2 blended with CME-diesel in combustion

Yuvaraj S.^{a,*}, Senthil Kumar A.P.^b, **Muthukumar M.**^c, Sadesh K.^b, Janaki S.^d

^a Department of Aeronautical Engineering, Sri Ramakrishna Engineering College, Coimbatore 641022, India

^b Department of Mechanical Engineering, PSG College of Technology, Coimbatore 641004, India

^c Department of Mechanical Engineering, Nandha Engineering College, Erode 638052, India

^d Department of Mechatronics Engineering, SNS College of Technology, Coimbatore 641107, India

ARTICLE INFO

Article history:
Available online 12 November 2021

Keywords:
Combustion
Energy
Blend
Ceramic
Additives

ABSTRACT

The growing interest for the alternative fuel has replaced the usage of diesel fuel in engines. This paper determines and evaluates the combustion characteristics of the new fuel blend comprising nanoparticles blended with cottonseed oil added diesel. The burning rates, variation of droplet size and temperature at various periods were studied. The fuel mix containing the blends of cottonseed oil in proportions of B20 (20% Cottonseed oil), B40 (40% Cottonseed oil) and B60 (60% Cottonseed oil) with Nano additive combinations of SiO_2 (Silicon dioxide), Co_3O_4 (Cobalt oxide), $\text{Co}_3\text{O}_4 + \text{SiO}_2$ with proportions of 100 ppm, 50 ppm (parts per million) and 25 ppm blended in diesel fuel by Ultrasonic dispersed techniques. The diameter of the injected fuel, time taken to complete the combustion process, and the temperature of prepared fuel blends were tested using the self-designed droplet combustion chamber and the results were processed and analyzed. The time taken for the better blend proportions is expected to be 6 s favouring micro-explosion by eliminating agglomeration.

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Selection and peer-review under responsibility of the scientific committee of the Second International Conference on Sustainable Energy Solutions for a Better Tomorrow.

1. Introduction

Biofuels have become an intriguing field of interest due to their eco-accommodating nature and maintainability. Likewise, a great deal of scientists has driven different investigations about different kinds of feedstock resources from which bio fuels can be readily. Analysts additionally applied enhancement procedures for refining the strategy for creation of the biofuels [1–3]. This is because of the way that biofuels consume cleaner and has better combustibility contrasted with non-renewable energy sources since it includes more oxygen inside the fuel. The combustibility of the fuel mixes was additionally answered to have been expanded with the option of nanoparticles. Studies recommended that expansion of 20 ppm of cerium oxide in a mix of waste cooking oil biodiesel, diethyl ester and diesel. The investigation inferred that mix of B30 has more decrease in oxides of nitrogen (6% not exactly) different partners [4]. Another examination including different nanoparticles (Al_2O_3 (Aluminium oxide), SiO_2 and TiO_2 (Titanium dioxide)) addi-

tional with biodiesel arranged from squander cooking oil at 100 ppm indicated that mix B10 demonstrated more prominent warm proficiency when the nanoparticles were added contrasted with the mix without the nanoparticles [5]. Comparable perceptions in progress in properties of the fuel combination when nanoparticles are added are likewise closed from different scientists working in comparable zone [6–9].

The wonder of ignition is an intriguing region with regards to the field of biofuels and such examinations are apparent from the past analysts. The need of contemplating the wonder of ignition at its bead stage is on the loose. This can be clarified by the vulnerability of the outcomes acquired during burning of the bio-fuel mixed combinations inside the motor ignition chamber. It can likewise be considered fairly hard to anticipate the idea of bio-fuel ignition by essentially noticing the burning inside the motor. Hence, scientists have begun concentrates on bead ignition of different fuel combinations [10,11]. The consuming attributes of separated fuel beads for ethanol, 1-butanol and n-decane were tentatively analyzed in CO_2 -rich or argon-rich conditions under microgravity. The centralization of oxygen was fixed to be 21% in volume rate, and that of CO_2 or argon was changed from 0 percent-

* Corresponding author.

E-mail address: yuvraj@yuvrajmail.com (Yuvaraj S).

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Request to receive Seed Money for Research

Application No. : 112, 113

Date: 2.11.2022

1. Name of the Faculty
(Write in BLOCK LETTERS)

B. ASHOK KUMAR

2. Name of the Department

Mechanical Engineering

3. Reason for requesting the seed money

Journal Publication

4. The Requested amount under seed money in (Rs) :

10,000/-

5. Whether the fund request is comes under
Research policy

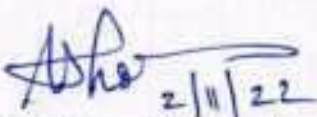
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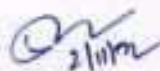
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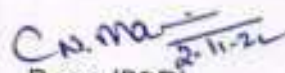
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7. Expected outcome of this request

Knowledge Update


Signature of the faculty


HOD


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Principal



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Study on the mechanical properties of a hybrid polymer composite using egg shell powder based bio-filler

B. Ashok Kumar^a, Rajasekaran Saminathan^b, Mohammed Tharwan^b, M. Vigneshwaran^c, P. Sekhar Babu^d, S. Ram^e, P. Manoj Kumar^{f,*}

^a Department of Mechanical Engineering, Nandha Engineering College, Vaikol Meda, Erode 638052, Tamil Nadu, India

^b Department of Mechanical Engineering, College of Engineering, Jazan University, Saudi Arabia

^c Department of Mechanical Engineering, Sri Krishna College of Engineering and Technology, Coimbatore 641008, Tamil Nadu, India

^d Department of Mechanical Engineering, Narasimha Reddy Engineering College, Kompally, 500100 Secunderabad, Telangana, India

^e Department of Mechanical Engineering, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad 500090, Telangana, India

^f Department of Mechanical Engineering, KPR Institute of Engineering and Technology, Coimbatore 641407, Tamil Nadu, India

ARTICLE INFO

Article history:
Available online xxx

Keywords:
Jute fiber
Egg shell powder
Epoxy composite
Hybrid composite
Mechanical properties

ABSTRACT

In composite fabrication process, the usage of natural fibers as reinforcing agent has been steadily grown significantly in the past decade. Such polymeric composite material has a broad spectrum of applications in challenging situations, where it would be subjected to threats including higher wear, and large mechanical stresses. Innovating new sustainable and environment friendly fibers enables the production of a viable substitute for several uses, particularly in the areas of composite materials. The current study explores the manufacture of hybridized epoxy-based polymer composites comprised of jute fiber (a plant-based fiber), and a bio-fillers derived from powdered waste egg shells. The ASTM guidelines were strictly followed during the process of manufacturing specimen and mechanical evaluation. The mechanical characteristics of raw jute fiber-based epoxy composites and hybridized epoxy composites incorporating jute fiber (JF) and powdered egg shell (PES) based bio-filler were studied. The ESP was used in different compositions such as, 3%, 6%, 9%, and 12% with the JF reinforced epoxy composite. The findings indicate the viability of hybridizing the epoxy composites with this new composition of materials. The addition of 9% PES bio-filler increased tensile characteristics, flexural strength, and Shore D hardness by 73.83, 50.17, and 21.43 percent, respectively. The inclusion of PES above 9% in JF epoxy composite was not impressive and hence, it is recommended to use 9% ESP in JF/ESP Epoxy hybrid composites.

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Selection and peer-review under responsibility of the scientific committee of the International Conference on Newer Engineering Concepts and Technology.

1. Introduction

The composite materials consist of more than one physically different material whose mixture results in aggregated characteristics that vary from those of their basic composition's characteristics. Composite materials could be incredibly helpful with higher strength-to-mass fraction and stiffness despite their low weight. Their strength-to-weight and structural rigidity are many old stronger than metals, and it is feasible to attain combinational characteristics, which are not easily achievable with metallic and/or ceramic substances [1,2].

Owing to their unique qualities, natural fiber-reinforced composite materials are recognized as the suitable materials for a variety of applications in the present scenario. Due to their better mechanical qualities, natural fibers currently dominate the automobile, building, and sports sectors [3,4]. The chiefly used natural fibers are sisal, banana, bamboo, ramie, abaca leaf, pineapple, jute, hemp and so on. The numerous benefits of natural fibers include less weight, cheap price, reduced energy consumption, equivalent material characteristics, and improved flexibility of polymeric materials reinforced with plant fibers, particularly while altered with smashed fibers, stitched fibers, and multi-dimensionally woven fibers [5,6].

New studies reveals that the plant fibers can effectively replace pricey glass fibers as reinforcing agent in polymer composites [7,8].

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<https://doi.org/10.1016/j.matpr.2022.07.114>

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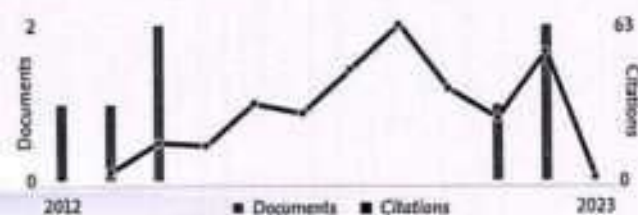
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Characterization of the Aluminium Matrix Composite Reinforced with Silicon Nitride (AA6061/Si₃N₄) Synthesized by the Stir Casting Route

B. Ashok Kumar ¹, **M. Muthu Krishnan** ², **A. Felix Sahayaraj** ²,
Mohamad Reda A. Refaai³, **G. Yuvaraj**⁴, **D. Madhesh**⁵, and **Haiter Lenin Allasi** ⁶

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The current work is concerned with the synthesis of aluminium (AA6061-T6) matrix composites (AMCs) reinforced with 15 and 20 weight percentages of silicon nitride (Si₃N₄) particulates using the indigenously fabricated electric stir casting furnace with bottom discharge arrangement. The major concern in the synthesis of AMCs of ceramic particles with the aluminium matrix is wettability in the casting route, and it was overcome by adding 2% of magnesium in the melt, proper incorporation time, and appropriate stirring speed. The microstructure and mechanical characteristics of the synthesized AMC were analyzed. Si₃N₄ particles in the matrix are uniformly dispersed in the optical and scanning electron micrographs (SEM). Adding reinforcement particles of Si₃N₄ to the AA6061 matrix increased microhardness, macrohardness, and ultimate tensile strength significantly. Microhardness and macrohardness of the AA6061/20 wt.% Si₃N₄ composite were 98 VHN and 91 BHN, respectively, which were 117.8% and 111.63% higher than those of the AA6061 matrix alloy, respectively. Ultimate tensile strength (UTS) of AA6061 was 159.82 MPa which was increased to 249.12 MPa in the AA6061/20 wt.% Si₃N₄ composite. Percent elongation of the AA6061/Si₃N₄ composite was reduced with the addition of Si₃N₄ reinforcement.

