# Characterization of Rainfall and Length of Growing Period Over North Western Zone of Tamil Nadu

July 2017 · Indian Journal of Ecology 44(2):232-238

Project: Agricultural Model Intercomparison and Improvement Project



Authors:

**Sathyamoorthy NK**
Tamil Nadu Agricultural University

**Ap Ramaraj**
International Crops Research Institute for ...

**Dheebakaran Ganesan**
Tamil Nadu Agricultural University

**Arthirani Bangaru**

**Senthilraja K.**
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# Response of Contemporary Maize Hybrids to Future Climate Change for Tamil Nadu, India

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**Authors:**

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Tamil Nadu Agricultural University

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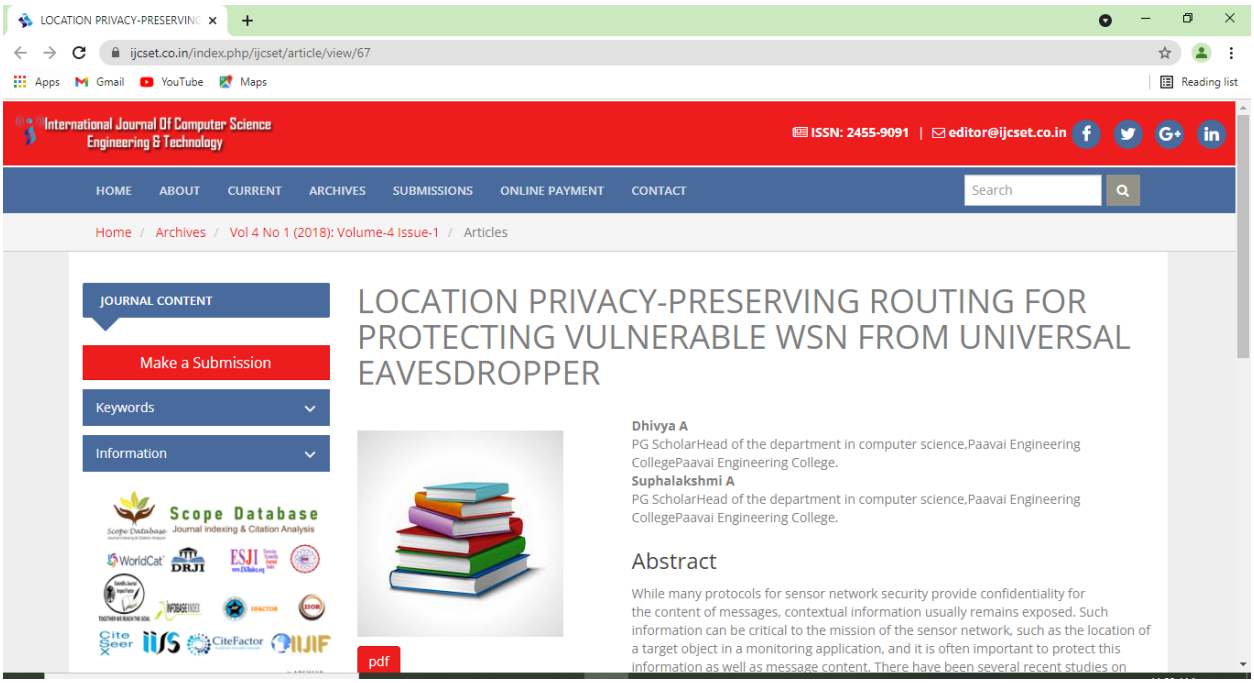

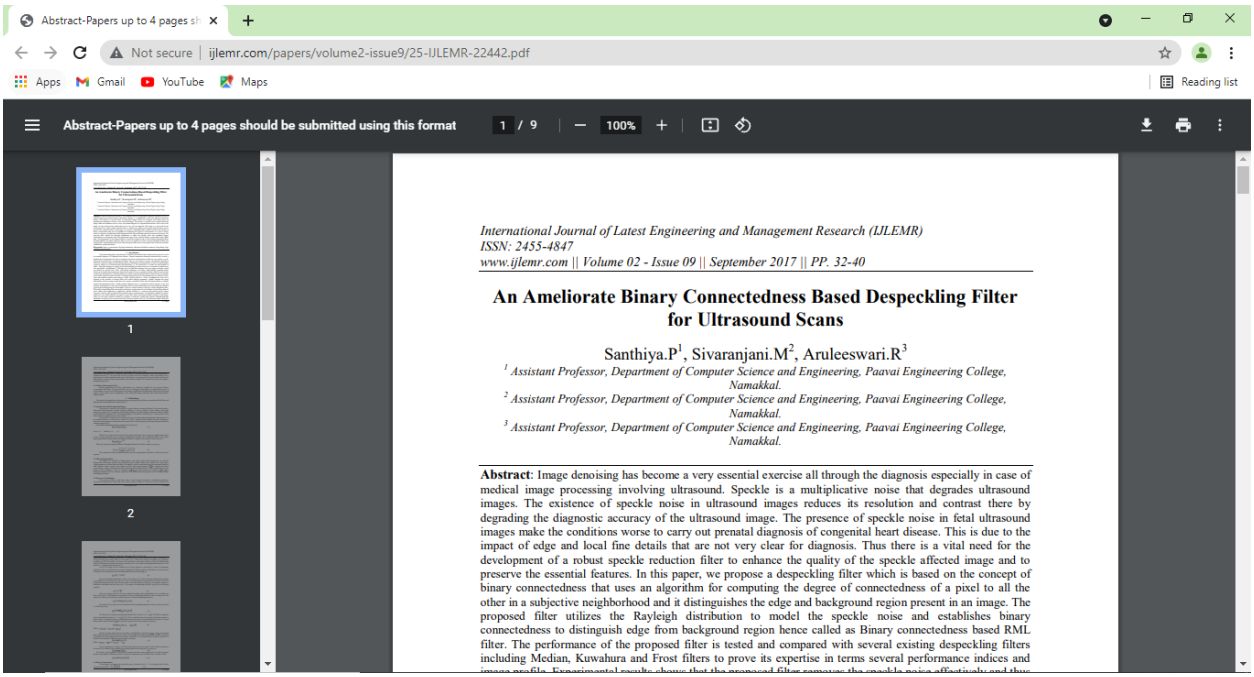
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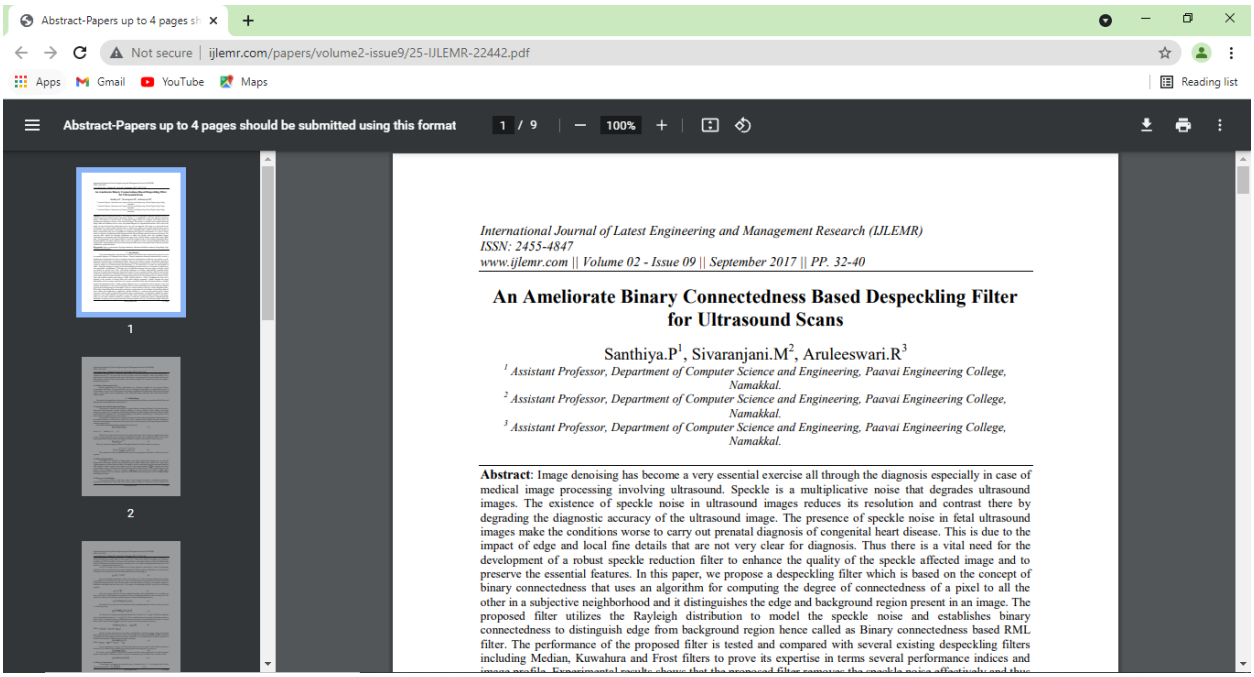
An Ameliorate Binary Connectedness Based Despeckling Filter for Ultrasound Scans
Santhiya.P[1], Sivaranjani.M[2], Aruleeswari.R[3]
[1] Assistant Professor, Department of Computer Science and Engineering, Paavai Engineering College, Namakkal.
[2] Assistant Professor, Department of Computer Science and Engineering, Paavai Engineering College, Namakkal.
[3] Assistant Professor, Department of Computer Science and Engineering, Paavai Engineering College, Namakkal.
Abstract: Image denoising has become a very essential exercise all through the diagnosis especially in case of medical image processing involving ultrasound. Speckle is a multiplicative noise that degrades ultrasound images. The existence of speckle noise in ultrasound images reduces its resolution and contrast there by degrading the diagnostic accuracy of the ultrasound image. The presence of speckle noise in fetal ultrasound images make the conditions worse to carry out prenatal diagnosis of congenital heart disease. This is due to the impact of edge and local fine details that are not very clear for diagnosis. Thus there is a vital need for the development of a robust speckle reduction filter to enhance the quality of the speckle affected image and to preserve the essential features. In this paper, we propose a despeckling filter which is based on the concept of binary connectedness that uses an algorithm for computing the degree of connectedness of a pixel to all the other in a subjective neighborhood and it distinguishes the edge and background region present in an image. The proposed filter utilizes the Rayleigh distribution to model the speckle noise and establishes binary connectedness to distinguish edge from background region hence called as Binary connectedness based RML filter. The performance of the proposed filter is tested and compared with several existing despeckling filters including Median, Kuwahura and Frost filters to prove its expertise in terms several performance indices and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International Journal of Latest Engineering and Management Research (IJLEMR)
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Santhiya.P[1], Sivaranjani.M[2], Aruleeswari.R[3]
[1] Assistant Professor, Department of Computer Science and Engineering, Paavai Engineering College, Namakkal.
[2] Assistant Professor, Department of Computer Science and Engineering, Paavai Engineering College, Namakkal.
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# An Ameliorate Binary Connectedness Based Despeckling Filter for Ultrasound Scans

Santhiya.P[1], Sivaranjani.M[2], Aruleeswari.R[3]
[1] *Assistant Professor, Department of Computer Science and Engineering, Paavai Engineering College, Namakkal.*
[2] *Assistant Professor, Department of Computer Science and Engineering, Paavai Engineering College, Namakkal.*
[3] *Assistant Professor, Department of Computer Science and Engineering, Paavai Engineering College, Namakkal.*

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# Efficient Algorithm for Big Data Application

**Santhiya R, Revathi M, Madanachitran R**

**Assistant Professor, Department of Computer Science and Engineering, Paavai Engineering College, Namakkal**

**ABSTRACT:**
Data mining applications play an important role in IT firms where energy wastage is the main problem. Increase in workload and computation leads to high energy cost. Mapreduce scheduling algorithm is a model which is developed for processing and storing large volume of data at the same time. EMRSA is an algorithm gives reliable energy and reduction in maps based on arrangement priority based scheduling is provided to the test for utilization and system using one step algorithm and three step algorithm Iterative algorithm by various calculations Efficient mining characteristics, too energy.

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# Biologically Inspired Clustering algorithms in Mobile Wireless Sensor Networks: A Survey

[1]Sudha.M and [2]Sundararajan.J

[1]Assistant professor, Department of ECE, Paavai Engineering College, Namakkal, Tamilnadu, India.
[2]Principal, Pavai College of Technology, Namakkal, Tamilnadu, India.

Received 1April 2017; Accepted 18 June 2017; Available online 2 July 2017

**Address For Correspondence:**
Sudha. M, Assistant professor, Department of ECE, Paavai Engineering College, Namakkal, Tamilnadu, India.



