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1(2018-19)

A Feasibility Study On C-RAN

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Abstract

Now a days the number of users of mobile phone are increasing exponentially, so it will cause jamming in the network and require large bandwidth. So among promising technology candidates to overcome this problem, cloud radio access network (C-RAN) is used. C-RAN, having one baseband unit (BBU) communicates with users through distributed Remote Radio Heads (RRHs). RRHs are connected to the BBU via high capability, low latency fronthaul links and performs soft relaying. The architecture of C-RAN imposes a shortage of fronthaul bandwidth because raw I/Q samples are exchanged between the RRHs and the BBU. In BBU different algorithms are used to improve the capacity, joint decompression and decoding (JDD) and Wyner-Ziv coding.

Keywords: Cloud radio access networks, joint decompression and decoding, BBU, RRH

INTRODUCTION

Cloud radio access network (C-RAN) has been widely accepted as a new architecture for future mobile networks to sustain the ever increasing demand in data rate [2]. Simply speaking, C-RAN is a centralized, cloud computing-based architecture for radio access networks that supports 2G, 3G, 4G and future wireless communication standards. C-RAN consists of one centralized Baseband Unit (BBU) and a variety of distributed Remote Radio Heads (RRHs), it serves users in a geographical region. The advantage of C-RAN over Traditional cellular, or radio access networks (RAN) includes system throughput improvement, high power efficiency, and dynamic resource management, which eventually result in the cost-saving on capital expenditure and operating expenditure [5].

Traditional cellular or Radio Access Networks (RAN), it consists of many complete base stations. Each base station covers a tiny space, whereas a cluster of base stations provides coverage over a

continual space. Each base station processes and transmits its own signal to and from the mobile terminal, and forwards the data payload to and from the mobile terminal and out to the core network via the backhaul. Each base station has its own cooling, backhaul transportation, backup battery, monitoring system, and so on. Because of restricted spectral resources, network operators 'reuse' the frequency among different base stations, which will cause interference between neighbouring cells [6].

Cloud computing is the hot topic for all information technology investors. C-RAN is used for boosting of data services and applications, in wireless systems mainly used in voice, data e-mail, video. Now a days increasing demand of data services and users C-RAN is used, earlier traditional RAN was used. In traditional RAN each base station connects to a fixed number of antennas, the antenna covers a small area and capacity is limited by interference. The main challenges are requirement of large base station, base



2(2018-19)

Micro-calcification Detection In Digital Mammogram

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Abstract

As reported by world health organization, breast cancer is the most common cancer in women and it caused large number of death in world. Early diagnosis is the only solution to increase the survival rate. There are two early screening plans for breast cancer: early detection and screening. Limited resources parameter with low health system is the main reason for diagnosing in the late stages and should organize early diagnosis programs based on knowledge of the first signs and symptoms. Many methods are used to test women to identify cancer before all symptoms appear. Mammography is one of the methods in which an X-ray of the breast used to detect and diagnose breast cancer tumors. The tiny deposit of calcium known as the micro-calcification can be detected by using screening mammogram and this calcification sometimes represents the cancer. This review aims to compare different method for detecting micro calcification in mammogram.

Keywords: Artificial neural network, Micro-calcification, Mammogram, Support vector machine, Wavelet Transform

INTRODUCTION

A mammogram is an X-ray image of breast. Mammograms can be used to detect breast cancer in women who have no sign of the disease and are known as screening mammogram. Screening mammogram usually consist of two X-ray images or images of two breast. These images are used to detect the tumor which cannot be felt and it also detects micro-calcification which sometimes indicates the presence of cancer. Mammogram is also used to detect cancer which shows some sign or symptoms. This type of mammography is called a diagnostic mammography. In addition to one piece, signs of breast cancer may include breast pain, skin thickening of the breast, nipple discharge, or a change breast size or shape; however, these signs may also be signs of benign conditions.

A observed mammography can also be used to estimate changes in screening mammography or to visualize breast tissue when it is difficult to get a screening

mammogram due to conditions such as presence of breast implants Prosthetic. The same machines are used for both types of mammography. Radiation from the mammogram causes some health problem. The continuous mammography will cause other health problems. However, diagnostic mammography takes longer to perform mammography screening and the total radiation dose is greater because more X-ray images are needed for getting the sinus view from different angles. The technician may develop a distrustful area to produce a detailed picture that can help the doctor to make a specific diagnosis.