1. Introduction

Industry 4.0 demands novel materials, and the demand for monolithic alloys is decreasing as they could not meet the requirements of the modern structural applications. Advanced materials such as aluminium metal matrix composites (AMCs) are a new generation of materials and find a wider scope in aeronautical, automobile, and electronics parts' and turbine blades' applications owing to their attractive mechanical and structural properties of lightweight and high

strength, better wear and fatigue resistance, greater stiffness, and highly effective electrical and thermal conductivities [1, 2]. They also exhibit high stability at elevated temperatures. Even though many processes such as squeeze casting technique, powder metallurgy, in situ reaction, and powder injection moulding are employed to synthesize AMCs, stir casting route is commonly employed commercially as it has many advantages over other processing methods.

Stir casting is one form of casting process where a mechanical stirrer is used to mix the reinforcement with the

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Investigation on Synergistic effect of Carbon Black on
Flow properties of EPDM Composite

Chemical

A. Murugesan^{1*}, K. Rajasekaran², R. Anbarasan¹, A. Fasil³

Abstract

Ethylene Propylene Diene Monomer is one of the most widely used rubbers in automotive exterior sealing systems. It is the material of choice for automotive sponge weather strips around doors, trunks and hoods. Its exceptional air and ozone resistance capabilities, combined with its compounding adaptability, result in high-performing profiles at a low cost, while sealing off water, dirt, and noise for the life of the vehicle. Over the last decade, advances in metallocene polymerization technique have allowed for more exact control of molecular architecture and co monomer introduction, allowing for the creation of high-performance elastomers with customised qualities. In this present research investigation, vulcanizates based on Ethylene propylene diene monomer (EPDM) rubber was prepared by incorporating 30 phr of cellulose short fibers along with different loading level of fast extrusion furnace black (FEF) at an increment level of 20 phr in a two roll mill. The effect of CB (FEF) on viscosity and rheological properties of various EPDM compounds such as C1 to C8 were fairly investigated by using the Monsanto moving die rheometer (MDR 2000) according to ASTM method D 2084 and also Mooney viscometer. The curing characteristics like TS2, TS5, ML, MH, cure time (T_{c90}) and viscosity of various EPDM compounds were extensively determined and also the results were critically compared with each other. It was fairly observed that the reinforcement of CB along with cellulose short fibres in the EPDM compounds have made greater impact on improving the rheological properties and showed the synergistic effect between the fillers and the rubber matrix.

Keywords: Cure time, Cellulose short fibres, Carbon black, Fillers, Vulcanizate, Viscosity

INTRODUCTION

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The fascinated natural history of the tyre and rubber Industry has tainted over the previous 30 to 40 years in that, akin to all other industries, it has come to be familiar with the importance of using renewable sources of raw materials, recycling materials whenever realistic and probing the potential of reclaiming tatty materials for fresh applications. EPDM rubber (ethylene propylene diene monomer (Keltan-512) rubber) is an example of a synthetic elastomer [1, 2]. EPDM rubber finds application in a number of industrial branches owing to its properties (high resistance to ozone, weather influences, etc.) and thereby it is used for production of truck tyres, passenger car tyres, off the road tyres (OTR), tire treads, V-belts and tubes which are applied in the area of the automotive industry [3, 4]. The elastomeric compounds properties are intimately related to the number,

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Desire and Determination of Anita Nair's Female Protagonist

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Research Guide,
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Ph.D Research Scholar
Department of English
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Arts College Namakkal (TN)

Abstract

An attempt has been made in this article to investigate the portrayals of women that Anita Nair gives in the fictional works that she has written. The majority of Anita Nair's stories centre on female protagonists who are put through harrowing ordeals as a result of male dominance in their families and social environments. According to the findings of psychologists, every individual, regardless of whether they are male or female, develops a notion about themselves through time. This process of constructing one's sense of "self" occurs subconsciously throughout an individual's life. Therefore, the search for one's "self" is a continuing activity. Anita Nair illustrates the psychological upheaval that her female characters go through as a result of the circumstances of their family lives. Their reliance and mental slavery has a profound effect on them from the very beginning of their lives. But women must know how to break and prove their identity. Their strong intellect and will power make the women to prove their self. This paper proves that Anita Nair's protagonist are mentally and intellectually very strong enough to create their own world.

Keywords: Psychological explorations, sufferings, experience, patriarchal

Desire and Determination of Anita Nair's Female Protagonist

The women writers during 1980s and after have tried to show female protagonists in their fiction, who try to assert themselves and even defy marriage and even motherhood. This is their suit of their education and their economic independence. This is also the influence of Western Feminist thought and movement. Through the process of social and cultural contact with the West, Indian Women Writers have begun to think differently, writing against social taboos on women and injustice done to them. These women writers challenge the stereotypical image of women created by the male writers and try to show how women can draw strength from their own biology. The women writers now boldly challenge the patriarchal system, which is being shown by the post-modern women writers in their fiction.

Women authors in Indian English literature have attempted to give a voice to the tribulations and difficulties that women go through. In her works of literature, Anita Desai delves deep into the minds of her strong female heroines by putting them in situations where they are constrained by the patriarchal conventions of their culture. In her novels *Cry, the Peacock*, *Voices in the City*, *Where Shall We Go This Summer*, and *Fire on the Mountain*, she investigates and presents the emotional world of her female protagonists. She

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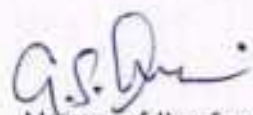
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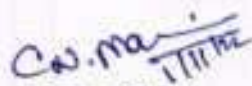
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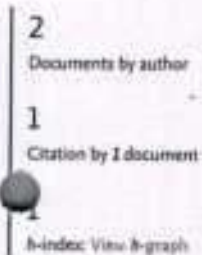
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On mild solutions of fractional impulsive differential systems of Sobolev type with fractional nonlocal conditions

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On the solutions of fractional integro-differential equations involving Ulam–Hyers–Rassias stability results via ψ -fractional derivative with boundary value conditions

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Abstract: In this paper, we study boundary value problems for the impulsive integro-differential equations via ψ -fractional derivative. The contraction mapping concept and Schaefer's fixed point theorem are used to produce the main results. The results reported here are more general than those found in the literature, and some special cases are presented. Furthermore, we discuss the Ulam–Hyers–Rassias stability of the solution to the proposed system.

Key words: Fractional integro-differential equation, Schaefer's fixed point theorem, Ulam–Hyers–Rassias stability

1. Introduction

In this paper, we investigate the existence and Ulam–Hyers stability results for ψ -fractional impulsive integro-differential equation with boundary condition

$${}^c D^{\beta, \psi} x(\xi) = \mathcal{G} \left(\xi, x(\xi), \int_0^{\xi} p(\xi, s, x(s)) ds \right), \quad \text{for each } \xi \in \mathbb{F} := [0, t], \beta \in (0, 1), \quad (1.1)$$

$$\Delta x|_{\xi=\xi_j} = \mathbb{I}_j(x(\xi_j^-)), \quad \xi = \xi_j, \quad j = 1, 2, \dots, n, \quad (1.2)$$

$$lx(0) + mx(t) = c, \quad (1.3)$$

where the ψ -Caputo fractional derivative ${}^c D^{\beta, \psi}$ of order β . Let the continuous functions be $\mathcal{G} : \mathbb{F} \times \mathbb{E} \rightarrow \mathbb{E}$, $p : \Delta \times \mathbb{E} \rightarrow \mathbb{E}$ and the real constants be l, m, n with $l + m \neq 0$. Now $\Delta = \{(\xi, s) : 0 \leq s \leq \xi \leq t\}$. For the purpose of brevity, we make use of

$$Px(\xi) = \int_0^{\xi} p(\xi, s, x(s)) ds.$$

Fractional differential equations (FDEs) have newly confirmed to be important aid in modelling of numerable phenomena in different fields of science and engineering. Viscoelasticity, electrochemistry, control,

*Correspondence: ogur.ege@ege.edu.tr

2010 AMS Mathematics Subject Classification: 26A33, 34A12, 34K40, 47H08



On mild solutions of fractional impulsive differential systems of Sobolev type with fractional nonlocal conditions

K. Karthikeyan¹ · G. S. Murugapandian² · Z. Hammouch^{3,4,5}

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Abstract

This paper concerns the application of the monotone iterative technique in conjunction with the lower and upper solution techniques to investigate the existence of mild solutions and their uniqueness for fractional impulsive differential systems of the Sobolev type with fractional order nonlocal conditions. To obtain the adequate requirements, noncompactness estimates and the generalized Gronwall inequality are utilized.

Keywords Fractional differential system · Upper and lower solutions · Estimate of noncompactness · Caputo fractional derivative · Monotone iterative technique · Impulsive and nonlocal conditions · Sobolev-type equations

Mathematics Subject Classification 26A33 · 34A08 · 34A12 · 34A37 · 34K40 · 35R11 · 35R12

Introduction

Fractional calculus theory has become a popular research topic in recent years, owing to its demonstrated applications to problems in electrical engineering [14, 23, 39, 40], bioengineering [37], control systems, physics [29], viscoelasticity [38], and other fields of science and engineering. Furthermore, due to the memory and heredity features of certain materials and processes, fractional differential operators appear to be much more suitable in modeling than standard

integer operators in many fields of research such as robotics, identification systems, and signal processing. We mention to the monographs [3, 21] and references referenced in that further more information on fractional differential systems and applications. Byszewski [9–11] was the first to introduce the nonlocal Cauchy problem. Differential systems with nonlocal conditions are more practical in describing many physical events and as a result, lead to better results in applications than the classical one (see [22]). As a result, in physics, Applied sciences, and Engineering nonlocal situations play a critical role in achieving superior results. See [1, 2, 19, 20, 28, 31, 33, 36] and there are references within more information.

We employ a monotone iterative technique to examine the existence and uniqueness of extremal mild solutions of the problem (1.1) in an ordered Banach space, motivated by [16, 31, 33, 35, 42, 43]. The monotone iterative technique based on lower and higher solutions is an excellent strategy to study the presence of solutions for nonlinear differential equations (fractional or non-fractional ordered). It generates monotone sequences of lower and upper solutions that converge uniformly to the mild extremal solutions between the two. In this paper, the results are obtained utilizing the theory of fractional calculus, semigroup theory, the measure of noncompactness, and the monotone iterative technique.

For nonlinear differential equations and difference equations, the approach of upper and lower solutions, along

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G. S. Murugapandian
murugapandian.g.s@gmail.com

¹ Department of Mathematics, KPR Institute of Engineering and Technology, Coimbatore, Tamil Nadu 641407, India

² Department of Mathematics, Nandha Engineering College, Erude, Tamil Nadu 52, India

³ Division of Applied Mathematics, Thu Dau Mot University, Thu Dau Mot, Binh Duong, Vietnam

⁴ Department of Medical Research, China Medical University Hospital, Taichung, Taiwan

⁵ Department of Sciences, Ecole Normale Supérieure of Meknes, Moulay Ismail University, Meknes, Morocco

NANDHA ENGINEERING COLLEGE
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ERODE-638 052, TAMILNADU

Request to receive Seed Money for Research

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Date: 1/11/2022

1. Name of the Faculty
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: S. PANDIARAJAN

2. Name of the Department

: Chemical Engineering

3. Reason for requesting the seed money

: Journal Publication in
AU - Annenture - I.