**ABSTRACT**

In recent years, the utilization of Mobile Wireless Sensor Network (MWSN) goes on increasing tremendously in all kind of real-time applications. It includes security, computer networks, robotics, control systems, parallel processing, bio-medical engineering, data mining, power systems, mobile wireless sensor networks, agricultural application, production engineering, Industrial automation, and more. MWSN nodes are autonomous, self-powered with limited battery and easily prone to failure. The mobile nature of sensor nodes tends to scarce the network energy quickly which leads to reducing the longevity of the network. So that, a lot many clustering methods proposed previously to improve the network lifetime by reducing power consumption. In this paper, we provide a detailed survey on Biologically Inspired Clustering (BIC) algorithms. In general, BIC algorithms are stimulated by nature, brain, and evolutionary methods provide computational intelligence to resolve real-world problems which affords enhanced reliability, effective adaptation with added robustness and scalability. Hence, here, we address the related surveys

International Journal of Mobile Network Design and Innovation > 2017 Vol.7 No.2

# Title: Cluster-based routing using fuzzy and bee colony optimisation in mobile wireless sensor networks

**Authors**: M. Sudha; J. Sundararajan

**Addresses**: Department of Electronics and Communication Engineering, Paavai Engineering College, Namakkal, Tamil Nadu, India ' Pavai College of Technology, Namakkal, Tamil Nadu, India

**Abstract**: In mobile wireless sensor networks, the existing routing technique results in increased energy consumption, time consumption, delay, increased mobility, and so on. Hence, in this paper, we propose a cluster-based routing using fuzzy and bee colony optimisation in mobile wireless sensor networks. In this technique, cluster heads are elected using artificial bee colony (ABC) algorithm based on the mobility factor. Then, timeslots are assigned to each cluster member using TDMA schedule. Moreover, an inter cluster routing scheme is developed for the cluster members to route the collected messages using fuzzy logic based on the number of hops, battery level, and mobility factor.

**Keywords**: mobile wireless sensor networks; bee colony optimisation; cluster-based routing; CBR; time division multiple access; TDMA; maximum residual energy; fuzzification.

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# Cross Layer Framework for Traffic Management During Vertical Handover in HetNets

Mrs.R.Mohanapriya [#1], Dr.K.B.Jayanthi [#2]

[#]ECE Department, Paavai Engineering College, Namakkal, India
[#]ECE Department, KSR College of Technology, Tiruchengode, India
[1]mprmpriya@gmail.com
[2]jayanthikb@gmail.com

***Abstract*—Next Generation Heterogeneous Networks uncovers few challenges, which still exist and thwart in providing seamless services during mobility. Heterogeneous networks differ in their capabilities, services and scalability, therefore, to handle handoff mechanism it becomes more complex. It involves the integration of different access network technologies that differ in reliability, bandwidth or cost but intelligent enough to connect the entire world without limits. Handoff initialization and network selection are important phases to be performed well to ensure ideal QoS and better traffic management to customers. In this paper, a cross layer control mechanism is proposed for the execution of vertical handoff in three different networks (Wi-Fi, WiMAX and LTE) with the goal of maximizing the quality of service faced by each user in terms of packet dropping rate, handoff failure rate, and handoff latency. Simulations carried out using Ns-3 and results were obtained.**

**Keyword -** Cross layer information, Heterogeneous wireless networks, Vertical Handover, Traffic adaptation.

## I. Introduction

The wireless network environment consists of different access technologies, such as Wireless Local Area Network (WLAN), Wireless Interoperability for Microwave Access (WiMAX) and 2G/3G/4G cellular mobile networks. In addition, within access technologies, there are different implementations resulting in different sized cells and features. Together these constitute a heterogeneous network environment, where different base stations (BSs) of different access technologies provide varying characteristics and capabilities. They support simultaneous connectivity to multiple overlapping access networks that may be based on multiple access technologies. For a satisfactory user experience, mobile terminals must be able to seamlessly transfer to the "best" access link among all available candidates with no perceivable interruption to an ongoing conversation which can be a video or voice session. Such ability to handover between heterogeneous networks is referred to as seamless vertical handovers [1].

Whether a handover is mobile device-initiated or network-initiated, finding the most optimal handover target in the range of the mobile device currently requires network scanning in different bands. Potential handover targets

# An Enhanced Medical Diagnosis Sustainable System for Brain Tumor Detection and Segmentation using ANFIS Classifier



**Authors:** Kumarganesh, S.; Suganthi, M.
**Source:** Current Medical Imaging, Volume 14, Number 2, 2018, pp. 271-279(9)
**Publisher:** Bentham Science Publishers
**DOI:** https://doi.org/10.2174/1573405613666161216122938



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Background: Medical imaging plays a key role in detecting and diagnosing abnormal patterns from scanned images. The computer aided automatic detection of the brain tumor was proposed in this work using Adaptive Neuro Fuzzy Inference System (ANFIS) classifier.

Methods: The proposed system has the following stages as noise reduction, Gabor transform, feature extraction and ANFIS classifier. The impulse noises in the brain images were detected and removed using directional filtering algorithm. Gabor transform transformed the spatial domain image into multi resolution image and further Pixel invariant, Local Binary Pattern (LBP) and Discrete Wavelet Transform (DWT) features were extracted from the Gabor transformed image and these features were given to the ANFIS classifier to classify the image as

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SSRG International Journal of Electronics and Communication Engineering ( SSRG – IJECE ) – Volume 5 Issue 4 - April 2018

# Full-Scale Testing and Performance Evaluation of Passive RFID System for Positioning and Personal Mobility

Krishnaraj.D[1], Sathish.K.R[2], Tamilselvan.S[3],Kumarganesh.S[4]
*UG (ECE) Students[1,2&3], ASP[4], ECE, Paavai Engineering College*

***Abstract***

*The Location of a person in a bounded area can be attained by Wi-Fi Positioning System (WPS). WPS is used to identify the person or object which is equipped with inside the human habitation area using radio waves collected by smart devices. The proposed system focuses to track an individual person in an environment. The location of the person can be achieved by Radio Frequency Identification (RFID) transponders. The RFID trackers accomplish with the Unique Device Identification (UDI). The procedure is deployed using an RFID sensor based application which pinpoints the location of the personnel inside architectural frameworks. The position co-ordinates in the indoor area can be using the Wi-Fi technology. The mechanism is split into two sections - Data Collection and Position Identification. The data collection combines the location information acquired from the sensor technologies. The identification of an individual with RFID transponders which results in the tracking the person. The location information obtained from the sensors are without time constraints and is updated in the RFID readers and databases including the time*

and describes the use of radio frequency signals to provide automatic identification. Unlike the electronic article surveillance (EAS) systems used for theft detection, RFID provides a unique serial number for identification of an object. RFID is used in the Mobile Speed pass system to pay for gas without going into the store, in automobile immobilizer systems to prevent theft by uniquely identifying a key with an embedded chip, in Fast Lane and E-Z Pass toll road systems to automatically pay tolls without stopping, in animal identification, in secure entry cards to secure access to buildings, and in the supply chain to manage the flow of pallets, cases, and items. RFID technology was invented in 1948, but it was not commercialized until the 1980s. One of its first known applications was during World War II, when it was used by the British radar system to differentiate between friendly and enemy aircraft with attached radio transponders.

Most media accounts of RFID are actually about one form of RFID, the electronic product code (EPC) system. Initially, RFID was being used to identify objects in the MIT robotics laboratory but was found to be useful for managing the supply chain. The

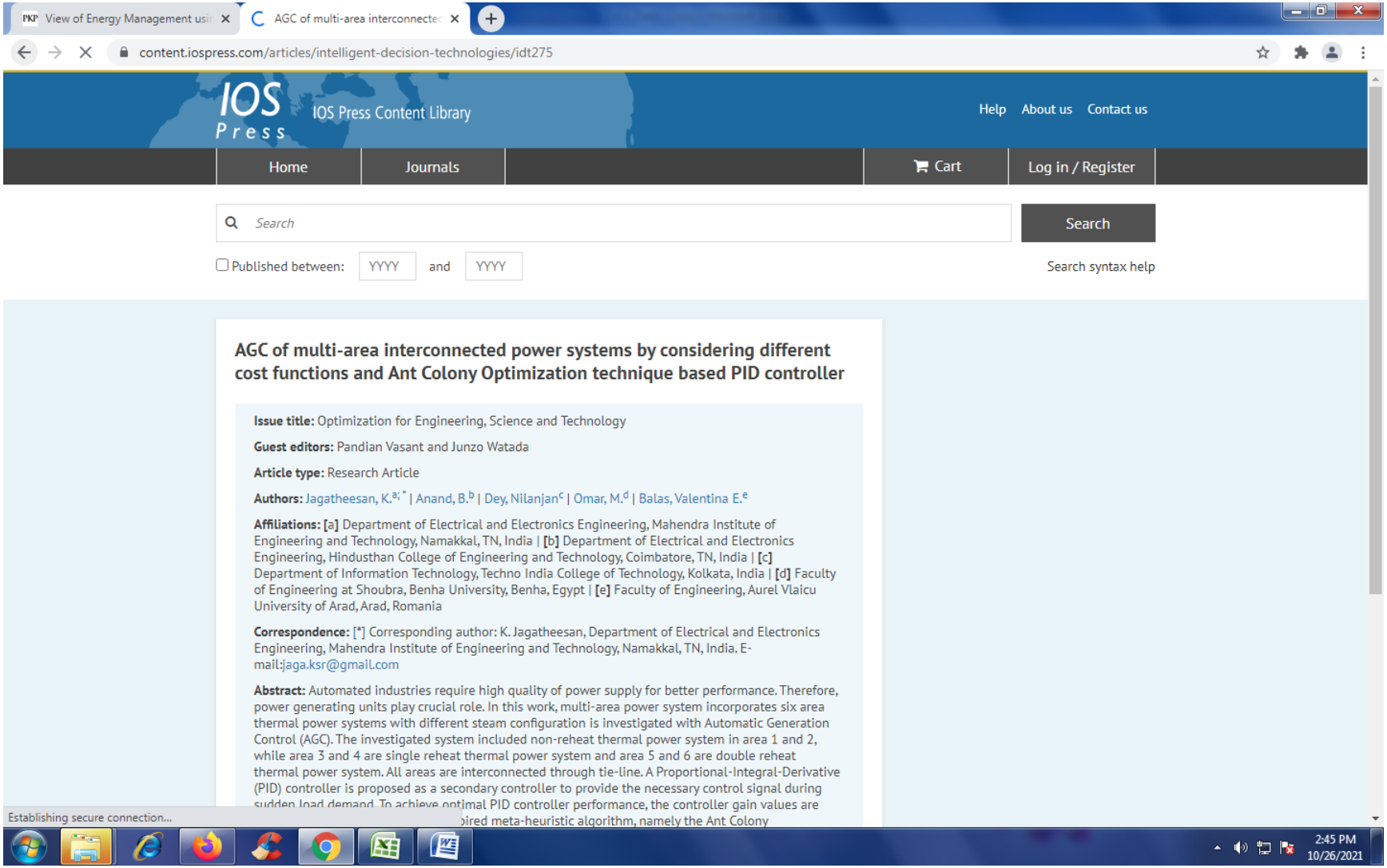
International Journal of Advanced Intelligence Paradigms > 2017 Vol.9 No.5/6

# Title: Particle swarm optimisation-based parameters optimisation of PID controller for load frequency control of multi-area reheat thermal power systems

**Authors**: K. Jagatheesan; B. Anand; Sourav Samanta; Nilanjan Dey; Amira S. Ashour; Valentina E. Balas

**Addresses**: Department of Electrical and Electronics Engineering, Mahendra Institute of Engineering and Technology, Namakkal, Tamil nadu, India ' Department of Electrical and Electronics Engineering, Hindusthan College of Engineering and Technology, Coimbatore, Tamilnadu, India ' Department of Computer Science and Engineering, University Institute of Technology, BU, Burdwan, Westbengal, India ' Department of Information Technology, Techno India College of Technology, West Bengal, India ' Department of Electronics and Electrical Communications Engineering, Faculty of Engineering, Tanta University, Egypt ' Faculty of Engineering, Aurel Vlaicu University of Arad, Romania