Fig: 1. an example of micro-calcification in mammogram

A woman born today has about one in eight chance of being diagnosed with



3(2018-19)

ORIGINAL ARTICLE

An Improved Classification System for Brain Tumours Using Wavelet Transform and Neural Network

AS Dhas¹, M Madheswaran²

ABSTRACT

This paper presents an improved classification system for brain tumours using wavelet transform and neural network. The anisotropic diffusion filter was used for image denoising, and the performance of the oriented rician noise reducing anisotropic diffusion (ORNRAD) filter was validated. The segmentation of the denoised image was carried out by fuzzy c-means clustering. The features were extracted using symlet and coiflet wavelet transforms, and the Levenberg-Marquardt algorithm based neural network was used to classify the magnetic resonance (MR) images. This classification technique of MR images was tested and analysed with existing methods, and its performance was found to be satisfactory with a classification accuracy of 93.24%. The developed system could assist physicians in classifying MR images for better decision-making.

Keywords: Brain tumour, fuzzy c-means, Levenberg-Marquardt algorithm, magnetic resonance images, neural network, wavelet transform

Un sistema de clasificación mejorado para los tumores cerebrales usando la transformada de ondeletas y la red neuronal

AS Dhas¹, M Madheswaran²

RESUMEN

Este artículo presenta un sistema de clasificación mejorado para los tumores de cerebro usando la transformada de ondeletas (transformada wavelet) y la red neuronal. El filtro de difusión anisotrópica fue utilizado para la eliminación del ruido de la imagen, y se validó el funcionamiento del filtro de difusión anisotrópica orientado a reducir el ruido riciano (ORNRAD, siglas en inglés). La segmentación de la imagen 'desruidizada' (denoised) fue realizada mediante el agrupamiento difuso c-means fuzzy. Las características fueron extraídas usando las transformadas de ondeletas symlet y coiflet, y la red neuronal basada en el algoritmo de Levenberg-Marquardt fue utilizada para clasificar las imágenes de resonancia magnética (RM) imágenes. Esta técnica de clasificación de imágenes de RM fue probada y analizada con métodos existentes, y se halló que su rendimiento era satisfactorio con una precisión de clasi-

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4(2018-19)

Epilepsy Detection Based on EEG Signals

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Abstract

Epilepsy is a brain neurological disorder in which the brain activity becomes abnormal causing unusual behavior, uncontrollable jerking movements, sensation and sometimes loss of awareness, affecting 71 million people world-wide. Electroencephalogram (EEG) is used to measure the electro-neurological activity of the brain. When the Signal to Noise Ratio (SNR) of the noisy data is lower than 0dB the current seizure detection method can't maintain a strong performance. The SNR of the noise data is below 0dB or negative means that EEG data is corrupted with serious levels of noise.

Index Terms: Electroencephalogram (EEG), Neural Network, specificity, accuracy, sensitivity, Epileptic seizure, SNR

INTRODUCTION

Epilepsy is a common brain disorder after migraine. In worldwide around 72 million people have epilepsy, it makes epilepsy the second common electro-neurological disorder after migraine [22]. It is a brain disorder that occurs in mammalian species, in both genders at all ages, especially in neonates and in aging population. In this case probably more frequently the brain become more complex, it can cause a variety of temporary changes in perception and behavior such as the brain activity becomes abnormal, causing unusual behavior, sensation, sometimes loss of awareness stare blankly, and uncontrollable jerking movements of the arms and legs. Epilepsy can be ordered into two, fractional/general Partial seizures: - they are delivered by and large from a restricted limited locale of the cerebrum, and some of the time it might radiate to other new regions. Based on the epilepsy patient's response during the seizure period, partial epileptic seizure is again divided into simple and complex [14]. Epilepsy detection plays a very

important role in improving the quality of life of epileptic patients. Electroencephalogram (EEG), the prime and more complex signal widely used for the diagnosis of epilepsy. It represents neuro-physiologic activity of the brain measured electrographically using electrode placed on the Scalp. Electroencephalographic records, is a relevant and most relevant tool/medium for the detection of neural disorders like head injury, tumor and epilepsy. Human EEG they are reflected by numerous ictal patterns, epileptic seizures can typically become evident as characteristic. Usually rhythmic brain signals frequently coinciding with or precedent the earliest observable changes in the behavior. Their diagnosis at the beginning of ictal patterns in the EEG can be used to begin detailed detection process during seizures and to discriminate epileptic seizures from other conditions with seizure-like symptoms [23]. Around 90% of the previous work has aim on developing sufficient and important feature extraction method that can find the most important EEG features