4. The Requested amount under seed money in (Rs) :

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5. Whether the fund request is comes under
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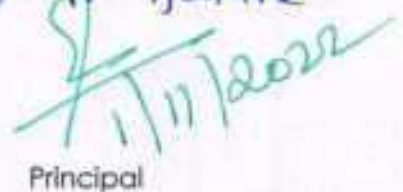
: Funding project may be
applied in future.


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AP/Chemical


S. Pandiarajan
1/11/2022


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1/11/2022

Morphological, optical and structural properties of pure, zinc and magnesium doped TiO₂ nanoparticles for solar cell devices

M. S. Manojkumar^{a*}, S. Venkatesan^b, S. Pandiarajan^c

^aAssistant Professor, Department of Biotechnology, Vivekanandha college of Engineering for Women (Autonomous), Tiruchengode, Tamil Nadu, India

^bProfessor, Department of Petro Chemical Engineering, University College of Engineering, BIT campus, Tiruchirappalli, Tamil Nadu, India

^cAssistant Professor, Chemical Engineering, Nandha Engineering College, Erode, Tamil Nadu, India

Zn²⁺ and Mg²⁺ ions doped Titanium dioxide had been synthesized using a hydrothermal method at 120°C with an annealing temperature at 450°C, including individual Zn²⁺ and Mg²⁺ ions. In addition, impact of these doping metal ions on the crystallization and phase transition of the Titanium dioxide nanoparticles were discussed by X-Ray Diffraction spectroscopy, Scanning Electron Microscopy, Fourier Transform Infra-Red spectroscopy, UV-Vis spectroscopy and Photo-Luminescence spectroscopy and also by photocatalytic measurements. The presence of anatase type structure in Titanium dioxide nanopowders with high crystallinity and high phase stability in spite of annealing at 450°C significantly specified that the dopants might prevent densification and crystallite growth in Titanium dioxide nanophase by on condition with different boundaries. Furthermore, with a suitable amount of Zn and Mg dopants, anatase grain size of Titanium dioxide powders was reduced. The band gap energy values of Zn²⁺ and Mg²⁺ ions doped nano-Titanium dioxide were lower than the pure nano-Titanium dioxide and they exhibited a red shift in the visible region.

(Received August 25, 2021; Accepted January 18, 2022)

Keywords: Grain-size, Crystallite, Stability, Anatase

1. Introduction

Nanoparticles research is as of now an area of powerful efficient investigation, because of a broad range of potential cases in several fields such as electronic, optical and bio-medical [1]. The particle size is the major characteristics of nanoparticles for their performance in various fields. This is mainly due to two factors, *viz.*, increase in the ratio of surface-area to volume and the effect of outward atoms controlling the behavior of nanoparticles [2]. When in comparison with the bulk materials such as nano-powders, nano-plates and nano-sheets, there is a formation of greater surface area on nanoparticles on account of decrease in nano size. Specifically, the nanoparticle of titanium oxide has huge surface-region and indicates outstanding photocatalytic, optical and electric properties. Metallic nanoparticles, for example, Ag and Au included further consideration inferable from their high surface-region, stability and incredible conductivity and these are also widely utilized in the field of biotech and clinical [3]. This investigation features the production and properties of Zn and Mg NPs in photocatalytic measure. A few approaches such as solvothermal, sol-gel were accessible to synthesize titanium oxide nanoparticles [4]. A number of researchers have called attention to that the structural and optical execution of titanium oxide nanoparticles basically dependent on its crystallinity, morphology, crystal arrangement and surface-region[5,6]. To increase the crystallinity of titanium oxide, hydro-thermal synthesis was a broadly utilized procedure. Through the hydrothermal method, the nanosize of the samples was estimated by means of nucleation processes [7]. The optical properties of nanoparticles prepared were generally assessing by UV-Vis spectroscopy and Photo-Luminescence spectroscopy techniques to contemplate the electronic transitions in semi-conductors with band edge or close to

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: Dr. D. VANATHI

2. Name of the Department

: CSE

3. Reason for requesting the seed money

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4. The amount requested under seed money in (Rs) :

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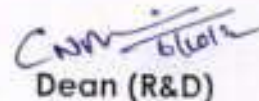
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6/10/22

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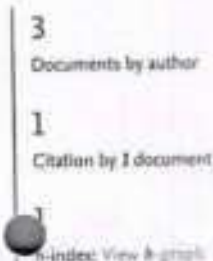
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Internet of Things- Cloud Security Automation Technology Based on Artificial Intelligence

Hussain, R., Vanathi, D., Jose, B.K., ...Faur, H., Senthilya, C.
Proceedings - International Conference on Applied Artificial Intelligence and Computing, ICAIC 2022, 2022, pp. 42-47

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Internet of Things- Cloud Security Automation Technology Based on Artificial Intelligence(Conference Paper)

Hussain, K., **Vanathi, D.**, Jose, B.K., Kavitha, S., Rane, B.Y., Kaur, H., Sandhya, C.

^aCvr College of Engineering Ibrahimpatnam, Department of Ece, Telangana, India

^bNandha Engineering College, Department of Artificial Intelligence and Data Science, Erode, India

^cS D College Alappuzha (University of Kerala), Department of Mathematics, Kerala, India

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Abstract

The development of industrial robots, as a carrier of artificial intelligence, has played an important role in promoting the popularisation of artificial intelligence super automation technology. The paper introduces the system structure, hardware structure, and software system of the mobile robot climber based on computer big data technology, based on this research background. At the same time, the paper focuses on the climber robot's mechanism compound method and obstacle avoidance control algorithm. Smart home computing focuses on 'home' and brings together related peripheral industries to promote smart home services such as smart appliances, home entertainment, home health care, and security monitoring in order to create a safe, secure, energy-efficient, sustainable, and comfortable residential living environment. It's been twenty years. There is still no clear definition of 'intelligence at home,' according to Philips Inc., a leading consumer electronics manufacturer, which once stated that intelligence should comprise sensing, connectedness, learning, adaption, and ease of interaction. Smart applications and services are still in the early stages of development, and not all of them can yet exhibit these five intelligent traits. © 2022 IEEE.

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ISBN: 978-166549730-7

Source Type: Conference Proceeding

Original language: English

DOI: 10.1109/ICEAAICS3929.2022.9792664

Document Type: Conference Paper

Publisher: Institute of Electrical and Electronics Engineers Inc.

✎ Hussain, K.; Cvr College of Engineering Ibrahimpatnam, Department of Ece, Telangana, India;

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Request to receive Seed Money for Research

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1. Name of the Faculty
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P. KOKILA ✓

2. Name of the Department

ECE

3. Reason for requesting the seed money

: Publish the paper in
reputed journals

4. The Requested amount under seed money in (Rs) :

Rs. 5,000/-

5. Whether the fund request is comes under
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: ✓
Yes or No

6. If NO, justify how this request is useful
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7. Expected outcome of this request

: To improve the citations and
get a solution for our problem


10/10/2022
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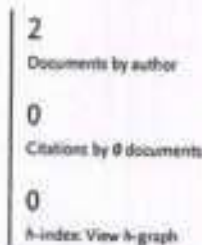
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Detection And Categorization of Transmission Line Faults Using Artificial Neural Network

Gunasekar, T., Kokila, P., Mohanramkumar, T., Lalin Kumar, D.
8th International Conference on Advanced Computing and Communication Systems,
ICACCS 2022, 2022, pp. 1967–1972

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International Journal of Mechanical Engineering, 2021, 6(3), pp. 1117–1122

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Fault classification and location of power transmission lines using artificial neural network

2007 International Power Engineering Conference (IPEC 2007)

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Abstract:

The proposed work depicts on locating, identifying and placing the faults on electric power transmission lines. Identification of faults, categorization and placement of faults are impressed by using Artificial Neural Networks (ANN). Back propagation algorithm is depicted in feed forward networks under all the vital phases at the time of locating faults. Simulations results indicate that proposed techniques are much more effective in determining the types of faults on transmission lines and have produced the good performance.

Published in: 2022 8th International Conference on Advanced Computing and Communication Systems (ICACCS)

Date of Conference: 25-28 March 2022

DOI: 10.1109/ICACCS54159.2022.9785272

Publisher: IEEE

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Request to receive Seed Money for Research

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1. Name of the Faculty
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: DR.C.SIVA

2. Name of the Department

: INFORMATION TECHNOLOGY

3. Reason for requesting the seed money

: PAPER PUBLICATION

4. The Requested amount under seed money in (Rs) :

RS. 5000/-

5. Whether the fund request is comes under
Research policy

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6. If NO, justify how this request is useful
For Research

: -


7. Expected outcome of this request

: To enhance the knowledge
in cloud based technology.


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Principal 19/10/22



An Optimal Cluster Based Intrusion Detection System for Defence Against Attack in Web and Cloud Computing Environments

K. G. Maheswari¹ · C. Siva² · G. Nalini Priya³

Accepted: 30 August 2022
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Abstract

In recent years, the rapid growth of information technology organizations causes ability to meet their demands such as scalability, mobility and flexibility. The security and privacy is a major issue of those organizations that's why they move the data to the cloud. Meanwhile, the security in cloud has become an important issue in the growing demand of cloud computing. Due to the nature characteristics of cloud, those confidential data are vulnerable to attacks/malicious or intruders. Several Intrusion Detection System (IDS) have been proposed for cloud environment to enhance the security problem but they are not possible to solve those issues with better accuracy, due to the recent real-time intruders. However, those IDSs are possible to solve and resist limited and known attacks. In this paper, we propose Optimal Cluster based Intrusion Detection System for defence against attacks in web and cloud computing environments (OC-IDS). We use hybrid optimization algorithm i.e. Multi-verse is combined with Chaotic Atom search optimization (MCA) algorithm for preprocessing which removes the unwanted/repeated data in dataset. We introduce a Chaotic Manta-ray Foraging Optimization (CMFO) based clustering technique which segment the data in different groups. Then, we develop hybrid machine learning technique i.e. Modified Teacher Learning based Deep Neural Network (MTL-DNN) which categorize the attack in cloud environment as a novelty of this study. Finally, the proposed OC-IDS technique can evaluate through standard open source datasets are KDD cup'99 and MSL-KDD, the performance of proposed and existing techniques are compared with different metrics such as accuracy, precision, recall and F-measure. Our proposed OC IDS MTL-DNN attains 95.01% accuracy in KDD cup'99 dataset.