**Abstract**: The current study presents the load frequency control (LFC) of multi-area reheat thermal power system with proportional-integral-derivative (PID) controller. The interconnected control areas are provided with a single stage reheat turbine in all areas. The proportional gain ($K_p$), integral gain ($K_i$) and derivative gain ($K_d$) values of the PID controller are simultaneously optimised using recent and powerful evolutionary computational intelligence technique, namely the particle swarm optimisation (PSO) algorithm. The superiority of the PSO-based PID controller has been proved by comparing its performance to recent modern optimisation techniques such as hill climbing (HC) algorithm and genetic algorithm (GA) tuned controllers for the same multi-area thermal power system. For the analysis, the time domain specification and 1% step load perturbation (1% SLP) are considered in thermal area 1. The simulation result showed that the proposed PSO-based PID controller provides superior dynamic response over other optimisation technique (HC and GA)-based PID controller.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Authors: Jagatheesan, K.[a,*] | Anand, B.[b] | Dey, Nilanjan[c] | Omar, M.[d] | Balas, Valentina E.[e]
Affiliations: [a] Department of Electrical and Electronics Engineering, Mahendra Institute of Engineering and Technology, Namakkal, TN, India | [b] Department of Electrical and Electronics Engineering, Hindusthan College of Engineering and Technology, Coimbatore, TN, India | [c] Department of Information Technology, Techno India College of Technology, Kolkata, India | [d] Faculty of Engineering at Shoubra, Benha University, Benha, Egypt | [e] Faculty of Engineering, Aurel Vlaicu University of Arad, Arad, Romania
Correspondence: [*] Corresponding author: K. Jagatheesan, Department of Electrical and Electronics Engineering, Mahendra Institute of Engineering and Technology, Namakkal, TN, India. E-mail:jaga.ksr@gmail.com
Abstract: Automated industries require high quality of power supply for better performance. Therefore, power generating units play crucial role. In this work, multi-area power system incorporates six area thermal power systems with different steam configuration is investigated with Automatic Generation Control (AGC). The investigated system included non-reheat thermal power system in area 1 and 2, while area 3 and 4 are single reheat thermal power system and area 5 and 6 are double reheat thermal power system. All areas are interconnected through tie-line. A Proportional-Integral-Derivative (PID) controller is proposed as a secondary controller to provide the necessary control signal during
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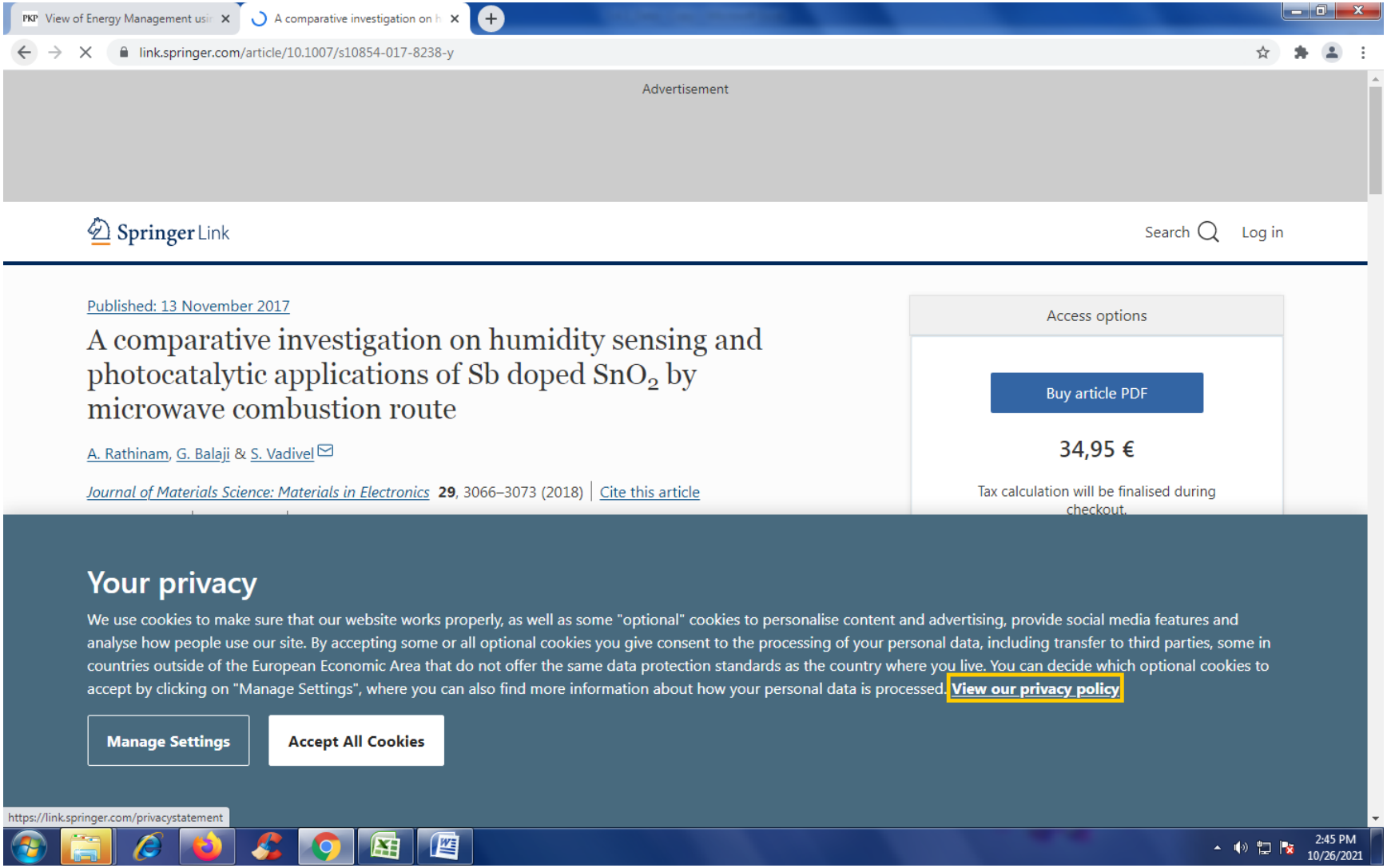
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# New Approach for Precisely Measuring the Zero Sequence Parameters of EHV/UHV Transmission Lines

M. Maharaja and Dr.G. Balaji

**Abstract---** A new method of measuring the zero sequence parameters of double-circuit EHV/UHV transmission lines with mutual inductance based on distribution parameter Model transmission line equations and distributed parameter model, a new approach is proposed to accurately measure the zero sequence parameters of long-distance double-circuit transmission lines using voltages and currents measured at the ends of lines. The mathematical model of the proposed method is explained in detail, the differential equations of two coupled lines with different self-parameters were solved for the first time with Laplace transform to get all the zero sequence parameters. And this approach is easy to implement since the measurement process is simple.

## I. INTRODUCTION

The Ultra-high-voltage AC power transmission has outstanding advantages of high transmission capacity, long distance of power transmission, low line loss, small coverage, etc., which is an energy-saving and eco-friendly advanced power transmission technology. At present, China lines. As a result, induced voltage and current may arise in nearby low-voltage lines, triggering potential safety threats in low-voltage line shutdown overhaul. As UHV lines have high running voltage and transmission power, it is more necessary to focus on their induced power on low-voltage lines. Domestic and foreign studies on UHV AC power transmission line induction are more concerned with parallel construction. In Literature, computation and field measurement are made on induced voltage and current in 500kV one-tower two-circuit parallel line; in Literature, simulated computation and analysis are made on induced voltage and current in two-circuit UHV line with one line in power and one line in shutdown and 1000kV UHV and 500 kV/220 kV lines parallel with each other on the same tower respectively; in Literature, computation is made on induction of UHV AC power transmission lines on low-voltage power distribution lines below. Concerning line crossing, in Literature, methods of computation of power-frequency electromagnetic fields in crossing areas of AC power transmission lines are introduced; in Literature, theoretical computation is made on electrostatic induction

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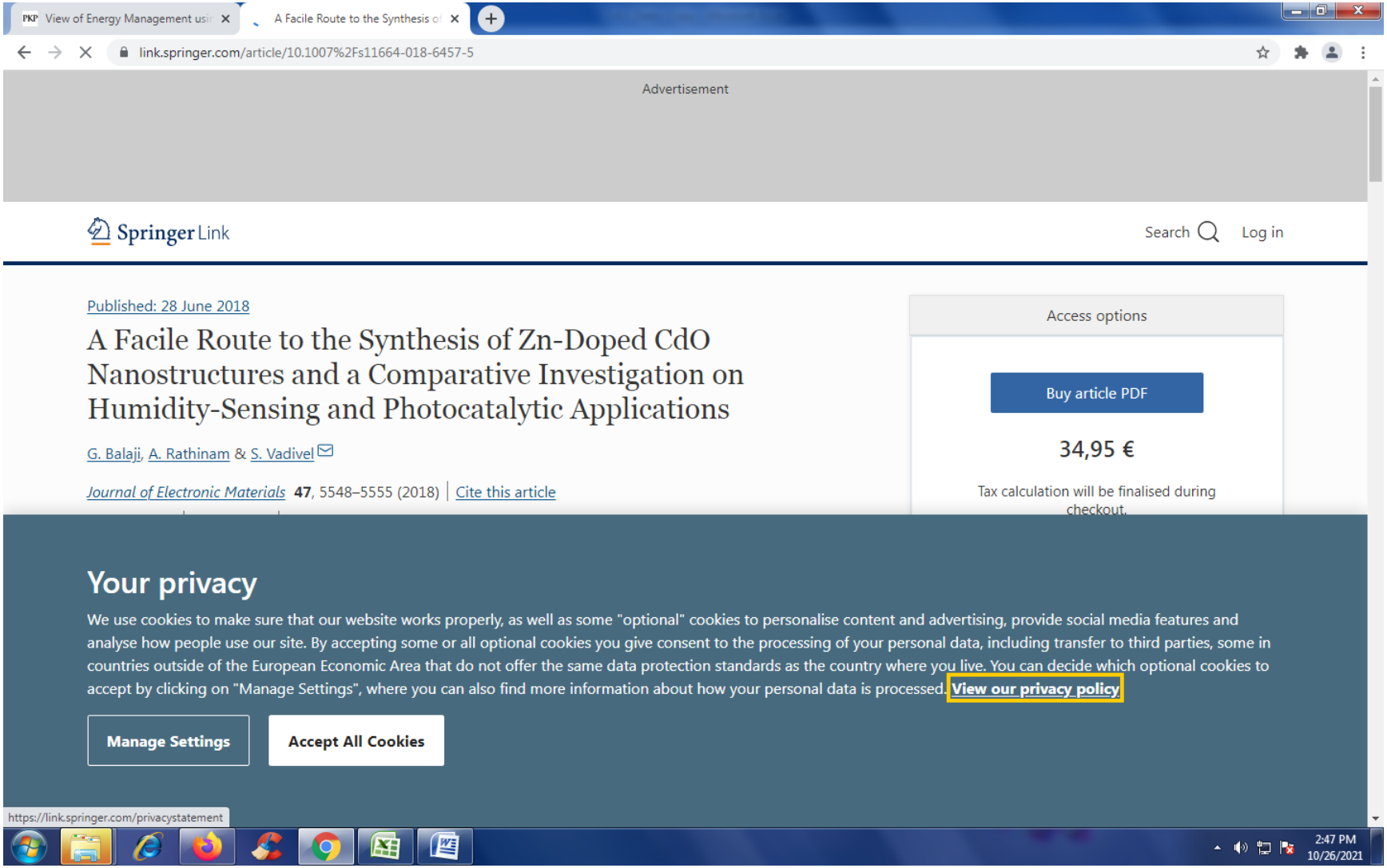
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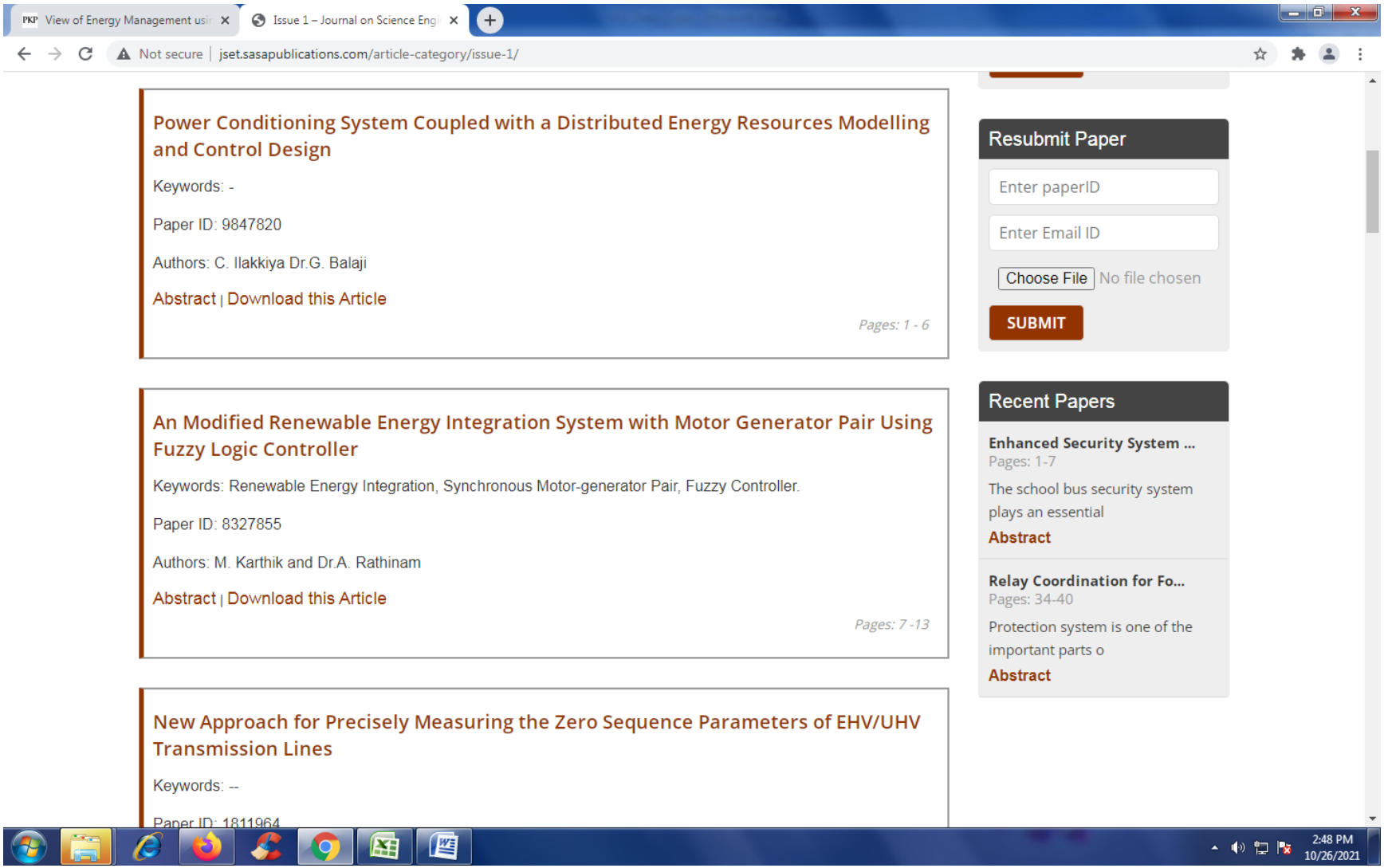
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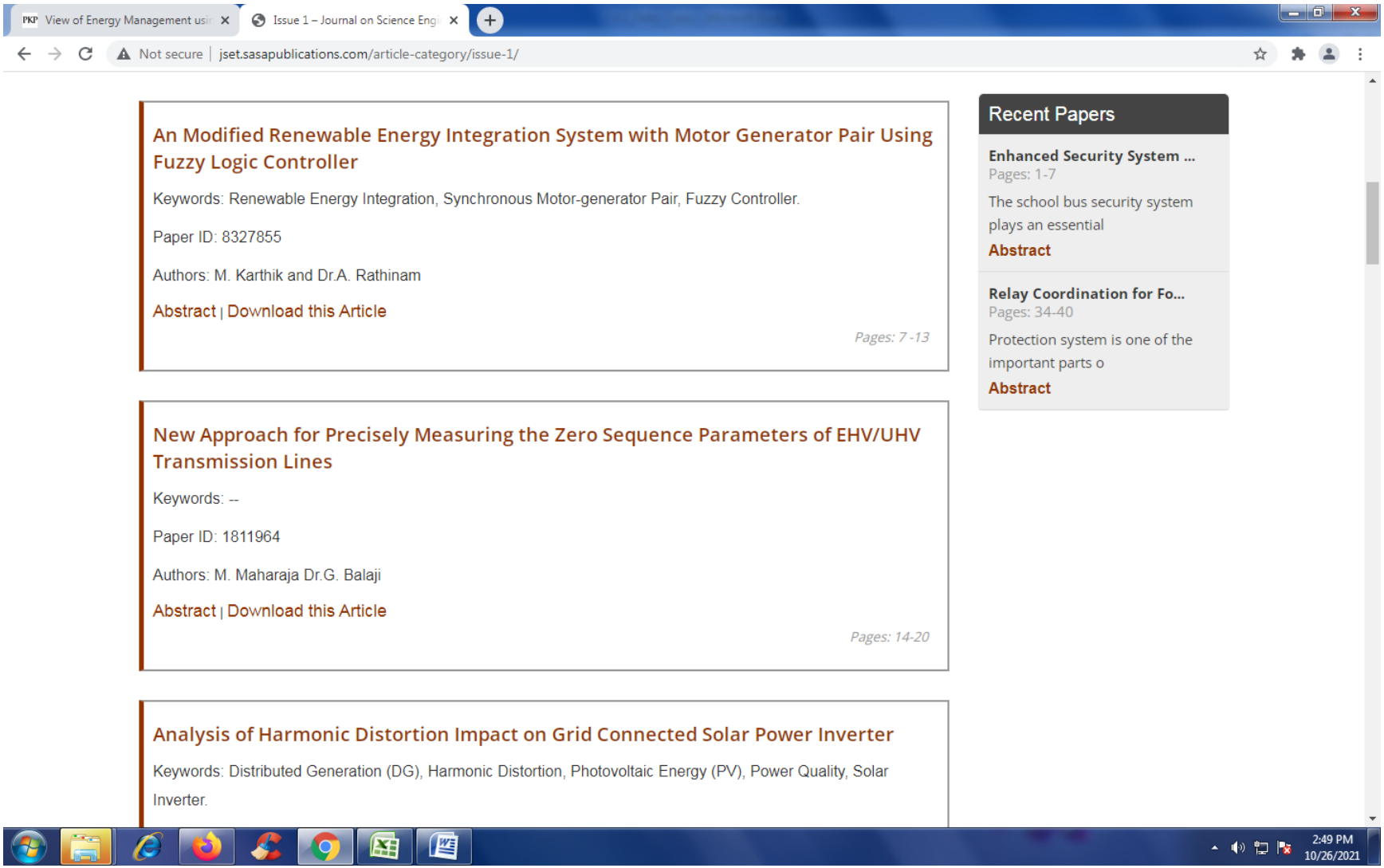
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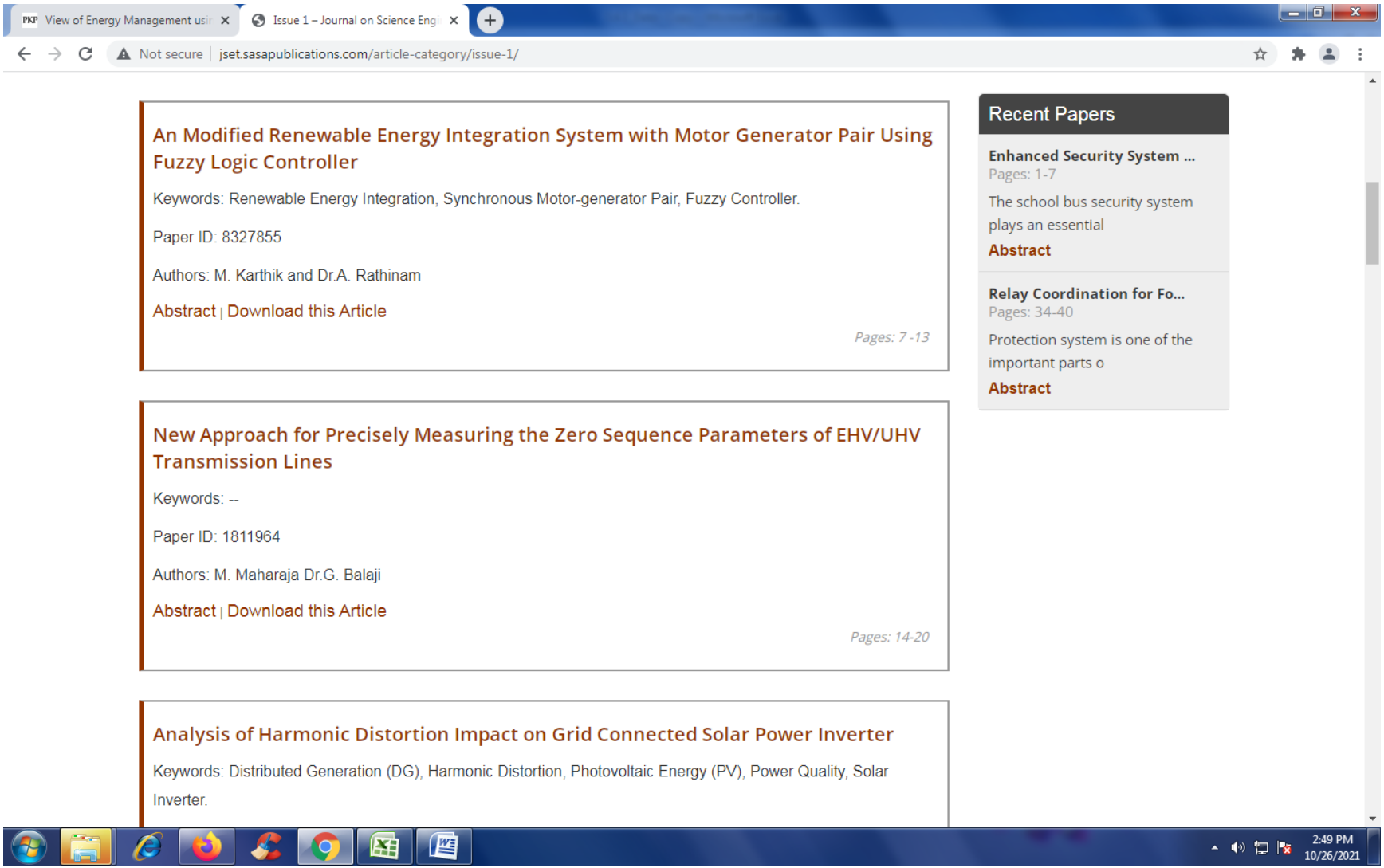
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**Vol. 7, Issue 2, February 2018**