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NAAC Cycle 2

Criterion: 3.3.1

5(2018-19)



Communications on Applied Electronics (CAE) – ISSN : 2394-4714
Foundation of Computer Science FCS, New York, USA
Volume 7– No. 23, December 2018 – www.caeaccess.org

A Critical Analysis on the Evolution in the E-Payment System, Security Risk, Threats and Vulnerability

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ABSTRACT

At present, payment system through the internet has been trending at the furious pace. There are different ways and varieties of e-payment systems are existing to facilitate ease of transaction at the most active security level. However, parallelly the cyber-attacks strategies are growing at the advanced level as security protocols. In this research study, have analyzing the evolution of e-payment system and its terminology followed by different conventional e-payment mechanisms. Also demonstrates lack of security provisions and solution strategies. The main contribution of the present survey study is providing the landscape of digital e-payment system and its opportunities for future e-commerce systems. In the last, have briefly discussing and analyzing the fraudulent transaction rates which will become the benchmark for the development of secure e-payment system.

Keywords

Debit/Credit card, Electronic Payment System, E-Cash Transaction, Mobile-Payment, Security, Secure E-Transaction (SET), QR code.

1. INTRODUCTION

With the fast growth of the internet and information technology, most of the consumers, as well as a vendor, are depending upon electronic-commerce (i.e., E-commerce) system. It is a process of buying and selling the goods and services or financial transaction, over the internet [1]. For example, e-payment or online payment, which is also known as EDI (Electronic data interchange). In the current digital world, internet banking or e-banking system has become most rapidly adopting technology for multiple purposes especially for online shopping, money transaction, e-ticket booking, and many more applications. An e-payment or e-banking system provides a service to make a financial transaction for goods and services via an electronic system, without using any cash or check. The e-payment technology has to place a new era over the past decades owing to the popular online-based shopping and internet banking [2]. As rapid growth in the development of e-banking system can notice the increasing use of e-payment system has provided tremendous opportunities and services for the users. The services offered from the internet banking are becoming the prevalent medium of money transactions and can be taken as major requirements in current financial industry [3]. As of simplifying e-banking operations, these services offer any time access to banking services [4]. As per the research report of [5], <29 percentage of online consumers accessed the e-banking sites in the year 2012, which is a very low access rate [6].

In the e-banking system, the essential aspect is that establishing the important technical infrastructure, for example; E-payment system. Generally, E-payment system can be grouped into

different categories; one is cash-based payment (i.e., E-cash, and pre-paid card) and second is account based payment system (i.e., credit card, debit card, and E-check). The E-payment process mainly depends upon time and location, and it happens with the help of the smart device that is named as M-payment (mobile payment) system. In this procedure, operators and network carriers have to communicate with banks or financial institutions, because, like example; cash-based payment system often managed over the accounts of citizens. In the state sector, there are multiple enterprises to offer E-payment for the citizens to protect the electronic payments is made by government organizations to pay for public services. With the tremendous growth in the information & communication technology (ICT), mobile services achieved broad coverage and extensive use, not only helping in the public sector but also in economic or business activities becoming essential service for improving business revenue. According to the report of ARCOTEL [7], mobile access surpasses 100%, with the coverage over 90% throughout the public region. In [8], Ecuador financial institution estimated that in the year 2014, less than 50% of the population was using e-banking, i.e. no alternative use of physical money payment.

The key factor of E-banking service is to understand the customer's satisfaction and requirements. To improve the E-payment system adoption rate, the factors which affect customer adoption must be better managed [6]. Despite the huge investment made on internet technology in the banking sector, the case study shows that few customers although following physical money transaction, are reluctant to utilize the system. This shows the research required to figure out the influencing factors for the adoption of e-payment system [9]. Multiple electronic banking methods have been explored to define the factors influencing the customer's adoption of E-payment. The major influencing factors are; flexibility during payment system, payment operations, data management, privacy and system security [10]. Always, customers of E-payment system fears about using the internet services for online money transactions. The major problem of trust occurs when high risk is involved. Therefore, security and trust can be considered as a primary factor influencing customer contentment in the use of E-payment.