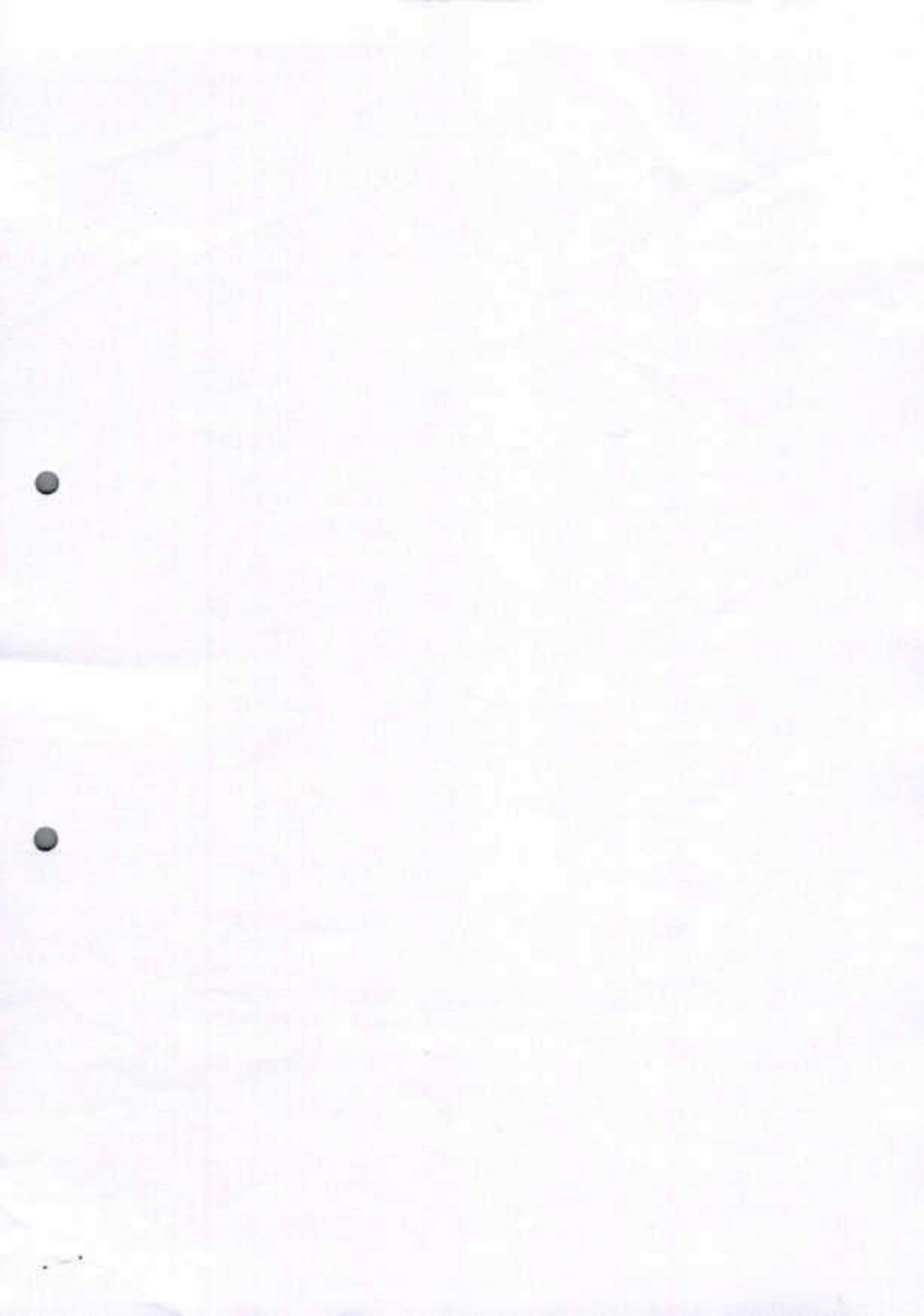
Keywords Intrusion detection system · Cloud computing · Chaotic Atom search optimization · Chaotic manta-ray foraging optimization · Modified teacher learning based deep neural network

✉ K. G. Maheswari
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¹ Department of Information Technology, Government college of Engineering, Erode, India

² Department of Information Technology, Nandha Engineering College, Erode, India

³ Department of Information Technology, Saveetha Engineering College, Chennai, India




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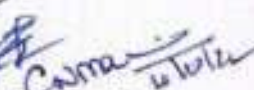
Application No. : 121

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1. Name of the Faculty : **Dr. D. ARULANATHAN**
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4. The Requested amount under seed money in (Rs) : **5000/-**
5. Whether the fund request is comes under Research policy : **Yes or No**
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7. Expected outcome of this request : **To improve the Scopus citation**


Name of the faculty
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HOD


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Principal
10/10/22

Power Reduction in 4T DRAM Cell using Low Power Topologies

L.Saranya^a, L.Abinaya^b, A.Nivedita^c, D.Arulanantham^d

saranyalece@gmail.com^a, abinayainba@gmail.com^b, visitniveditaece@gmail.com^c,
arulanantham@gmail.com^d

^aDepartment of ECE, Karpagam College of Engineering, Coimbatore, TamilNadu, India.

^bDepartment of EEE, Sri Ramakrishna Engineering College, Coimbatore, TamilNadu, India.

^cDepartment of ECE, Sri Ramakrishna Engineering College, Coimbatore, TamilNadu, India.

^dDepartment of ECE, Nandha Engineering College, Erode, TamilNadu, India.

ABSTRACT

Today's world there is a high demand in the development of VLSI circuits and the designers are also very much paying attention to design a good performance with zero hunger circuits in terms of power. At present, in order to design a high speed and a low cost device is becoming a major challenge across the designers. In order to enlarge the demand of VLSI, CMOS technology plays a fundamental role. Dynamic Random Access Memory is the volatile memory, which is used in wide ranges of electronic based gadget applications. In this paper, the low power techniques like sleep transistor logic and Self Voltage Controllable Logic (SCVL) are implemented. A 4T DRAM cell using these low power logics has been designed and implemented and also the power has been analyzed at 90nm technology. The simulation is done using Tanner 13.1.EDA tool.

Keywords: Low power, DRAM, Volatile, Sleep, SCVL.

I. Introduction

Dynamic Random Access Memory is a main memory which is volatile in nature. It is made of one transistor and one capacitor which together constitute one memory bit of data (6). DRAM remains the second lowest cost per bit memory behind the Flash. DRAM is a fastest memory which constitutes the writing speed equal to the reading speed. SRAM are preferred for low power and high speed applications. Memory cell need not be refreshed periodically to retain the data even though when the power is in switched off mode. The capacitor in the DRAM charges at logic 1 with 1V and discharges at logic 0 with 0V. This charging of capacitor leaks because of the sub-threshold current in the cell transistor. Hence, the charge needs to be refreshed a number of times for each second to hold the data in the memory cell for a longer period.

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 Journal of Applied Engineering Science, 2022, 10(2), 827-832
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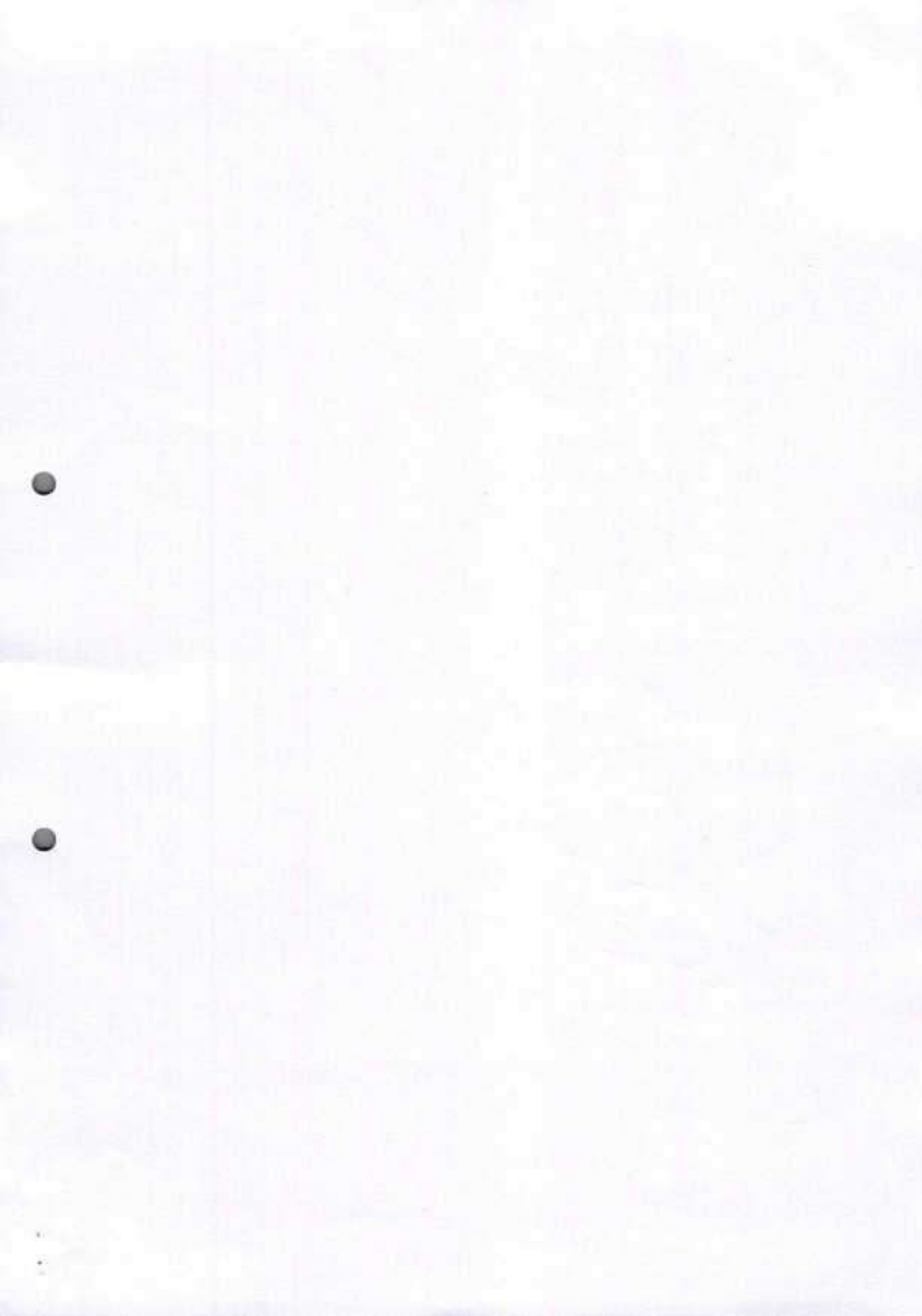
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 International Journal of Communication Systems, 2022, 16(2), e4070
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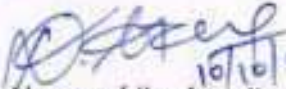
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PFC based Three Stage Interleaved Boost Converter for Renewable Energy System

Dr.S.Gomathi,
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St.Joseph's Institute of Technology

Dr.D.Arulanantham²,
Associate Professor
Nandha Engineering College

Dr.Rajesh Thumma³,
Associate Professor
Anurag University

Dr. S. Vimala⁴
Associate Professor
Prathyusha Engineering College

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Jeppiaar Institute of Technology

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Mail id: sgomathi411@gmail.com¹, arulananthamme@gmail.com², rajesh.thumma88@gmail.com³,
vimalarasan@gmail.com⁴, soniya@jeppiaarinstitute.org⁵, tdsbha2010@gmail.com⁶

Abstract

Recent advances in converter technology have proposed interleaved boost converters with lower output voltage ripple. AC sources are connected to DC loads via PFC-ILBC converters. The open loops of two-stage PFC-ILBC and three-stage PFC-ILBC are compared. A closed loop PFC-ILBC regulates the load voltage. A suitable closed loop controlled ILBC controller is discussed. The PFC-ILBC employs a linked inductor and a switching capacitor to achieve high voltage gain. In terms of T_s and E_{ss} , the responses of closed loop control of an ILBC using PI and PID are investigated. According to simulation data, PID controlled PFC-ILBC has a greater time domain response than PI controlled PFC-ILBC.