# Maximum Power DFIG Control Algorithm using Interleaved and ANFIS Converter

Ramachandran.S, Dr.M.Ramasamy, Radha Krishnan.K,

Assistant Professor, Department of EEE, Paavai Engineering College, Namakkal, India

Associate Professor, Department of EEE, K.S.R College of Engineering, Namakkal, India

UG Scholar, Dept. of EEE, Paavai Engineering College, Namakkal, India

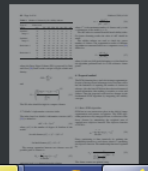
**ABSTRACT:** This study provides a review of past and present MPPT controllers used for extracting maximum power from the WECS and doubly fed induction generator (DFIG). Furthermore, some comparisons of two different methods have been carried out to validate the results. The chapter starts with a brief background of wind energy conversion systems of not needing the wind speed and wind turbine characteristics of the traditional HCS method, but it also improves the stability and accuracy of MPPT by estimating the exact loss torque. Then, main MPPT control methods are presented, after which, MPPT controllers used for extracting maximum possible power in WECS are presented. The presented strategy not only has the advantagesthe comparison analysis results indicate that the system using ANFIS can obtain higher voltage than the system using FLC. In addition, the proposed system is also able to reduce overshoot and be able to increase the output power.

**KEYWORDS**: Interleaved, ANFIS controlled, DFIG,direct drive; maximum power point tracking (MPPT).

## I. INTRODUCTION

This method relies on a large amount of online computation, and thus, it would be difficult to achieve MPPT for fast varying wind speeds. Although the varying tracking step could be used to improve computation speed, this disadvantage cannot be eliminated. Recently, a proposed method of employing the power versus rotor speed characteristic curve is frequently used due to its simplicity in hardware and software [1]. The optimal reference power



*Sādhanā* (2018) 43:40
https://doi.org/10.1007/s12046-018-0802-5




# Stability-integrated Fuzzy *C* means segmentation for spatial incorporated automation of number of clusters

V ROYNA DAISY[1,*] and S NIRMALA[2]

[1]Department of Electrical and Electronics Engineering, Paavai Engineering College, Namakkal 637 018, India
[2]Department of Electronics and Communication Engineering, Muthayammal Engineering College, Rasipuram 637 408, India
e-mail: roynadaisy@gmail.com; roynavedhanayagampec@paavai.edu.in; nirmala.ramkamal@gmail.com

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**Abstract.** Fuzzy *C* Means clustering, one of the predominant segmentation algorithms, requires prior knowledge of number of clusters in the image and is sensitive to noise and outliers. Determining the number of clusters and including spatial information to basic Fuzzy *C* Means clustering are done in numerous ways. Literature reveals that either number of clusters is defined or spatial information is incorporated. In the proposed work, spatial information and cluster determination are integrated based on the concept of stability. Implementation of split and merge algorithm to find the number of clusters is done based on the modified Sylvester's theorem in the context of positive definite functions. Experiments are performed on synthetic and real images and the number of clusters determined is validated using validation indices. Results show that correct clusters are classified with robustness to noise.

**Keywords.** Fuzzy *C* Means clustering; stability; positive definite functions; spatial information; validity index.

## 1. Introduction

Magnetic Resonance Imaging (MRI) is a vital diagnostic procedure used for analysing the neurological disorders that cause changes in the shape, thickness, mass and volume of brain tissues. Image processing is done in order to make quantitative and qualitative measurement of the alteration made to analyse and classify the disorders. The most crucial step in the process of image processing is image segmentation. Different image segmentation algorithms have been developed, yet each method has its own advantages and limitations. of normal tissues where we cannot predetermine the number of clusters. If the number of clusters is not set to the number of natural clusters or the centroids are initialized randomly, the clustering results would be unreliable and inconsistent. Hence, for automatic segmentation using FCM, clustering several techniques has been developed by determining the number of clusters [6–9].

A few algorithms that determine the cluster number have been proposed in the literature. A variety of self-splitting–merging clustering algorithms have been developed for determining the number of clusters. Zhang and Liu [10]

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# Experimental investigation of future HFC/HCs Blended refrigerants for use in small capacity Window Air-conditioner

*P.Elumalai*[1], *R.Vijayan*[2], *V.Subburam*[3]
Department of Mechanical Engineering,
[1,3]Paavai Engineering College, Namakkal, Tamilnadu, India.
[2]Government College of Engineering, Salem, Tamilnadu, India.
E-mail ID: eluammu@gmail.com

***Abstract*:** This paper deals with the experimental study of the air conditioning system working with a new alternative for R22 in view of reducing the global warming effect. The investigations pertain to five refrigerant mixtures with varying mass compositions of R152a /R290/R600.The properties of new proposed mixtures were obtained from REFPROP7.0 software for the operating temperature ranging from 0°C to 60 °C. The performance of the refrigerant mixtures was evaluated from the output parameters like Co-efficient of performance (COP), power consumption, mass flow rate, refrigeration effect and pressure ratio. From the investigations, the mixture with R152a-10% / R290-10%/ R600 - 80% was found to give 5.27% higher COP and 5.22% lower power consumption than that of R22. This refrigerant mixture with lower global warming potential could be used as an alternative working fluid for residential air conditioning applications.

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UDK 621.18.08:621.9.08
Original scientific article/Izvirni znanstveni članek

ISSN 1580-2949
MTAEC9, 51(6)989(2017)

# OPTIMIZATION OF MICRO-EDM PARAMETERS USING GREY-BASED FUZZY LOGIC COUPLED WITH THE TAGUCHI METHOD

## OPTIMIZACIJA PARAMETROV MIKROELEKTROEROZIJE Z UPORABO MEHKE LOGIKE V POVEZAVI S TAGUCHI METODO

**Muthiyalu Shanmugam Vijayanand[1], Mani Ilangkumaran[2]**

[1]Paavai Engineering College, Department of Mechanical Engineering, Pachal, 637018 Namakkal, Tamilnadu, India
[2]K.S.R. College of Technology, Department of Mechatronics Engineering, Tiruchengode, 637018 Namakkal, Tamilnadu, India
msvijayanand08@gmail.com

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doi:10.17222/mit.2017.048

The correct selection of process parameters for the best performance output of a micro-electro-discharge machining (Micro-EDM) process is challenging because the performance measures of micro-EDM are non linear. This work aims to solve and control complex non-linear systems by applying the hybrid grey-based fuzzy logic together with the Taguchi technique in the field of micro-EDM. Input parameters, namely, the discharge current, pulse-off time and pulse-on time were selected to obtain the target responses such as the material-removal rate (*MRR*) and tool-wear rate (*TWR*). Nine experiments were performed based on the Taguchi $L_9$ orthogonal array. An analysis of variance was performed to find the significant contribution of the intervening process parameter in a single performance characteristic using the grey-based fuzzy-logic expert system. Multi-performance characteristics indexes (MPCIs) were analysed and the results were calculated with good accuracy.