The establishment of M-payment system began more than ten years ago. However, in real scenario adoption of M-payment is quite different. Till now, 70% of Indian customers are being aware of M-payment system, don't adopting the technologies. The primary reason for this less adoption rate is because of high fear of privacy and security incorporations provided by different services [11]. With the adoption of mobile phones and related services, various applications (M-Pesa) has been launched in our country which can be utilized for financial transactions, E-recharge, E-bill payments, and cash withdraw from ATM.





6(2018-19)

International Journal of Electrical, Electronics and Data Communication, ISSN(p): 2320-2084, ISSN(e): 2321-2950
Volume-6, Issue-6, Jun-2018, http://traj.in

METAMATERIAL PATCH ANTENNA WITH PBG STRUCTURE TO REDUCE SURFACE WAVE

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Abstract - This paper presents a modified design of patch antenna using an artificial material called metamaterial. The resonating frequency of 7.6 GHz patch antenna with RT DUROID 5880 is the substrate. The proposed antenna has a size of 32mm*28mm and thickness 31 mil. Microstrip patch antenna has high advantages like low profile, light weight, omni-directional and low-cost, but it also face some disadvantages like low gain, low VSWR and presence of surface wave leads to reduction of over all performance. To overcome these drawbacks use metamaterial patch antenna and Photonic band gap structures. That will improve overall performance as well as efficiency of the proposed patch antenna. Rectangular patch and microstrip line feeding is also present. On patch micro-triangular pattern is using, that make the patch to metamaterial. And on ground plane crossed strip lines are using, also on substrate PBG structure is using to reduce the presence of surface wave. Proposed antenna is simulating using HFSS software.

Keywords- Metamaterial, Microtriangles, PBG, VSWR, Surface wave.

I. INTRODUCTION

Antenna design is the emerging field of research to change the future. Microstrip patch antenna is one of the interesting area in antenna design due to its wonderful advantages like low profile, light weight, easily compactable, and low-cost. Patch antennas also face some disadvantages in these parameters like low gain, low VSWR, and low efficiency due to some unwanted signals like surface waves, leaky waves etc. Researches take it as a challenge to overcome these drawbacks and getting new products every day. In this paper, the proposed patch antenna has a size of 32mm*28mm and thickness of 31mil. RT Duroid 5880 is the substrate material. Due to the patterning of patch as microtriangles and ground plane with crossed strip lines make patch and ground plane to metamaterial.

Metamaterial is an artificial material. It can't be found naturally in earth. Repeated pattern make any metal or plastic to metamaterial. Metamaterials show negative refractive index too. Using these advantages of metamaterials the proposed antenna has negative refractive index as well as horizontal radiation when it place horizontally.

Applying photonic band gap structure on substrate near to patch area helps to reduce the presence of surface waves. And that makes a highly efficient patch antenna. This concept is also using in this proposed metamaterial patch antenna to reduce the presence of surface wave.

The resonating frequency of proposed antenna is 7.6GHz and it lies in X band. So it can be used for X band applications. HFSS software is using for simulation purpose.

II. ANTENNA DESIGN

For designing a patch antenna, it is very important to find the operating frequency of proposed patch antenna. After the decision of resonating frequency, calculate the width and length of patch antenna by equation no [1].

$$\omega = \frac{c_0}{2f_r} \sqrt{\frac{2}{\epsilon_r + 1}} \quad (1)$$

The calculation of $\epsilon_{r_{eff}}$ is given by the equation

$$\epsilon_{r_{eff}} = \frac{\epsilon_r + 1 + \epsilon_r - 1}{2} \left[1 + 12 \frac{h}{\omega} \right]^{-\frac{1}{2}} \quad (2)$$

Substituting the values of ω , $\epsilon_{r_{eff}}$ and h,

$$\Delta L = 0.412h \frac{(\epsilon_{r_{eff}} - 0.3) \left(\frac{\omega}{c_0} + 0.264 \right)}{(\epsilon_{r_{eff}} - 0.258) \left(\frac{\omega}{c_0} + 0.8 \right)} \quad (3)$$

Substituting the values of $\epsilon_{r_{eff}}$ and f_r ,

$$L_{eff} = \frac{c_0}{2f_r \sqrt{\epsilon_{r_{eff}} - 2.6W}} \quad (4)$$

The actual length of the antenna is given by,

$$L = L_{eff} - 2\Delta L \quad (5)$$

III. ANTENNA STRUCTURE

A 32 mm*28 mm RT Duroid with 2 side copper coating is taken with substrate thickness of 31 mil. The patch dimensions are 16mm*12 mm rectangular patch. On patch microstrip line pattern is added to make the patch to metamaterial as shown in fig 1.