Keywords: ILBC, Three stage, Linked Inductor, Switching capacitor, PID and PI Controller

I. INTRODUCTION

There has been an increase in energy consumption in developing countries such as China and India. Depletion of conventional fuel reserves is occurring at an alarming rate. Fortunately, alternatives are available. Increasing energy demand and diminishing fossil fuel supplies have compelled humanity to look for new sources of power. For individual three-level inverters, Peng[1] suggested new control methods. "High-power enablers," according to Rodriguez[2]. High-quality and high-power power conversion is now possible with multilevel converters, which are the cutting-edge technology of today. He proposed a ML inverter with self-voltage balancing. One-cycle, single-stage photovoltaic inverter MPPT was proposed by Fortunato. Meteorological constraints on design Using the optimization algorithm, we can find out how sensitive a system is to each of the controller parameters. Inverter performance can be improved by using a perturb and observe controller [3-4]. Gopakumar[5] researched multilevel cascading inverters.

High-quality output voltages and input currents are the result of this. Decoupled control for cascaded h-bridge MLC was presented by him. As proposed by Jun[7]. An innovative modulation strategy for PV grid-connected generators. H-Bridge PV inverters with multiple MPPT levels have been demonstrated by Bailu[8]. Inverter control strategy based on grid-connected PV CHBs H-bridge configuration: a series of power cells is powered by one or more PV modules. Using Mei's modular multilevel inverter, connect generators. Without the use of an additional compensation signal, dynamic capacitor voltage balance is achieved using selective virtual loop mapping. Generalized An Inverter with a Series of Sub-Level Cascaded Multilevel An increase in the need for high-power multilevel inverters [10]-[12].

II. PROPOSED SYSTEM

Voltages applied to PFC-ILBC converter Winding 1 and 2. Q_1 , Q_2 and Q_3 are phase switches, mutual inductance M . With two windings that are similar, the coupling coefficient $\frac{M}{L_{CP}}$ Inverse coupling raises equivalent inductance (EI). The coupled inductor can be decoupled to obtain the equivalent inductance. $Q1=V_g$, $Q2=V_g \cdot V_o$,

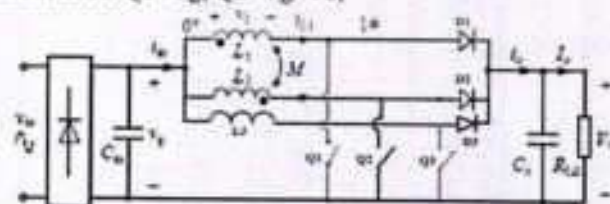


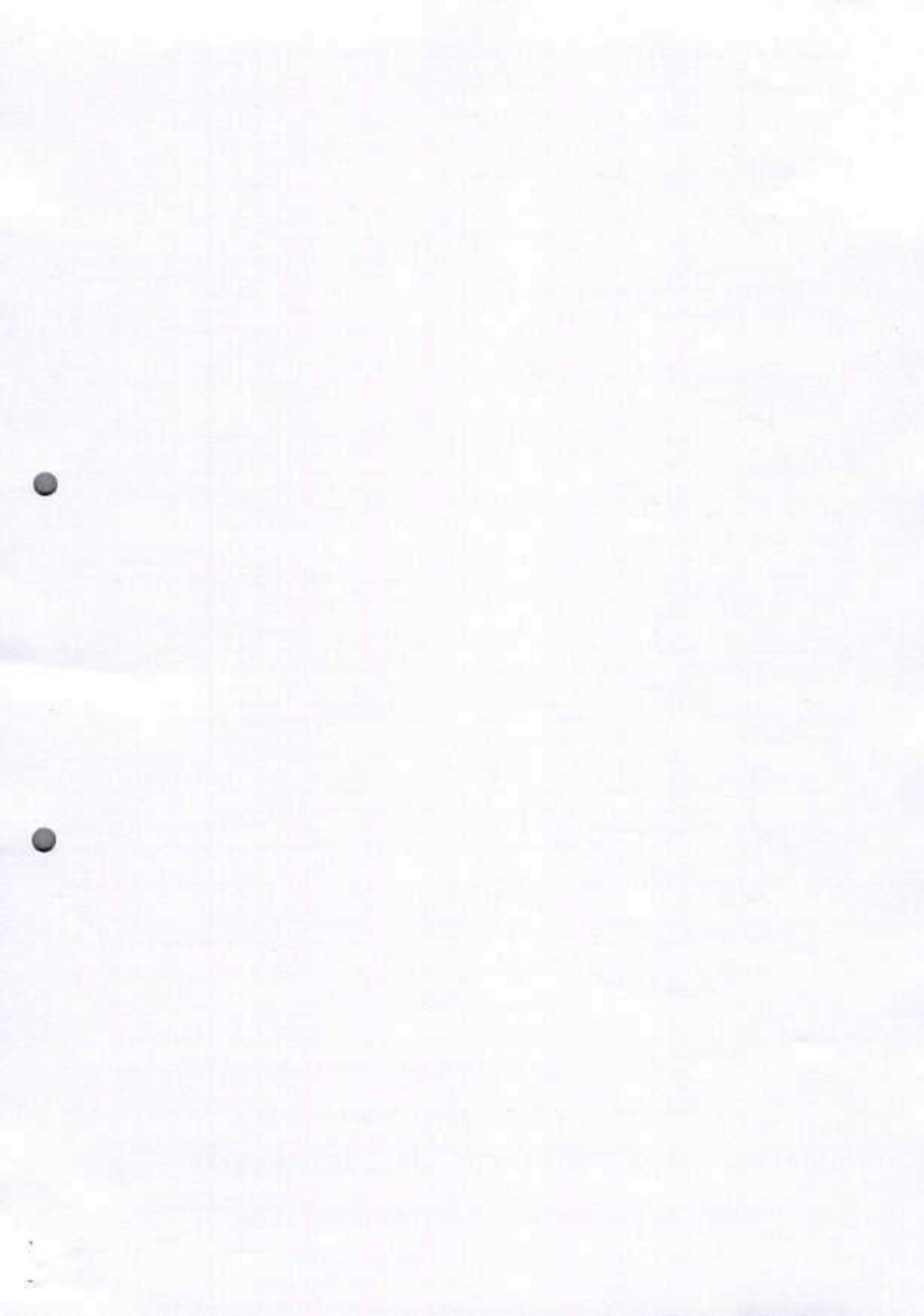
Fig 1 . Proposed Circuit Diagram of 3 stage PFC-ILBC

When $V_g > V_o/(1+\beta)$, Q_1 turns on, and when $V_g < V_o/(1+\beta)$, Q_1 turns off, Q_2 turns on. Equivalent inductance is

$$L_{eq1} = \frac{\left(\frac{V_g}{V_o}\right)(1-\beta^2)}{(1+\beta)\left(\frac{V_g}{V_o}\right)-\beta} L_{cp} \quad (1)$$

When both Q_1 and Q_2 are off, the equivalent inductance is computed as follows:

$$L_{eq2} = (1-\beta) L_{cp} \quad (2)$$



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 Srinivasa, S., Harshitha, P., Vijay, L., Arulanantham, D., Palani, R.T.
39th International Conference on Intelligent Computing Technologies, ICICT 2022 - Proceedings, 2022, pp. 199-204
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Ganesh, V., Arulanantham, D., Thirumala, K., Jeevan Prasad, L., Sathya, S.D.
2022 4th International Conference on Trends in Electronics and Information, ICEI 2022 - Proceedings, 2022, pp. 274-278
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George, L., Arinze, L., Marudra, A., Arulanantham, D.
IEEE Transactions, 2022, 67(5), pp. 1146-1174
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Arulanantham, D., Palaniandy, C.
International Journal of Communication Systems, 2021, 14(5), e1218
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Research - Open access

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Arulanantham, D., Palaniandy, C., Prabhakaran, S., Sathya, S.
Journal of Physics: Conference Series, 2021, 2140(1), 012001
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Article

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Arulanantham, D., Palaniandy, C.
International Journal of Communication Systems, 2021, 14(5), e1217
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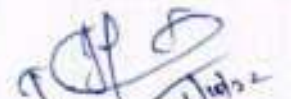
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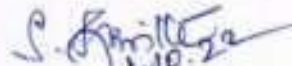
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Published in: 2022 6th International Conference on Trends in Electronics and Informatics (ICOEI)

Date of Conference: 28-30 April 2022 **INSPEC Accession Number:** 21659934

Date Added to IEEE Xplore: 24 May 2022

DOI: 10.1109/ICOE53556.2022.9777139

ISBN Information:

Publisher: IEEE

Conference Location: Trunelveli, India

☰ Contents

I. Introduction

The Orthogonal frequency division multiplexing is the way of transferring the information where a solitary data stream is split among a few firmly dispersed narrow band sub channel frequencies rather than a solitary Wide band channel frequency. It is generally utilized in remote information transmission yet may be worked in wired and fiber optic correspondence as well. In a conventional single channel regulation plan, every information bit is sent sequentially or successively in a steady progression. In OFDM, several pieces can be sent in equal, or simultaneously, in two different sub stream channels. This empowers each sub stream's data rate to be lower than would be needed by a solitary stream of comparable data transmission. This makes the framework less defenseless to interference and empowers more productive information transfer speed. Orthogonal recurrence division multiplexing has numerous advantages over a solitary channel information transmission approach. Primarily, OFDM is stronger to electromagnetic impedance, and it enables more proficient utilization of absolute accessible data transmission because the sub channels are firmly dispersed. It is likewise more safe to interference in light of the fact that few channels are available. Advanced error adjustment can be utilized to fan out the general information to create redundancy. Thus, narrow band obstruction on a single sub channel won't influence different channels, enabling the generally framework to in any case work. Recurrence particular interference blurring due to multi path reverberation impacts can likewise be corrected. The lower information rate on the individual sub channels enables guard stretches to be utilized between images, which eliminates inter symbol impedance and assists with multi path errors. There are two essential detri-ments with OFDM looked at to single-channel frameworks. OFDM frameworks should have closely tuned transmitters and recipients. This requires the circumstance on signal modulators and demodulators be firmly coordinated and produced to tight resistances. It likewise makes the framework more sensitive to Doppler shift and, along these lines, less compelling for fast moving vehicles. OFDM additionally has a few advantages compared to standard recurrence division multiplexing. The ra-dio frequency beneficiary is more straight forward in OFDM in light of the fact that the entire transmission can be gotten in a solitary recurrence selective filter and isolated in programming utilizing a quick Fourier transform, while a OFDM framework requires a different RF band pass filter for each channel.