Keywords: ANOVA, fuzzy logic, orthogonal array, grey-based Taguchi technique, electrical-discharge machining, drilling

Pravilna izbira procesnih parametrov za doseganje najboljšega izkoristka procesa mehanske obdelave z mikroelektro erozijo

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[1]Paavai Engineering College, Department of Mechanical Engineering, Pachal, 637018 Namakkal, Tamilnadu, India
[2]K.S.R. College of Technology, Department of Mechatronics Engineering, Tiruchengode, 637018 Namakkal, Tamilnadu, India
msvijayanand08@gmail.com

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JOURNAL OF ADVANCES IN CHEMISTRY



# ANN MODELLING OF SMALL HOLE DRILLING ON MONEL METAL BY USING ELECTRICAL DISCHARGE MACHINING

**M.S. Vijayanand**
Assistant Professor, Paavai Engineering College,

**M. Ilangkumaran**
K.S.Rangasamy College of Technology, Tiruchengode â€“ 637215. Namakkal, TamilNadu

**DOI:** https://doi.org/10.24297/jac.v12i25.1841

**Keywords:** Drilling, Electrical Discharge Machining, Artificial Neural Network and Response Surface Methodology.

International Journal of Precision Technology > 2018 Vol.8 No.1

# Title: Performance optimisation of electrochemical micromachining of micro-holes on Inconel 625 alloy

**Authors**: V. Subburam; S. Ramesh; P.N. Mohan Kumar; A. Srinivasan

**Addresses**: Department of Mechanical Engineering, Paavai Engineering College, Namakkal, 637018, India ' Department of Mechanical Engineering, KCG College of Technology, Chennai, 600097, India ' Department of Mechanical Engineering, Paavai Engineering College, Namakkal, 637018, India ' Department of Mechanical Engineering, AVS Engineering College, Salem, 636003, India

**Abstract**: This work involves producing micro holes on Inconel 625 alloy through Electrochemical micromachining (EMM) process. The input parameters investigated are supply voltage, electrolyte concentration and duty ratio. The cathode tool used is a conical tipped stainless steel needle and the electrolyte is acidified sodium nitrate solution. Taguchi design of L9 Orthogonal Array is followed for experimental work. The performance analysis is done through process responses such as machining rate and overcut. The experimental results have given the optimum parameter combination for higher machining rate as 16 V supply voltage, 35 g/lit electrolyte concentration and 45% duty ratio and for lesser overcut as 12V, 35 g/lit and 45% duty ratio. The influence of input parameters on the process is also studied. The multi-objective optimisation technique used has produced 12 V, 30 g/lit and 45% duty ratio as the ideal combination for achieving higher machining rate and lower overcut.

*IJSRD - International Journal for Scientific Research & Development| Vol. 6, Issue 02, 2018 | ISSN (online): 2321-0613*

# Optimization of Machining Parameters in Electro Chemical Machining using Response Surface Method

**Maniraj .S[1] Vijaya Raghavan .K[2] Sudharsan .S[3] Vijaybabu .K[4] Tamilmani .R[5]**
[1]Assistant Professor
[1,2,3,4,5]Department of Mechanical Engineering
[1,2,3,4,5]Paavai Engineering College, Namakkal, India

*Abstract*— Non-conventional machining is increasing in importance due to some of the specific advantages which can be exploited during machining operation. Electrochemical machining (ECM) appears to be a promising technique, since in many areas of application, it offers several special advantages including higher machining rate, better precision and control, and a wider range of materials that can be machined. The present work is, therefore, initiated to investigate the influence of some predominant electrochemical process parameters such as applied voltage, electrolyte concentration, electrolyte flow rate and tool feed rate on the metal removal rate (MRR), and radial overcut(ROC) to fulfill the effective utilization of electrochemical machining of copper produced through stir casting. The contour plots are generated to study the effect of process parameters as well as their interactions. The process parameters are optimized based on Response Surface Methodology (RSM).

***Key words:*** Metal Matrix Composites (MMC'S), Electrochemical Machining (EMM), Radial Overcut (ROC), Metal Removal Rate (MRR), Contour Plot

## I. INTRODUCTION

### *B. Radial OverCut (ROC)*

It means that the extra machined of the part over than the planned measurement.

## II. RESPONSE SURFACE METHODOLOGY

Response surface methodology (RSM) approach is the procedure for determining the relationship between various process parameters with the various machining criteria and exploring the effect of these process parameters on the coupled responses, i.e., the material removal rate and radial overcut. This is done using the MINITAB18 software. We are using this to find the optimized value from the given parameters of the electrochemical machining (ECM).

The value can be assigned according to our conditions and the parameters are also choosen accordingly.

## III. EXPERIMENTAL WORK

The test specimens of copper alloy were produced through stir casting. The dimensions of the specimens were 50mm in length and 40 mm in breadth and 0.4mm thick. The experiments were conducted on ECM equipment. The tool was made up of stainless steel with a circular cross section

*Vol-4 Issue-2 2018* *IJARIIE-ISSN(O)-2395-4396*

# PNEUMATIC POWERED WALL CLIMBING ROBOT FOR DUST CLEANING PURPOSE IN A HIGH RISK BUILDING'S

[1]Parthiban C, [1]Ranjith R, [1]Kapilesh N, [1]Jayaraman K, [2]Rajarathnam D.R.P

[1]*UG Scholar, Mechatronics Engineering, Paavai Engineering College, Namakkal, India*

[2]*Associate Professor, Department of Mechatronics, Paavai Engineering College, India*

## ABSTRACT

*This Paper Presents a Wall Climbing Robot for Cleaning of Dust Particle in high risk buildings. The facade cleaning of high risk building by human operator is not safe. The development of a mobile robot which can move on the vertical or overhanging walls of tall buildings, on the side walls of ships etc., has been expected for a long time. The robot could then be utilized to carry rescue tools or does some other works instead of human. To increase operation efficiency and to protect human's we designed a wall climbing robot for cleaning application. The gripping is required to sustain the robot or to move it upwards on the wall. A magnetic force or vacuum pressure can be used to produce the fixing force on the walls and wheels or crawlers are available as parts of the moving mechanism on flat and wide vertical surfaces. A climbing robot with suction cup is more attractive since it can move on a large irregular surface. The microcontroller Atmega2560 is implemented for control application. While climbing in the vertical wall obstacle like windows opening, grills in the walls are detected by using the obstacle sensor.*

*International Journal of Modern Research in Engineering and Technology (IJMRET)*
*www.ijmret.org Volume 3 Issue 4 ǁ April 2018.*

# BOREWELL RESCUE ROBOT

[1]Rajarathnam D.R.P, [2] Lakshmi Raj Thilak R, [2]Rithvik K,[2] Vignesh G,
[2]Mohamed Marsook Hameed SH

[1]*AssociateProfessor, Department of Mechatronics Engineering, Paavai Engineering College , India*

[2]*UG Scholar, Mechatronics Engineering, Paavai Engineering College , Namakkal , India*

***ABSTRACT :*** *The bore well accidents are now become common everywhere. Frequently we here news on child stuck in the bore well, some are being rescued and in some cases we lose to save the life of the child. The main objective of this project is to design and construct a portable robot which is cost effective, quick in action and accurate. The Bore well Rescue Robot is capable of moving inside the well and performs operations according to the user commands. The proposed model is designed to provide the child with two level of safety achieved by using robotic holding at the top and safety airbag at the bottom. This arrangement ensures that the child does not slip further deep during the rescue operation. The robot is operated by the human manually and monitor in computer .According to the observations made continuously using CCTV camera.*

***KEYWORDS :****Robotic arm, circular disk, Airbag, IR device*

## I. INTRODUCTION

groundwater. Groundwater for various reasons -

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# CENTRALIZATION AND MATCHING OF AN ELECTRONIC COMPONENTS AND SCHEMATICS USING ANDROID APPLICATION

M.C.ArjunGiridharan[1], I.Harish[1], D.Nishanth[1], G.Prem Anand[1], S.Rajesh Raja[2], D.R.P.Rajarathnam[3]

[1]*UG Scholar, Department Mechatronics Engineering, Paavai Engineering College, Tamil Nadu, India*

[2]*Assistant Professor, Dept of Mechatronics Engineering, Paavai Engineering College, Tamil Nadu, India*

[3]*Associate Professor, Dept of Mechatronics Engineering, Paavai Engineering College, Tamil Nadu, India*

## Abstract

*Our Project('ELECTROMATICS')which is an android application, is to provide a complete, full-fledged and centralized information of electronic components and providing a successful alternative for their characteristics. In addition to that of the objective we are focused on providing a complete and collective schematics of laptop motherboards. There is numerous application that are developed for providing an information of the components and finding a specific value. So, we are planned to develop the components information that are only*

# Smart Polyhouse Farming using IoT Environment



**Title:**

Smart Polyhouse Farming using IoT Environment



**Authors:**

Raja. G | Rajarathinam. D. R. P | Abhiraj. R | Arunkrishnan | Febin Malik, Jesu Jorof Divin. J

**DOI:**

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**Cite This Article :**

Raja. G | Rajarathinam. D. R. P | Abhiraj. R | Arunkrishnan | Febin Malik, Jesu Jorof Divin. J **"Smart Polyhouse Farming using IoT Environment"** Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-2 | Issue-3, April 2018, pp.691-697, URL: https://www.ijtsrd.com/papers/ijtsrd10977.pdf

**Abstract :**

A Polyhouse is a building where plants are grown. Polyhouses are often used for growing flowers, vegetables, fruits, and tobacco plant. Basic factors affecting plant growth are sunlight, water content in soil, temperature, etc. These physical factors are hard to control manually inside a Polyhouse and a need for automated design arises. Automatically controlling all the factors that affect plant growth is also a difficult task as it is expensive and some physical factors are inter-related, for example, temperature and humidity are related in a way when temperature raises humidity reduces therefore controlling both together is difficult. Because the temperature and humidity of Polyhouse must be constantly monitored to ensure optimal conditions, a wireless sensor network can be used to gather the data from point to point. A graphical user interface (GUI) is unified for the ease of operations by the farming community. System also allows transmission of process parameters, including emergency alarm signals via e-mail client server o
SMS on a mobile phone. A conventional chat has also been integrated with the GUI to ado

*Vol-4 Issue-2 2018* *IJARIIE-ISSN(O)-2395-4396*

# GESTURE CONTROLLED CRANE USING ARDUINO MPU 6050

G.Abishek Maniraj[1], K.Kiran Kumar[1], J.Mithun Dass[1], G.Raja[2], D.R.P.Rajarathnam[3]

*1UG Scholar, Department Mechatronics Engineering, Paavai Engineering College, Tamil Nadu, India*
*2Assistant Professor, Dept of Mechatronics Engineering, Paavai Engineering College, Tamil Nadu, India*
*3Associate Professor, Dept of Mechatronics Engineering, Paavai Engineering College, Tamil Nadu, India*

## ABSTRACT

*In the context of further automation of manufacturing processes, automated transportation of heavy weights using cranes becomes more and more important. Applying the skills of robots to crane automation, a wide market of new applications could be developed. The crane hook represents the effectors of the robot. A load displacement system that have 5 Degrees OF Freedom(DOF) in a 3-Dimensional environment, which is controlled through Gestures of Hand and fingers Remotely for better Man-Machine interface, thereby improving the accuracy and control over the system. A wireless data glove was developed to control the crane remotely. This crane is a model for gesture controlled user interface (GCUI), and identifies trends in technology, application and usability. We present an integrated approach is real time detections, gesture based data which control vehicle movement and manipulation on gesture of the user using hand movements. A three-axis accelerometer is adaption. As the person moves their hand, the accelerometer also moves accordingly. The gesture is capture by accelerometer and processed by gesture. With each passing day the gap between machines and human are being reduced with the introduction of new technology. The future scope of advanced robotic arms that are designed like the human hand itself can easily controlled using hand gesture only. It is also having proposed utility in field of construction, medical science, hazardous waste disposal etc.*

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Dr.D.R.P.Rajarathnam

# OIL SPILLING ROBOT


Authors D.R.P.Rajarathinam Ashokkumar.V, Sabarinath.K.S , Vijayabalan.P.S , karthikeyan.G , Arunbabu.R



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10/25/2021

# Smart Polyhouse Farming using IoT Environment



**Title:**

Smart Polyhouse Farming using IoT Environment



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*In the context of further automation of manufacturing processes, automated transportation of heavy weights using cranes becomes more and more important. Applying the skills of robots to crane automation, a wide market of new applications could be developed. The crane hook represents the effectors of the robot. A load displacement system that have 5 Degrees OF Freedom(DOF) in a 3-Dimensional environment, which is controlled through Gestures of Hand and fingers Remotely for better Man-Machine interface, thereby improving the accuracy and control over the system. A wireless data glove was developed to control the crane remotely. This crane is a model for gesture controlled user interface (GCUI), and identifies trends in technology, application and usability. We present an integrated approach is real time detections, gesture based data which control vehicle movement and manipulation on gesture of the user using hand movements. A three-axis accelerometer is adaption. As the person moves their hand, the accelerometer also moves accordingly. The gesture is capture by accelerometer and processed by gesture. With each passing day the gap between machines and human are being reduced with the introduction of new technology. The future scope of advanced robotic arms that are designed like the human hand itself can easily controlled using hand gesture only. It is also having proposed utility in field of construction, medical science, hazardous waste disposal etc.*