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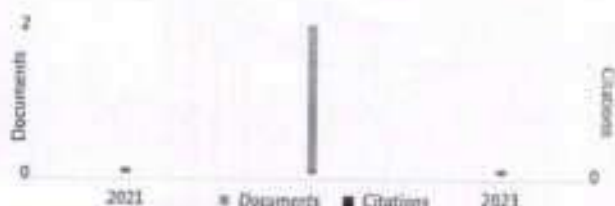
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2022 6th International Conference on Trends in Electronics and Informatics, ICOTEI 2022

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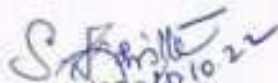
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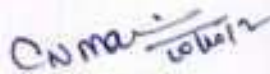
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With the development of smart devices and high-speed internet, demands for the ever-increasing number of videos. Comparing conventional machine learning methods with in-depth Reading methods. The two independent steps used to decipher text is; the discovery of the Candidate text region and the division into categories. Then, the text texts received were, distributed through a few layers of CNN, which first produced a conversion feature map as well as Divide candidate circuits into text or non-text classes. Explored the proposed programs. On the data got from various Telugu videos. The data sets have been collected by collecting, videos from various Telugu channels. Text from the video provides useful information, which can create a default video index and retrieval system and integrated heuristic and in-depth learning-based approach Neural Network (CNN) to automatically output text to video. Two independent steps were used to extract the existing text; the discovery of the Candidate text region and the division into categories. In the first step, the circles are rectangular. It identified textual content using heuristics, which included morphology analysis and geometric issues. Then, the text of the accepted candidate text has transferred to a few layers of CNN, which first produced a convolutional feature map and then split the candidate regions into text or non-text classes. Video collection organized on the website is different. channels Telugu. 70 percent of the data have been used for network training while 30

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☰ Contents

I. Introduction

The advent of smart devices and high-speed internet has resulted in a large amount of formal and informal data such as audio, video, and images. These advances in technology have made it possible to produce, storage, and processing a large amounts of video captions. However, this is a time-consuming and sometimes inconsistent video activity. It may limit search capabilities due to the lack of complete video data and requires further reference and retrieval system. In addition to the audio content of the video, text from within video frames provides valuable information about visual content that can be used for automated video identification. This text content is categorized as group text or graphic text. Graphic text is an additional inclusion of text content during editing, more commonly known as transactional text or caption text. Group text appears naturally during video recording or photography. The text contained within the video or image is significant and comes in different styles with different layouts and alignment. Support in content video content, a possible way would be to automatically identify contents in the video. Other than the audio and visual content, text information in videos provides valuable clues, which can be used for automated identification and retrieval. Text from videos has different fonts, sizes, and alignments that are automatically separated as text or group text. Synthetic text, also known as plain text or caption text, is embedded within the video during the editing process to give it extra semantics. Conversely, scenes are text that appears naturally in a photo while recording a video or taking a photo. The template text comes in an unexpected format with a variety of layouts and variations, making its availability very challenging. Although, the synthetic text is usually aligned directly or horizontally with higher brightness, which makes it more readable and easier to find and extract.

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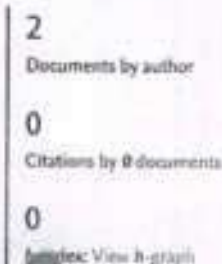
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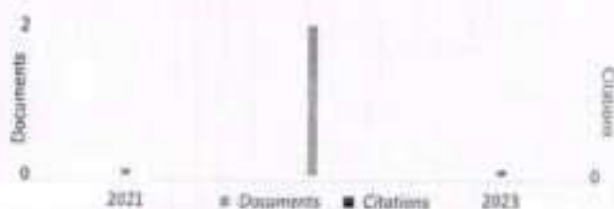
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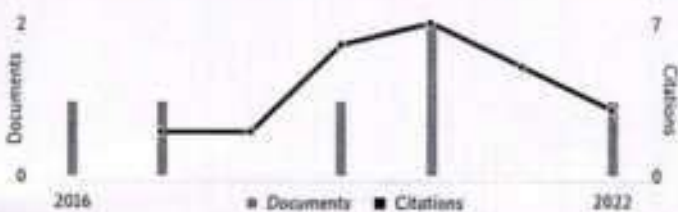
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International Journal of Advanced Science and Technology, 2020, 29(3), pp. 5679–5689

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Accurate recognition of ancient handwritten Tamil characters from palm prints for the Siddha medicine systems

Vellingiraj, E.K., Balasubramanie, P.
International Journal of Business Intelligence and Data Mining, 2020, 16(3), pp. 345–360

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International Journal of Recent Technology and Engineering, 2019, 8(3), pp. 8407–8412

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Information extraction and text mining of Ancient Vattezhuthu characters in historical documents using image zoning

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Proceedings of the 2016 International Conference on Asian Language Processing, IALP 2016, 2017, pp. 37–40, 7875929

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Giridharan, R., Vellingiraj, E.K., Balasubramanie, P.
2016 International Conference on Recent Trends in Information Technology, ICRTIT 2016, 2016, 7569600

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Original article | [Published: 30 January 2022](#)

Fuzzy logic controlled 3 port DC to DC Cuk converter with IoT based PV panel monitoring system

[A. Senthilnathan](#) , [R. Murugasami](#), [R. Balakrishnan](#), [R. Sundar](#) & [P. Palanivel](#)

International Journal of System Assurance Engineering and Management (2022)

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Abstract

Clean energy is the energy that is created from sustainable sources. Owing to inconstancy of ambient circumstances, the output from PV panels/cells fails to supply maximum power to a load, despite rising demand for solar photovoltaic (PV) energy. As a result, maximum power point tracking (MPPT) is becoming increasingly important for PV systems. A new internet of things (IoT)-enabled MPPT fuzzy controller is developed and implemented in this study suggested circuit system makes use of Internet of Things-based sensors to communicate critical data to cloud for remote monitoring and control. IoT platform enables remote monitoring of system. This research paper portrays a 3 port DC to DC Cuk converter that is intended to associate two sources

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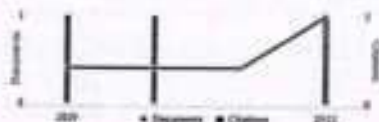
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Senthilvelan, A., Murugasami, R., Subramanian, R., Yanika, K., Palanisami, P.
 International Journal of Systems, Services Engineering and Management, 2022

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Performance analysis of clock pulse generators and design of low power area efficient shift register using multiplexer based clock pulse generator

Murugasami, R., Rajagathi, G.
 Microelectronics Journal, 2021, 101, 100915

2
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Principal

Binary Vedic Multiplication Using Carry Save Adder CS3A based on Modified Approximate Three Operand Adder

A. Priyanga¹, C.N. Marimuthu²

¹PG Scholar, Department of Electronics and Communication Engineering, Nandha Engineering College.

²- Professor, Department of Electronics and Communication Engineering, Nandha Engineering College.

Abstract- Consumer electronics markets have increased demand for high-speed, low-power adders with huge operands to be used in new portable systems. One of the most promising ways for achieving a trade-off between delay and power consumption for the addition of big operands is the CSA adder. In this paper, a VLSI architecture is proposed based on Binary Vedic multiplication using Carry save adder. The suggested changing binary Vedic multiplication technique is more efficient in terms of delay. The Vedic multiplication method can be extended for a larger bit size. The Xilinx ISE Design Suite 14.2 is used for circuit synthesis. The simulation results for 4 bit and 8 bit multiplication. VLSI implementation results when compared with existing it reveal that the suggested adder saves more than 12% of energy and reduces the area-delay-product by more than 5%.

Index Terms— Three-operand adder, carry save adder (CSA), Vedic Multiplication.

I. INTRODUCTION:

The word "Vedic" is derived from the word "Veda" which means the store-house of all knowledge. The word "Vedic" comes from the word "Veda" which implies the store-house of all information Vedic arithmetic is associate ancient system of arithmetic existed in Asian nation. Vedic arithmetic is far less complicated and simple to know than typical mathematic. Developing digital systems is hampered by the number. The spread of strategies for implementing quick multipliers within the literature. Another approach for implementing an efficient number is that the Vedic multiplication formula. In Vedic arithmetic, there are three ways to travel concerning multiplying. nVedic of the 3-strategies is generic, that means it's going to be employed in any situation; the opposite are situation-specific. Urdhva Tiryakbhyam is that

the primary vedic multiplication formula. Literally, it signifies in 2 directions: up and down.

This multiplier number multiplies 2 operands vertically and crosswise then, adds the ensuing sums.

$$\begin{array}{r} 1 \ 6 \\ \times 3 \ 3 \\ \hline 1 \ 8 \quad \leftarrow 3 \times 6 \\ 1 \ 2 \times \quad \leftarrow 3 \times 4 \\ 1 \ 8 \times \quad \leftarrow 3 \times 6 \\ \hline 1 \ 2 \times \times \quad \leftarrow 3 \times 4 \\ 1 \ 5 \ 1 \ 8 \end{array}$$

Fig 1: 2x2 Vedic Multiplication

Multipliers are key parts of the many high performance systems such as FIR filters, Microprocessors, Digital Signal Processors etc. To perform multiplications, an oversized range of adders or parts are used. The traditional system of arithmetic named as vedic multiplier was rediscovered from the Vedas. In distinction to traditional method, this vedic multiplier is easier and simple to know.

It includes sixteen-sutras or formulae and 13 sub-sutras. The variability of applications of this multiplier includes theory of numbers, compound multiplication, pure mathematics operation, calculus, squaring, cubing, cube root, easy quadratic, geometry and marvellous to vedic Numeric Code. The speed is a vital consider the third-dimensional VLSI drawback and conjointly a constraint within the multiplication operation. Therefore increase in speed will be achieved by sinking the quantity of steps within the computation method. Therefore the potency of the system will be evaluated by the assistance of Speed and space consumed by the parts of number determines the potency of a system.

The technique use in this multiplier is principally supported sixteen Sutras. Vedic multiplier techniques

High-Speed Area-Efficient VLSI design of Three-Operand Binary Adder

A. Priyanga¹, C.N. Marimuthu²

PG Scholar, Department of Electronics and Communication Engineering, Nandha Engineering College, Erode, Tamil Nadu, India¹

Professor, Department of Electronics and Communication Engineering, Nandha Engineering College, Erode, Tamil Nadu, India²

ABSTRACT: Carry Save Adder (CSA) is the extensively used fashion to perform the three operand addition. This adder is that the start purposeful unit to perform fully completely different calculation in cryptography and pseudorandom bit generator (PRBG) rule. However, the ripple carry stage in the CSA leads to a high propagation delay of $O(n)$. Also, the complement of the carry is generated and propagated inside the carry network of the proposed adder in order to drop the detention. It is one of the foremost promising ways to achieve power consumption for the summation of big operands. This study presents a new replacement adder architecture, specifically designed for big operands, supports on the premise that in massive parallel-prefix adders, the smallest significant carries are produced much sooner than the most-significant ones. This ends up in decrease of the area of the summation blocks while not compromising the speed. The results of the proposed adder reported is quicker than the CSA for 32-, 64- and 128- bit design severally.

KEYWORDS: Three-operand adder, Pseudorandom bit generator (PRBG), carry save adder (CSA)

I. INTRODUCTION

To achieve optimum system performance whereas maintaining physical security, it's necessary to implement the cryptography algorithms on hardware standard arithmetic like standard mathematical operation, standard multiplication and standard addition is often used for the arithmetic operations in varied cryptography algorithms so, and the performance of the cryptography formula depends on the economical implementation of the congruential standard operation. The foremost economical approach to implement the standard multiplication and mathematical operation is that the Montgomery formula whose important operation relies on three-operand binary addition. The three-operand binary addition is additionally a primary operation within the linear congruential generator (LCG) based mostly pseudo-random bit generators (PRBG) like coupled LCG (CLCG), changed dual-CLCG (MDCLCG) and matched variable input LCG (CVLCG) changed dual-CLCG (MDCLCG) is that the most secure and extremely random PRBG technique among all the LCG-based and alternative existing PRBG ways. It's polynomial-time unpredictable and secure if $n \geq 32$ -bits. Therefore, the safety of the MDCLCG enhances with the rise of quantity size. However, the region and important path delay will increase linearly since its hardware design consists of 4 three-operand modulo- 2^n adders, 2 comparators, four multiplexer's space. Hence, the performance of the MDCLCG will be bettered by the provident perpetration of the three-operand adder. The three-operand binary addition are applied either used as a pair of two-operand adders or 1 three-operand adder. The three-operand binary addition may be allotted either by mistreatment 2 two-operand adders or one three-operand adder. Carry-save adder (CS3A) is that the area-efficient and wide adopted technique to perform the three-operand binary addition at intervals the quality arithmetic used in cryptography algorithms and PRBG ways that. However, the longer carry propagation delay at intervals the ripple-carry stage of CS3A seriously influences the performance of the MDCLCG and different cryptography architectures on IoT based hardware devices. Therefore on dock the veritably important path detention, a prefixed two-operand adder like Hui-Carlson (HCA) may be used for three-operand double addition. It reduces the vital path delay within the order of $O(\log_2 n)$ however will increase the region within the order of $O(n \log_2 n)$. Therefore, it's a necessity to develop associate economical VLSI style to carry out the short three-operand binary addition with minimum hardware resources. Hence, a novel high-speed space-efficient adder technique is planned practice pre-compute bitwise addition followed by carry-prefix computation logic to perform the three-operand addition throughout this paper that consumes considerably lower gate space whereas minimizing the propagation detention compared to the HCA- grounded three-operand adder (HC3A). The planned adder design is enforced with the Verilog HDL, then synthesized with industrial

Autonomous Car Parking System Using GSM and RFID Module

Barath R¹, Karthick Kumar K¹, Karthick R¹, **Dr C N Marimuthu M.E.,Ph.d²**

Department of ECE, Nandhu Engineering College, Erode, India¹

Professor & Dean, Department of ECE, Nandhu Engineering College, Erode, India²

ABSTRACT: In this fast-moving world of technologies, everyone finds difficult in some platform. Mainly the people spend most of their time in finding the parking slot areas to park the car. While parking the car in parking slot area, the peoples face some difficulties like spending the time and work. People want to use those time for some other important work. While considering people in parking the car in commercial places like shopping malls, cinema theatres, etc...first they have to find the space, only after that they park the car. We designed the solution for to save the humans time and work by automation technology. This technology would designed by hardware and software. This technology is named as Autonomous car parking system using GSM and RFID module. This project will give the exact solution for people to park the car easily and get the car parking slot with the help of some modules. The Autonomous car parking system enables a vehicle to drive itself and park the car in parking area without any human help. We have designed car parking areas of driverless car for detecting and parking the car automatically. Once the car reached the car parking area, the car will start to detect the empty parking slot and detect the road line based on detecting technology. The car will keep on moving the road as well as it detects the free space in both the sides. Once it detected the available parking slot then, the car gets parked and read the Parking slot number using RFID module. Once it was read parking slot number, the slot number and car current status will share through message to the car owner or car driver using GSM module.

KEYWORDS: Hardware, Software, RFID, GSM Module

I. INTRODUCTION

Even if we find the space for parking the vehicle so much time is wasted in finding the exact vehicle parking slot area. It results in more fuel consumption and it is not environment friendly. If we could automatically detect the exact vacant position of the parking slot, it would be helpful not only for the drivers but also for the society. This concept of autonomous car parking system was driven by two main factors: that is need for car parking space and aware of available land. The Autonomous car parking system uses a mechanical device for transporting vehicles to parking spaces in order to conserve a significant amount of space that would otherwise be spent manual parking. The ACPS technology is also known by variety of other names like Automated parking facility (APF), Real time Car parking system (RTCPS), Smart parking System (SPS). All car parking technology will reduce the car parking spaces and saving the time and human work. We designed car parking system technology. The process is that, when the car enters into the parking area, the driver exit the care and enable the parking mode. Once it enabled the car will entering into the parking area and find the parking slot whether the place is vacant or not. Once it find the parking place, the car will parked automatically. Till the process is already exist. We additionally added some extra features like while parking the car in vacant place, once it parked the car will detect the car parking slot number by the help of Radio frequency identification (RFID) module and send the parking slot number to Driver through wireless medium with the help of GSM Module.

II. LITERATURE SURVEY

1. REAL TIME CAR PARKING SYSTEM USING IMAGE PROCESSING

Car parking areas are an essential concept in a vast scope of traffic and civilian applications. With the massive issue of urban traffic congestion and the ever-increasing scarcity of parking spaces, these car parking locations must be well-equipped with autonomous parking data and guidance systems. The counting of parked cars and finding the available car parking site are two goals of intelligent parking list management. Using image processing technologies, this research presents a new approach for giving parking information and guidance. Counting the number of parked cars is part of the proposed system. Instead of employing electronic sensors or modules placed in the floor, the auto parking system uses pictures to detect the vehicles. At the entrance to the car parking area, a camera has been installed. The

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HUMAN EPILEPTIC SEIZURES DETECTION BASEDON IoT

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ABSTRACT

Epilepsy is the most common neurological disorder and it can affect all the people particularly for the patient's affected by a brain tumor, elder people affected by stroke, autism disorders, sleeping disorders. The most common symptoms of epilepsy is variation in heartbeat rate, muscle movement called as seizures, variation in heartbeat rate etc.

The proposed smart alert system is specially designed for the epilepsy patients to detect the seizures and send the message to caretaker or doctor. If they affected by seizures.

The smart alert system will monitor the patient's heartbeat, pulse rate,

oxygen level with the help of respective sensor. With the help of smart alert system the patient can lead normal life.

The main Objective of this proposed system is to develop the real-time monitoring and alert system to help epilepsy affected persons in their day to day activities in life.

Keywords: Cloud server..., Node MCU..., Healthcare...,

INTRODUCTION

The smart alert system is wearable gadget it detects the seizures within few minutes. It receives the signals from the human body to detect the



IoT Enabled Flotable Waste Collecting Machine With Quality Monitoring System

Dr .S. Kavitha, Professor & Dean, Department of ECE, Nandha Engineering College

C.Dharani, Final year Student,

V. Jananee, Final year Student

S.Logeshwari, Final year Student

N. Menaga, Final Year Student

ABSTRACT:

As the use of plastics grows uncontrollably in many countries, the toxins generated by these materials disturb the ecosystem and are hazardous to humans. Cleaning waste by hands would be insufficient because it frequently involves a large area of labor and endeavors, as well as the risk of contracting various diseases from the seductive microorganism found in sewage while cleaning manually. The Indian Government has taken charge of river cleaning and has invested heavily in numerous river cleaning project. Taking this into account, we intend to operate the waste collection machine by utilizing IoT to monitor the water bodies and analyze the water quality. A floatable waste-collecting machine could be a lifesaver for endangered aquatic animals and humans.

KEYWORDS: Trash Collector, Remote controlled, IoT monitoring, Water quality

INTRODUCTION:

Water is an important valuable natural resource in the world, and it should be found in many alternative forms that are divided into salt and water, as well as tiny and large. The characteristics said them apart from each other, like oceans, streams, ponds, and different natural wonders. These water bodies are vital to life on earth. But many human activities and industrial development lead to pollution of water bodies. Many countries lack the infrastructure needed to prevent plastic pollution, such as sanitary landfills, incineration facilities, recycling capacity, and circular economy infrastructure, as well as proper waste management and disposal systems as a result, 'plastic leakage' occurs into rivers and the oceans.

Every year, over 300 million tonnes of plastic are made to used in a massive selection of applications. Plastic accounts for about 80 percent of all marine garbage discovered from surface waters to sea sediments, and a minimum of 14million tonnes of it finishes up within the ocean per annum. By 2050, global primary plastic production is estimated to exceed 34 billion tonnes. Plastic waste is ingested or entangled by marine creatures, resulting in serious injury and death. Plastic pollution endangers food safety and quality, human health, coastal tourism, and climate change. More than half of our rivers and streams, as well as more than a third of our lakes, are filthy and unfit for swimming, fishing, or drinking, according to the most recent national water quality studies conducted by the Environmental Protection Agency.

A 2020 research on riverine plastic pollution from fisheries revealed greater amounts of trash fishing gear closer to the sea, with sample location along the Ganges from the Bangladesh coast to the Himalayas in India. According to the study, this is likely owing to greater levels of fishing activity and down stream buildup of fishing gear in these locations. The nets, ropes, thread, floats, and lines that makeup ghost fishing gear have been known to ensnare and kill freshwater wildlife including Gangetic dolphins, turtles, and smooth-coated otters.

DOCUMENTARY RESEARCH:

Several research in the literature have reported on and addressed river cleaning machine difficulties. M. N. Mohammed et al., (2020) have designed and developed the river cleaning robot. This study includes a recommended design for a garbage collection system that is both practical and effective for cleaning up waste from rivers, channels, and lakes. The garbage collection system is expressly

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Subarna, T.G., Sukumar, P.