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# CENTRALIZATION AND MATCHING OF AN ELECTRONIC COMPONENTS AND SCHEMATICS USING ANDROID APPLICATION

M.C.ArjunGiridharan[1], I.Harish[1], D.Nishanth[1], G.Prem Anand[1], S.Rajesh Raja[2], D.R.P.Rajarathnam[3]

[1]*UG Scholar, Department Mechatronics Engineering, Paavai Engineering College, Tamil Nadu, India*

[2]*Assistant Professor, Dept of Mechatronics Engineering, Paavai Engineering College, Tamil Nadu, India*

[3]*Associate Professor, Dept of Mechatronics Engineering, Paavai Engineering College, Tamil Nadu, India*

## Abstract

*Our Project('ELECTROMATICS')which is an android application, is to provide a complete, full-fledged and centralized information of electronic components and providing a successful alternative for their characteristics. In addition to that of the objective we are focused on providing a complete and collective schematics of laptop motherboards. There is numerous application that are developed for providing an information of the components and finding a specific value. So, we are planned to develop the components information that are only*

International Journal of Scientific Research in Science and Technology
Volume 3, Issue 3, Article first published online: March-April - 2017





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Themed Section: Science and Technology

# Design of Power Drive Asscender for Highly Inclined Terrains

**S. Mohankumar[1], V. K. Gobinath[1], D. R. P. Rajarathnam[1], S. R. Feri Abishek[2], M. Kanaga Manikandan[2], N. Kodiyarasan[2], K. K. Narjas[2]**

[1]Assistant Professor, [2] U.G Scholar
[1,2]Department of Mechatronics Engineering, Paavai Engineering College, Namakkal. Tamil Nadu, India

## ABSTRACT

This paper relates to a design that involves driving a four wheeled vehicle in highly graded planes. The primary use of the design discussed in this paper is to allow four wheeled rovers to climb highly inclined terrain and have a suspension system in place to provide frictional force for the wheels to come down and provide traction over the ground. Such a design allows the rover to travel unmapped terrain.

**Keywords**:Power Drive Asscender; Inclined terrarin; High Torque Motors; Four Wheel Drive

## I. INTRODUCTION

Mobile robots, or Rovers play a significant role to increase our explore in current and future surveillance missions. To achieve advanced mission goals, rovers are

step, ramp, ditch and staircase. In comparison, legged robots will have the best abilities followed by re-configurable robots; both types of robots are able to traverse on the various types of terrain and overcome most of the obstacles. Tracked robots have the ability to

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International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

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**Vol. 6, Special Issue 2, March 2017**

# Development of A Hand Motion Controlled Robotic Arm

V.K. Gobinath[1], S. Mohankumar[1], D.R.P. Rajarathnam[1], K. Santhoshkumar[2], T. Suresh kumar[2], D. Veeramani[2], G.Marimuthu[2]

Assistant professor, Dept. of Mechatronics, Paavai Engineering College, Namakkal, Tamil Nadu, India[1]

UG Student, Dept. of Mechatronics, Paavai Engineering College, Namakkal, Tamil Nadu, India[2]

**ABSTRACT**: The system allows controlling a robotic arm by hand movements. The system uses RF receiver which is interfaced to the 8051 microcontroller which controls the driver IC which is responsible to control the moving of the arm. The transmitter circuit contained an accelerometer sensor which is interfaced to the AT mega microcontroller. The transmitter circuit sends commands to the receiver circuit. That the commands indicate whether to move the robotic arm in upward or downward direction or whether the commands indicates to grip an object or release it.

**KEYWORDS**: Robot arm, Hand motion, signal processor, driver circuit.

## I.INTRODUCTION

**Imperial Journal of Interdisciplinary Research (IJIR)**
**Vol-3, Issue-3, 2017**
**ISSN: 2454-1362,** http://www.onlinejournal.in

# Design of Employee Attendance Monitoring System by Using Radio Frequency Identity Cards

S. Mohankumar[1], V.K. Gobinath[1], D.R.P. Rajarathnam [1], B.Tamil Selvan[2], M.Prem Kumar[2], K.Ajith Kumar[2], J.Sanjai Chandran[2]
[1]Assistant Professor, [2]U.G scholar
Department of Mechatronics Engineering, Paavai Engineering College, Namakkal– 637 018, Tamil Nadu, India.

***Abstract:*** *Nowadays, there have been ascent in the number of usages based on Radio Frequency Identification (RFID) systems. The RFID system have been successfully applied to different areas transportation, medical, agriculture, and industrial to name a few. RFID technology facilitates automatic wireless identification using ID tags and reader method. In our project RFID cards are used to denote members are present in class at the time. In RFID cards are having the magnetic coil which gives the Radio frequency to the reader. After reading coil's frequency it stores the attendance to*

the student-lecturer interactive relationship is kept intact. In some cases, have come in simple forms such that roll calls, while in more interesting cases, can be formats like surprise quizzes, extra credit in class, etc. These strategies are however time consuming, stressful and laborious because the valuable lecture time that could be used for lectures is dedicated to student attendance taking and sometimes inaccurate. Despite of all these challenges, the attendances are recorded manually by the tutor and therefore are exposed to personal errors. There ascent a need for a more efficient and

Article PDF Available

# Investigation of the Wear Behaviour of an AISI 1040 Forged Steel Shaft with Plasma-Spray Ceramic-Oxide Coatings for Sugar-Cane Mills

December 2017 · Materials and Technologies 51(6):239-244
DOI:10.17222/mit.2017.035



Authors:

D. R. Ponnusamy Rajarathnam

JAYARAMAN M.

Dr.D.R.P.Rajarathnam

# AVOID PARKING IN NO PARKING AREAS

| | |
|---|---|
| Authors | VK Gobinath, S Mohankumar, DRP Rajarathnam, S Rajesh Raja |
| Publication date | 2017 |
| Journal | International Journal of Research In Science & Engineering |
| Volume | 3 |
| Issue | 3 |
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| Publisher | International Journal of Research In Science & Engineering |

Requires Authentication Published by De Gruyter January 27, 2017

# Tribomechanical behavior of $B_4C_p$ reinforced Al 359 composites

## Tribomechanisches Verhalten von $B_4C_p$-verstärkten Al 359 Kompositen

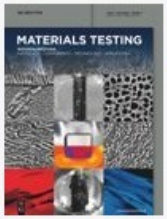
*Deivasigamani Ramasamy, Mohan Kumar Subramanian, Gobinath Velu Kaliyannan, Jayanth Durairaj, Rajasekar Rathanasamy and Sathish Kumar Palaniappan*

From the journal Materials Testing
https://doi.org/10.3139/120.110979



## Abstract






**Materials Testing**
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**Vol-3, Issue-3, 2017**
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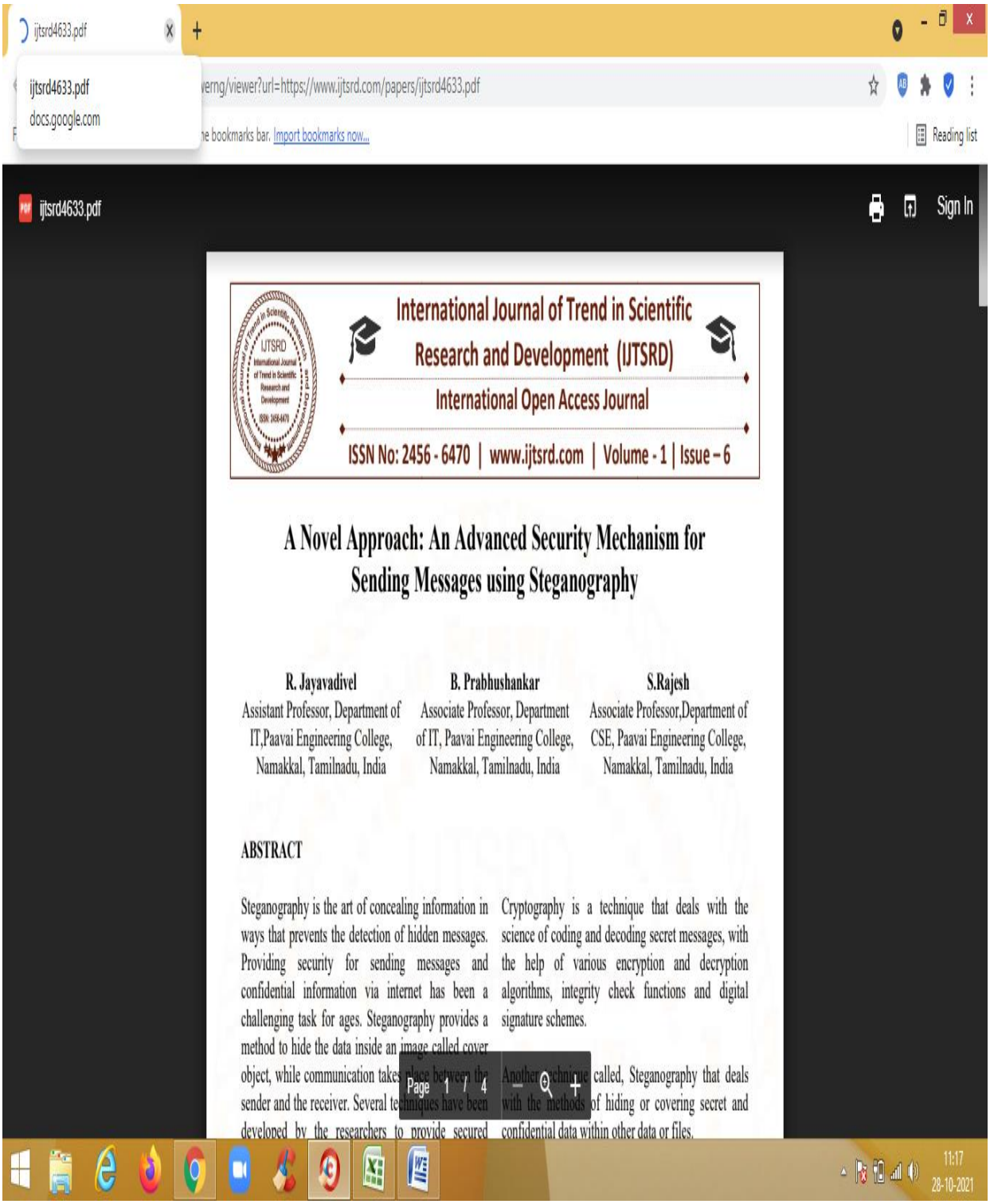
ACADEMIC YEAR 2017-2018

# A Novel Approach: An Advanced Security Mechanism for Sending Messages using Steganography



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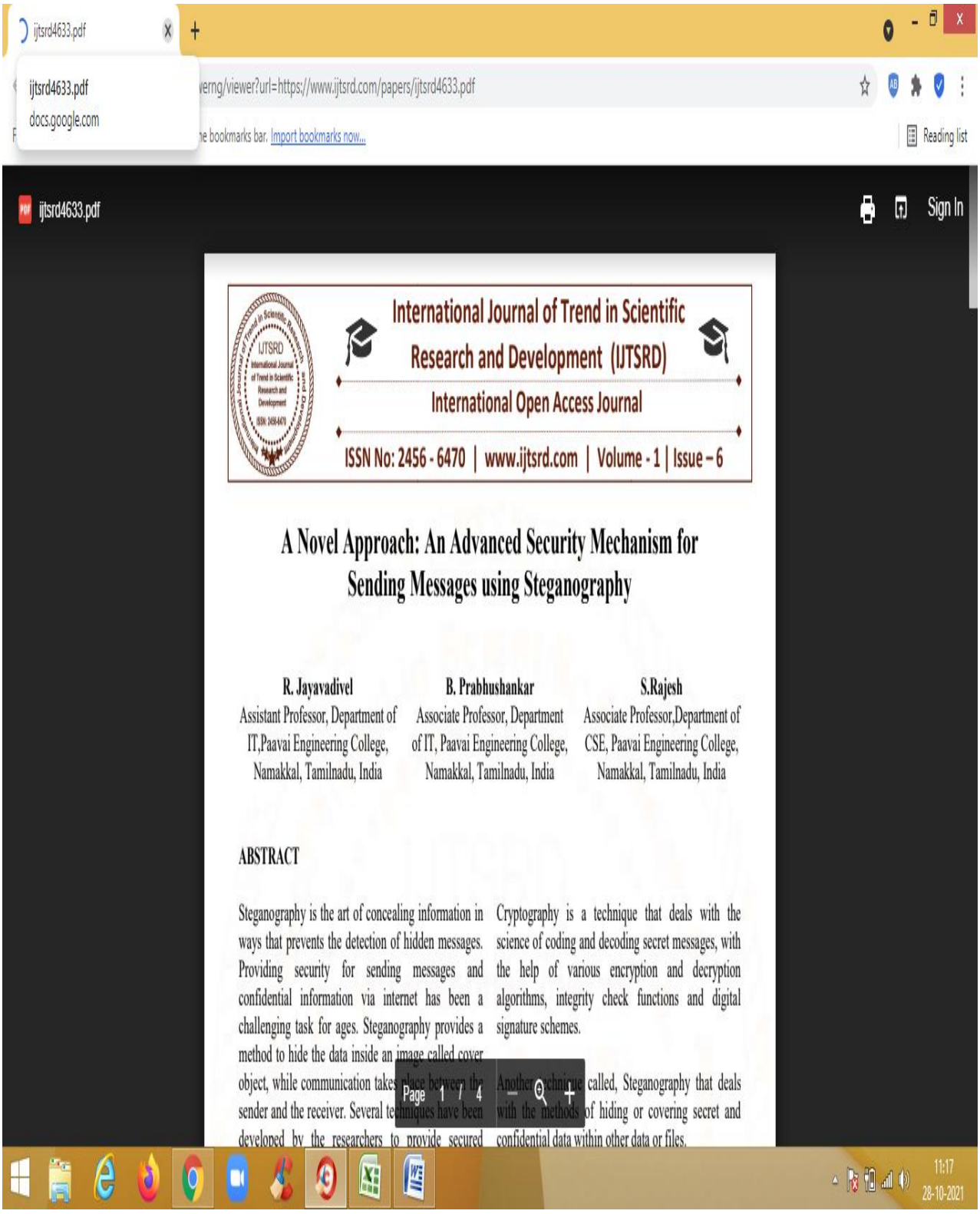