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Detection and classification of cervical cancer images using CEENET deep learning approach

T.G. Subarna* and P. Sukumar

Department of Electronics and Communication Engineering, Nandha Engineering College, Erode, Tamilnadu, India

Abstract. Earlier detection of cervical cancer in women can save their lives before a chronic development. The accurate detection in cancer tissues of cervix in the human body is very important. In this article, cervical images were classified into either affected or healthy images using deep learning architecture. The proposed approach was designed with the modules of Edge detector, complex wavelet transform, feature derivation and Convolutional Neural Networks (CNN) architecture with segmentation. The edge pixels in the source cervical image were detected using Kirsch's edge detector, the Complex Wavelet Transform (CWT) was there used to decompose the edge detected cervical images into number of sub bands. Local Derivative Pattern (LDP) and statistical features were computed from the decomposed sub bands and feature map was constructed using the computed features. The featured map along with the source cervical image was fed into the Cervical Ensemble Network (CEENET) model for classifying of cervical images into the classes healthy or cancer (affected).

Keywords: Cervix, deep learning, CNN, cervical image, cancer

1. Introduction

Cervical cancer and breast cancer are the harmful diseases in women patients around the world. When compared to the breast cancer, cervical cancer is the life killing disease which is found in women patients. Some tissues in the cervix region of the women are abruptly changed and produce for the cancer cells. In early stage of this cancer, there are no symptoms found and so the women patient does not feel any pain in their abdomen [1–4]. In the advanced stage of this cancer, the women patients feel sudden pain in their abdomen followed by bleeding from the cervix. If it is not timely treated, sudden death was occur. Due to

transformation from moderate stage to advance of this cancer, the cells in the cervix region spreads rapidly the other parts of the human body such as liver and bladder. Therefore, an earlier detection of this cancer will be an important aspect to save the life of the women [5–7]. There are two conventional methods available for the identification of cervical cancer namely Cervigram and Papsmear cell test. The Cervigram is a method which scans the cervix region of the women; images scanned are used to detect the cancer regions. Papsmear cell test method, a small portion of the cells in cervix regions that are used to detect the cancer by examining the nucleus in these cells. Arora et al. [16] used Papsmear cells to identify the cervical cancer by machine learning algorithms. The cancer segmentation accuracy level was found to be 92% which is not suitable for further diagnosis and treatment process [9–11]. Thus, Cervigram method

*Corresponding author, T.G. Subarna, Research Scholar, Department of Electronics and Communication Engineering, Nandha Engineering College, Erode, Tamilnadu, India. E-mail: subarnatg@gmail.com



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3. Reason for requesting the seed money

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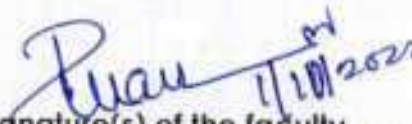
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: To enrich the knowledge
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QoS Constrained Network Coding Technique to Data Transmission Using IoT

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Abstract: The research work presents, constrained network coding technique to ensure the successful data transmission based composite channel cmos technology using dielectric properties. The charge fragmentation and charge splitting are two components of the filtered switch domino (FSD) technique. Further behavior of selected switching is achieved using generator called conditional pulse generator which is employed in Multi Dynamic Node Domino (MDND) technique. Both FSD and MDND technique need wide area compared to existing single node-keeper domino technique. The aim of this research is to minimize dissipation of power and to achieve less consumption of power. The proposed research, works by introducing the method namely Interference and throughput aware Optimized Multicast Routing Protocol (IT-OMRP). The main goal of this proposed research method is to introduce the system which can forward the data packets towards the destination securely and successfully. To achieve the bandwidth and throughput in optimized data transmission, proposed multicast tree is selected by Particle Swarm Optimization which will select the most optimal host node as the branches of multi cast tree. Here node selection is done by considering the objectives residual energy, residual bandwidth and throughput. After node selection multi cast routing is done with the concern of interference to ensure the reliable and successful data transmission. In case of transmission range size is higher than the coverage sense range, successful routing is ensured by selecting secondary host forwarders as a backup which will act as intermediate relay forwarders. The NS2 simulator is used to evaluate research outcome from which it is proved that the proposed technique tends to have increased packet delivery ratio than the existing work.

Keywords: Multicast routing; optimal node selection; secondary relay nodes; probability of interference; residual energy; bandwidth; throughput



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Request to receive Seed Money for Research

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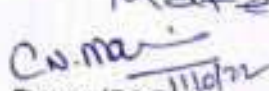
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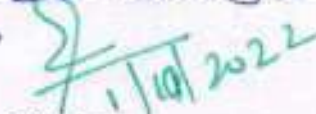
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2. Name of the Department : MECHANICAL
3. Reason for requesting the seed money : PAPER PUBLICATION
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5. Whether the fund request is comes under
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6. If NO, justify how this request is useful
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7. Expected outcome of this request

: To enrich the knowlege
of Thermal characteris
of phase change
Material.


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Analyzing thermal characteristics of an inorganic phase change material

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ARTICLE INFO

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DSC

Nano-silica

PCM

Thermal characteristics

ABSTRACT

The use of inorganic phase changing materials (PCMs) in thermal energy storage systems has become widespread due to the remarkable energy saving capabilities of these substances. In the current investigation, the enhancement in energy storage capability of the calcium chloride hexahydrate (CaCl₂·6H₂O) had been attempted with the assistance of nano-silica addition. Four different proportion of nano-silica (0.3%, 0.6%, 0.9% and 1.2%) had been employed for this purpose. The thermal characteristics namely, latent content, phase transformation temperatures, and thermal conductivity of the CaCl₂·6H₂O with the presence of nano-silica had been assessed using DSC and thermal properties analyzer. The results confirmed that the inclusion of nano-silica at 0.6% mass proportion in CaCl₂·6H₂O would enhance the thermal storage characteristics in terms of its thermal conductivity to a grander magnitude, without much losing the latent content of the salt hydrate. Whereas, the maximum drop in latent content of 27.1% and 27.51% during heating and cooling was observed at 1.2% fraction of nano-silica in CaCl₂·6H₂O. Copyright © 2023 Elsevier Ltd. All rights reserved.

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1. Introduction

Considering that many different forms of energy are inconsistent by their existence, stowage of energy plays a significant role in both the conservation of the energy that is now accessible and the improvement of its consumption. In the majority of instances, storing for only a very short duration is desired; but, in other uses, stowage for longer periods of time, such as a few weeks could be necessary [1,2]. Since energy from the sun can really be harvested only for a few hours in a day, its usage necessitates the development of a reliable heat storing system. It has become necessary for allowing the additional unused heat that is being gathered throughout the daytime to be saved for subsequent utilization in the evening and overnight periods. When the supply of excess heat and the times during which it has been utilized are varied, analogous challenges exist in thermal energy recovering units. This results in the necessity of heat recovery as well as storing units [2,4]. Furthermore, the usage of electricity obviously varies

throughout the day and evening hours, particularly in nations with incredibly cold climates and nations with exceptionally hot climates, respectively, in which the majority of the fluctuation in usage has been caused by household room air conditioners. A time of lower customer demand results, which often begins around nighttime and continues into the dawn. As a consequence of this, power generators ought to be built with capabilities that are adequate enough to fulfil the peak demand. Instead, it would've been necessary to have a power supply system that was exceedingly powerful [5]. Effective governance of the electricity generating process is possible if any of the maximum demand can indeed be moved to the low demand time. This is something that can be accomplished by heat energy storage that can either store hotness or chillness. Because of this, the utilization of load shedding and renewable power effectively is dependent, to a significant degree, on the form of thermal storage that is implemented [6,7].

Among all the purposes that were just discussed, the sensibly heating method is listed as the one that has been utilized for storing thermal energy in the often times. In sun-based heating units, water has been utilized for thermal stowage in fluid-dependent units, whereas a stone-bed has been widely used in wind-

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Request to receive Seed Money for Research

Application No. : 119

Date: 05/05/2022

1. Name of the Faculty : DR.C.SIVA
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2. Name of the Department : INFORMATION TECHNOLOGY
3. Reason for requesting the seed money : PAPER PUBLICATION
4. The Requested amount under seed money in (Rs) : RS.5000/-
5. Whether the fund request is comes under Research policy : Yes or No Yes
6. If NO, justify how this request is useful For Research : -
7. Expected outcome of this request : To upgrade the knowledge in cloud technology.

Name of the faculty : [Dr.C.siva]
HOD

Dean (R&D) : [Signature]
Principal : [Signature] 5/5/2022

RESEARCH ARTICLE

A hybrid soft computing technique for intrusion detection in web and cloud environment

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Abstract

Cloud computing environment contains important, essential, or confidential information; therefore, a security solution is needed to prevent this environment from potential attacks. In short, cloud computing has become one of the most sought after technologies in the field of information technology, and among the most dangerous threats. In this article, we propose a hybrid soft computing technique for intrusion detection in web and cloud environment (ST-IDS). In ST-IDS, we illustrate whale integrated slap swarm optimization algorithm for pre-processing which remove the unwanted/repeated data's in dataset. We introduce new clustering technique based on modified tug-of-war optimization algorithm which groups the data in different segments. Then, we develop hybrid machine learning technique that is, capsule learning based neural network which categorize the attack in cloud environment. Finally, the proposed ST-IDS technique can evaluate through standard open source datasets are KDD cup'99 and NSL-KDD. The performance comparison of the proposed ST-IDS technique using existing innovative technologies in terms of accuracy, precision, recall, specificity, F measure, false positive rate, and false negative rate.

KEYWORDS

CLNN, clustering technique, hybrid machine learning, IDS, intrusion detection, preprocessing

1 | INTRODUCTION

Cloud computing is a novel computing model that provides resources and applications to meet the computing needs of Internet service users. The cloud computing servers are classified as Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). The use of cloud vulnerabilities undermines the integrity, service, privacy, and accessibility of cloud resources.¹ In cloud computing the protection against network attacks is the most important protection issues. Network layer attacks include IP fraud, DNS poisoning, human intrusion, and port scanning. To avoid cloud services, a firewall with the main cloud providers such as are used.^{2,3} The first line of defense is the firewall which protects the system's front entry points. Therefore, it is impossible to determine the depth pressure. Some DoS or DDoS attacks make it difficult to use traditional screens.⁴ Cloud computing is also known as Internet computing. The use of the Internet for computing purposes is described by the cloud computing.⁵ The cloud icon on the network map represents the internet, so this type of cloud has its own metaphor. The main advantage of a cloud computing is that you can use the resources anywhere and anytime and save everything on a given resource. The cloud service provider is a person who provides these kind of services. The service provider does not require all the computer resources.⁶ The final accountant should rely on the final calculation requirement of multiple service providers. Another great advantage of the company is that it significantly reduces capital costs to create corporate resources, which paves the way for young entrepreneurs.