International Journal of Trend in Scientific Research and Development (IJTSRD)
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ISSN No: 2456 - 6470 | www.ijtsrd.com | Volume - 1 | Issue – 6

## A Novel Approach: An Advanced Security Mechanism for Sending Messages using Steganography

**R. Jayavadivel**
Assistant Professor, Department of IT,Paavai Engineering College, Namakkal, Tamilnadu, India

**B. Prabhushankar**
Associate Professor, Department of IT, Paavai Engineering College, Namakkal, Tamilnadu, India

**S.Rajesh**
Associate Professor,Department of CSE, Paavai Engineering College, Namakkal, Tamilnadu, India

### ABSTRACT

Steganography is the art of concealing information in ways that prevents the detection of hidden messages. Providing security for sending messages and confidential information via internet has been a challenging task for ages. Steganography provides a method to hide the data inside an image called cover object, while communication takes place between the sender and the receiver. Several techniques have been developed by the researchers to provide secured

Cryptography is a technique that deals with the science of coding and decoding secret messages, with the help of various encryption and decryption algorithms, integrity check functions and digital signature schemes.

Another technique called, Steganography that deals with the methods of hiding or covering secret and confidential data within other data or files.

Improved Quality of Service (QoS) in Video Streaming LTE Networks using PID Controller and Exhaustive Search Mechanism

Energy-Efficient QoE-Aware Video Adaptation and Resource Allocation for Video Streaming

International Journal of Control Theory and Applications

ISSN : 0974-5572



Volume 10 • Number 12 • 2017

# Improved Quality of Service (QoS) in Video Streaming LTE Networks using PID Controller and Exhaustive Search Mechanism

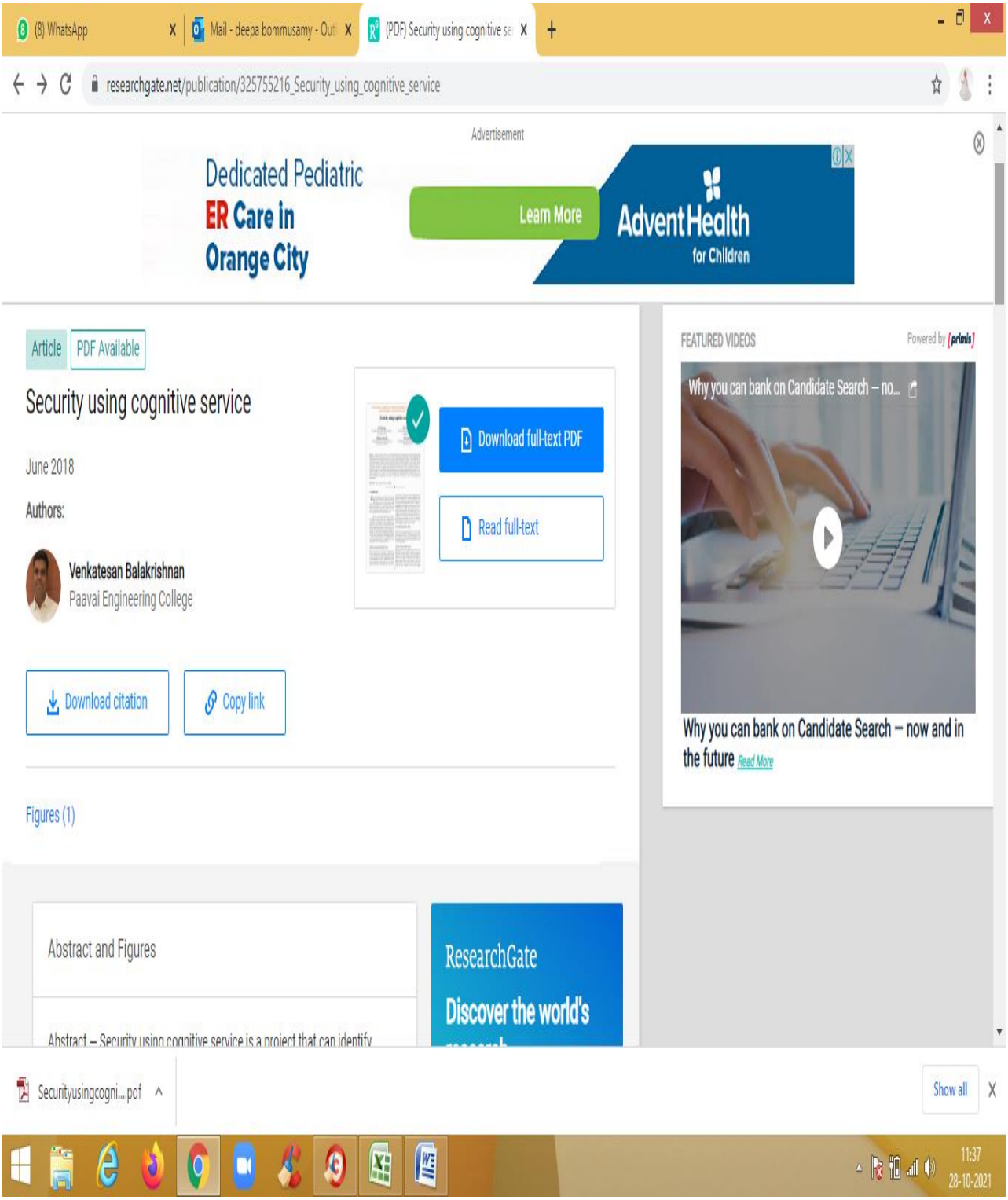
R. Jayavadivel[a] and J. Sundararajan[b]

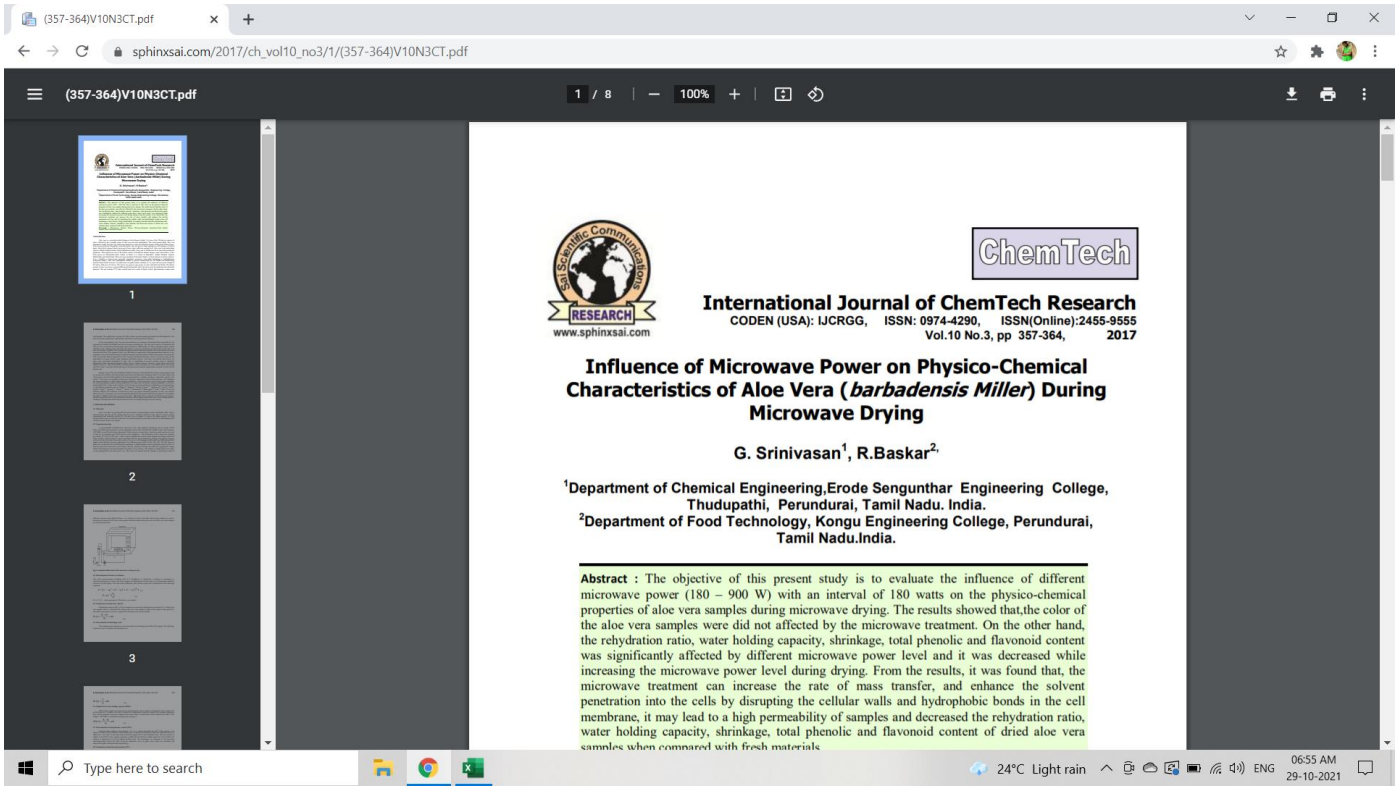
[a]Assistant Professor, Department of Information Technology, Paavai Engineering College, Pachal, Namakkal, Tamilnadu, India - 637018

[b]Principal, Pavai College of Technology, Pachal, Namakkal, Tamilnadu, India - 637018

***Abstract:*** Quality of Service (QoS) is an important consideration in Video streaming services over LTE networks. The video streaming services suffers from latency and other communication error due to buffering during network streaming. This often occurs due to limited bandwidth and the video quality chosen by the users. This paper aims at reducing latency and improving QoS in inefficient bandwidth allocation in video streaming on wireless networks. The problem is solved with DASH encoder that sends the packets over the streaming networks. The QoS is improved using

Security using cognitive service





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ChemTech

**International Journal of ChemTech Research**

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Vol.10 No.3, pp 357-364, 2017

# Influence of Microwave Power on Physico-Chemical Characteristics of Aloe Vera (*barbadensis Miller*) During Microwave Drying


**G. Srinivasan[1], R.Baskar[2,]**

[1]Department of Chemical Engineering,Erode Sengunthar Engineering College, Thudupathi, Perundurai, Tamil Nadu. India.
[2]Department of Food Technology, Kongu Engineering College, Perundurai, Tamil Nadu.India.



**Abstract :** The objective of this present study is to evaluate the influence of different microwave power (180 – 900 W) with an interval of 180 watts on the physico-chemical properties of aloe vera samples during microwave drying. The results showed that,the color of the aloe vera samples were did not affected by the microwave treatment. On the other hand, the rehydration ratio, water holding capacity, shrinkage, total phenolic and flavonoid content was significantly affected by different microwave power level and it was decreased while increasing the microwave power level during drying. From the results, it was found that, the microwave treatment can increase the rate of mass transfer, and enhance the solvent penetration into the cells by disrupting the cellular walls and hydrophobic bonds in the cell membrane, it may lead to a high permeability of samples and decreased the rehydration ratio, water holding capacity, shrinkage, total phenolic and flavonoid content of dried aloe vera samples when compared with fresh materials.


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Influence of Drying Temperature

vegetosindia.org/journal/vegetos-30(4)2017/Influence-of-Drying-Temperature-on-Mass-Transfer-Characteristics-and-Physiochemical-Properties-of-Aloe-Vera-(Aloe-Barbadensis-Miller).html

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Year :2017, Volume : 30, Issue :4
First page : (22) Last page : (28)
Print ISSN : 0970-4078. Online ISSN : 2229-4473.

RESEARCH ARTICLE A SOCIETY FOR PLANT RESEARCH PUBLICATION


# Influence of Drying Temperature on Mass Transfer Characteristics and Physiochemical Properties of Aloe Vera (*Aloe Barbadensis Miller*)


**Srinivasan G[1,*], Baskar R[2]**

[1]Department of Chemical Engineering, Paavai Engineering College, Pachal, Namakkal, Tamil Nadu, India [2]Department of Food Technology, Kongu Engineering College, Perundurai, Tamil Nadu, India

***Corresponding author: Srinivasan G, Department of Chemical Engineering, Paavai Engineering College, Pachal, Namakkal, Tamil Nadu, India, Tel: 04286-243 038; E-mail: gsrinivasanchem@gmail.com**



The aim of this research is to evaluate the kinetics study of hot air drying with aloe vera *(Aloe barbadensis Miller)* as a specimen and also to find the influence of temperature in various kinetic models proposed. In hot air drying different temperatures ranging from 30–50˚C with an air velocity of 2.0 m/s is used. In this experiment the proposed mathematical models are studied they are Newton, Henderson-Pabis, Page, modified Page and Logarithmic model. Using the linear regression coefficient ($R^2$), sum square error (SSE), root mean square error (RMSE) and Chi-square statistic ($w^2$) the best fit quality is found. As the temperature range is increased the effective moisture diffusivity is also increased from $4.78 \times 10^{10}$ $m^2$/sec to $13.45 \times 10^{-10}$ $m^2$/sec. From the mathematical models evaluated in this research the modified Page model gives the best result and fits into the experimental and predicted drying data.


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url: http://www.ijpam.eu
Special Issue

ijpam.eu

# Oscillation theorems for third-order retarded differential equations with a sublinear neutral term

V. Ganesan[1]* and M. Sathish Kumar[2]

[1]Department of Mathematics
Aringar Anna Government Arts College
Namakkal - 637002, Tamilnadu, India.

[2]Department of Mathematics
Paavai Engineering College
Namakkal - 637018, Tamilnadu, India.

March 6, 2017

Inter national Journal of Pure and Applied Mathematics
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# Oscillation Criteria For Second-Order Neutral Differential Equations

V. Ganesan[1]* and M. Sathish Kumar[2]

[1]Department of Mathematics
Aringar Anna Government Arts College
Namakkal - 637002, Tamilnadu, India.
ganesan_vgp@rediffmail.com

[2]Department of Mathematics
Paavai Engineering College
Namakkal - 637018, Tamilnadu, India
msksjv@gmail.com

**Abstract**

The aim of this paper is to study the oscillation of a class of second-order neutral differential equations of the from

$$\left(r(t)[x(t)+p(t)x(\tau(t))]'\right)'+q(t)x(\sigma(t))+s(t)x(\eta(t))=0,$$

are presented. Obtained results are based on the new comparison theorems that enable us to reduce problem of the oscillation of the second order equation to the oscillation of the first order equations. New oscillation theorems and illustrative examples are presented that improve those known results in the literature.

**Key Words and Phrases:** Oscillation, Neutral differential equations, Positive solutions, Comparison.
**AMS Subject Classification:** 34K11, 34C10.

*Corresponding Author

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N.N. Krasovskii Institute of Mathematics and Mechanics,
Ural Branch of the Russian Academy of Sciences and
Ural Federal University named after the first President of Russia B.N.Yeltsin

URAL MATHEMATICAL JOURNAL



# ON THE OSCILLATION OF A THIRD ORDER NONLINEAR DIFFERENTIAL EQUATIONS WITH NEUTRAL TYPE

*V. Ganesan* (Aringar Anna Government Arts College, Namakkal, Tamilnadu, India)
*Marappan Sathish Kumar* (Paavai Engineering College, Pachal, Namakkal, Tamilnadu, India)

## ABSTRACT

In this article, we investigate that oscillation behavior of the solutions of the third-order nonlinear differential equation with neural type of the form

$$\left(a_1(t)\left(a_2(t)Z'(t)\right)'\right)' + q(t)f\left(x(\sigma(t))\right) = 0, \quad t \geq t_0 > 0,$$

where $Z(t) := x(t) + p(t)x^{\alpha}(\tau(t))$. Some new oscillation results are presented that extend those results given in the literature.

**Bangmod** Int. J. Math. & Comp. Sci.
Vol. 3, No. 1-2, 2017; Pages 53 - 60
http://bangmod-jmcs.kmutt.ac.th/
ISSN : 2408-154X

# OSCILLATION OF CERTAIN THIRD ORDER NONLINEAR DIFFERENTIAL EQUATION WITH NEUTRAL TERMS

**V. Ganesan**[1]*, **M.Sathish Kumar**[2]
[1] *Department of Mathematics, Aringar Anna Government Arts College, Namakkal - 637002, Tamilnadu, India.*
*E-mail: ganesan_vgp@rediffmail.com*
[2] *Department of Mathematics, Paavai Engineering College, Namakkal-637018, Tamilnadu, India.*
*E-mails: msksjv@gmail.com ; sathishkumarmarappanpec@paavai.edu.in*

**Corresponding author.*

**Abstract** The main goal of this work is to establish some new comparison theorems for oscillation of solutions to the third order nonlinear differential equations with neutral terms of the form

$$\left[r(t)\left[\left(x(t)+\sum_{i=1}^{n}p_i(t)x(\eta_i(t))\right)''\right]^{\gamma}\right]'+q(t)x^{\gamma}(\sigma(t))=0,$$

are presented. We give several Theorems and related examples to illustrate the main results.

**MSC:** 34K11, 34C10, 34C15
**Keywords:** Third-order neutral differential equation, Non-linear, Comparison theorem, Oscillation of solutions.

Submission date: 17 May 2017 / Acceptance date: 16 July 2017 /Available online: 1 August 2017

J Mater Sci: Mater Electron
DOI 10.1007/s10854-016-5816-3

CrossMark

# High performance humidity sensing properties of indium tin oxide (ITO) thin films by sol–gel spin coating method

**B. Murali Babu[1] · S. Vadivel[2]**

Received: 25 July 2016 / Accepted: 3 October 2016


**Abstract** The tin doped indium oxide (ITO) thin films prepared by sol–gel spin coating method with $In(NO_3)3$ $H_2O$ and $SnCl_4 \cdot 5H_2O$ as indium and tin sources respectively is presented. The as deposited samples were annealed at 500 °C for 2 h in order to improve the crystallinity. The structural, morphological and optical prop-

## 1 Introduction

Thin film semiconductors play an essential role in detection, monitoring and control of the pollutants involved in the chemical processes the production of hazardous and harmful vapours [1]. Metal-oxide-based thin film sensors,

J Mater Sci: Mater Electron
DOI 10.1007/s10854-017-6566-6

CrossMark

# Effect of annealing temperature on structural, optical and humidity sensing properties of indium tin oxide (ITO) thin films

**M. Premkumar[1] · S. Vadivel[2]**

Received: 16 December 2016 / Accepted: 13 February 2017


**Abstract** Tin doped indium oxide (ITO) thin films were prepared by sol–gel spin coating method with In $(NO_3)\cdot 3H_2O$ and $SnCl_4\cdot 5H_2O$ as indium and tin sources, respectively. The as deposited samples were annealed at various temperature such as, 300, 400, 500 and 600 °C for 2 h in ambient atmosphere. The grown ITO thin films are

## 1 Introduction

Humidity sensors are widely used in measurement and to manage the humidity for human comfort and a myriad of industrial development. Recently, flexible sensors with suitable substrate has been attracted due to their light weight,

J Mater Sci: Mater Electron
DOI 10.1007/s10854-017-6820-y

CrossMark

# Fabrication and performance estimation of dye sensitized solar cell based on CdSe/ZnO nano particles

**B. Murali Babu[1] · M. Shyamala[1] · S. Saravanan[2] · K. R. Kavitha[2] · S. Vadivel[3]**

Received: 5 January 2017 / Accepted: 21 March 2017


**Abstract** In this paper, the core cell CdSe/ZnO nanoparticles were synthesized by novel aqueous solution route. The as prepared samples were annealed at 450 °C for 30 min in ambient atmosphere to improve the structural perfection. A considerable blue shift and increase in the band gap was observed with the increase of Se content and quantum con-

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J Mater Sci: Mater Electron
DOI 10.1007/s10854-016-6070-4

# Fabrication of double cation (Sn + Mg) activated ZnO thin films for environmental and health care applications

R. Mohan[1] · S. Snega[2] · K. Ravichandran[2] · S. Vadivel[3]

Received: 18 October 2016 / Accepted: 11 November 2016


**Abstract** Undoped and Sn + Mg doped ZnO thin films were deposited onto glass substrates using a nebulizer spray technique. The optical, structural, photoluminescence, morphological, photocatalytic and antibacterial properties were investigated for various doping levels (2, 4, 6, 8 and 10 at.%) of Mg and constant doping level (6 at.%)

## 1 Introduction

In the recent decade, the development of cost-effective and highly efficient semiconductor photocatalysis is very much essential for the degradation of organic pollutants and toxics [1]. Therefore, an increasing attention has been paid

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# A comparative investigation on humidity sensing and photocatalytic applications of Sb doped $SnO_2$ by microwave combustion route

A. Rathinam[1] · G. Balaji[1] · S. Vadivel[2]

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**Abstract**
This work highlights the high sensitivity humidity sensor and photocatalytic activity of pure and Sb doped $SnO_2$ nanoparticles by microwave combustion route. The role of Sb dopant on structural, morphological and optical properties were systematically investigated by powder X-ray diffraction (XRD), Field emission scanning electron microscope (FESEM), Raman spectra, UV–Vis absorption spectra and Photoluminescence spectra analysis. PXRD and Raman results reveal that $SnO_2$ is nanocrystalline with tetragonal structure. The structure of $SnO_2$ does not change with Sb doping but the shape of the nanoparticles changes from spherical to needle like morphology by Sb doped $SnO_2$, which is confirmed through FESEM micrographs. Tuning of band gap and enhanced absorption edge was found to be UV and PL spectra analysis. The Sb doped $SnO_2$ sample showed high performance humidity sensing such as high sensitivity, fast response (40 s) and recovery time (35 s). The photocatalytic activities of the samples were evaluated by photocatalytic degradation of Methylene blue and

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# PHYSICO – CHEMICAL ANALYSIS ON CETYLPYRIDINIUM CHLORIDE ( CPC ) WITH ALCOHOL SOLUTION AT DIFFERENT TEMPERATURES-ULTRASONIC , UV AND FTIR ANALYSIS

V. Karikalan, A. Panneerselvam, K. Vallalperuman • Published 2018

The ultrasonic velocity, density and viscosity in the mixtures of Cetylpyridinium Chloride (CPC) with Water Alcohols (Methanol, Ethanol and 1-Propanol) in different concentration ranges are measured at different temperatures 303, 313 and 323K with a view to determine the Critical Micelle Concentration (CMC). From the experimental data, other related acoustical parameters such as adiabatic compressibility (β), intermolecular free length (Lf), internal pressure (□i), free volume (Vf), cohesive... Expand

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# Brush Plated Copper Gallium Sulphide Films and their Properties

*B. Kajamaideen[1], A. Panneerselvam[2] and K. R. Murali [3,*]*

[1] Department of Science and humanities (Physics), KIT-Kalaignarkarunanidhi Institute of Technology, Coimbatore 641 402, India.
[2] Department of Physics, Paavai Engineering College, Paachal, India
[3] ECMS Division, CSIR-CECRI, Karaikudi -630 006, India.

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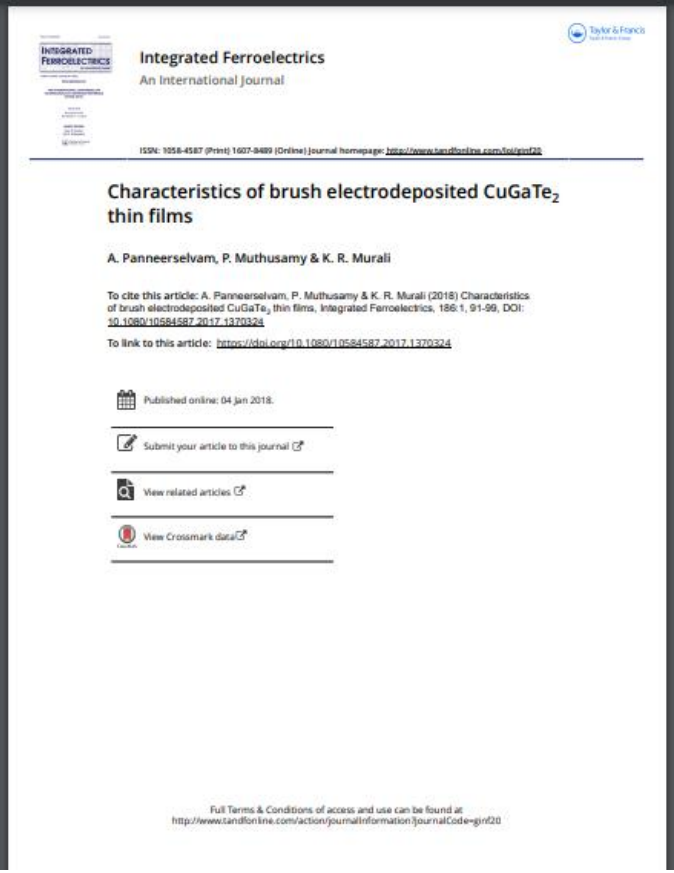
**Abstract:** Copper gallium sulphide films were deposited for the first time by the brush plating technique at different electrolyte temperatures in the range of 30°C - 80°C and at a constant deposition current density of 5.0 mA cm-2. X-ray diffractograms of the films are single phase with chalcopyrite structure. EDAX measurements indicated that the Cu/Ga ratio decreased from 1.29 to 1.00 as the electrolyte temperature increased from 30°C - 80°C. The grain size increased with increase of electrolyte temperature. The grain size increases from 100 nm to 300 nm as the electrolyte temperature increases.

**Keywords:** brush elctrodeposition technique, thin film, semiconductor, electronic material, chalcopyrite



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# Characteristics of brush electrodeposited $CuGaTe_2$ thin films

A. Panneerselvam, P. Muthusamy & K. R. Murali

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