7(2018-19)

Image & Signal Processing | [Published: 15 May 2019](#)

A Hybridized ELM for Automatic Micro Calcification Detection in Mammogram Images Based on Multi-Scale Features

[Jayesh George Melekkoodappattu](#)  & [Perumal Sankar Subbian](#)

[Journal of Medical Systems](#) **43**, Article number: 183 (2019) | [Cite this article](#)

424 Accesses | **25** Citations | [Metrics](#)

Abstract

Detection of masses and micro calcifications are a stimulating task for radiologists in digital mammogram images. Radiologists using Computer Aided Detection (CAD) frameworks to find the breast lesion. Micro calcification may be the early sign of breast cancer. There are different kinds of methods used to detect and recognize micro calcification from mammogram images. This paper presents an ELM (Extreme Learning Machine) algorithm for micro calcification detection in digital mammogram images. The interference of mammographic image is removed at the pre-processing stages. A multi-scale features are extracted by a feature generation model. The performance did not improve by all extracted feature, therefore feature selection is performed by nature-inspired optimization algorithm. At last, the hybridized ELM



8(2018-19)

Journal of Medical Systems (2019) 43:183

<https://doi.org/10.1007/s10916-019-1316-3>

IMAGE & SIGNAL PROCESSING



A Hybridized ELM for Automatic Micro Calcification Detection in Mammogram Images Based on Multi-Scale Features

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Received: 12 March 2019 / Accepted: 25 April 2019

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Abstract

Detection of masses and micro calcifications are a stimulating task for radiologists in digital mammogram images. Radiologists using Computer Aided Detection (CAD) frameworks to find the breast lesion. Micro calcification may be the early sign of breast cancer. There are different kinds of methods used to detect and recognize micro calcification from mammogram images. This paper presents an ELM (Extreme Learning Machine) algorithm for micro calcification detection in digital mammogram images. The interference of mammographic image is removed at the pre-processing stages. A multi-scale features are extracted by a feature generation model. The performance did not improve by all extracted feature, therefore feature selection is performed by nature-inspired optimization algorithm. At last, the hybridized ELM classifier taken the selected optimal features to classify malignant from benign micro calcifications. The proposed work is compared with various classifiers and it shown better performance in training time, sensitivity, specificity and accuracy. The existing approaches considered here are SVM (Support Vector Machine) and NB (Naïve Bayes classifier). The proposed detection system provides 99.04% accuracy which is the better performance than the existing approaches. The optimal selection of feature vectors and the efficient classifier improves the performance of proposed system. Results illustrate the classification performance is better when compared with several other classification approaches.

Keywords Mammography · Micro calcification · Extreme Learning Machine · Feature selection · Classification · FOA

Introduction

Mammography is an X-ray based imaging model which is

mammogram is considered to be the main method which can sense 85 to 90% of all breast cancers [5]. The milk gland is the main origin of growth of malicious cells [6, 7]. The



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NAAC Cycle 2

Criterion: 3.3.1

9(2018-19)

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MICROGRIDS -A FUTURE SMART GRID DESIGN

Ms. Thrishna Jayaraj, Prof. G Justin Sunil Dhas

ABSTRACT

Microgrid is the small scale power grid with a bunch of manifold distributed generators (DGs) that supply electrical energy to consumers. The main components include loads, DERs, master controller, smart switches, protective devices, as well as communication, control and automation systems [1]. Two main control techniques used in microgrids are hierarchical control and distributed control structures. Both control structures empower consistent and resourceful operation for microgrids. Different measures have been developed to improve the negative effects of the voltage disturbance and to moderate the power quality complications. A microgrid can able to operate moreover in grid-connected or autonomous (islanded) modes. Islanding can have undesirable impacts on system operation as well as safety issues if not detected and configured on time. Within the smartgrid concept microgrids have been proposed as novel distribution network architecture.

FULL TEXT:

 PDF

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NAAC Cycle 2

Criterion: 3.3.1

10(2018-19)



V.S. Bibin Raj



Glan Devadhas

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Abstract

The future of renewable energy is so demand as it relates more with the scarcity of the bio-fuels and other petroleum products. The usage of such a part is aided for the conventional production of electric power. The generation of electricity cost a lot as it is highly used for the day to day needs. A reliable indigenous production of electric power is from the application or introduction of the photovoltaic system. The main region where the PV system leads behind is especially on the shaded conditions. The shading effect reduces the output efficiency of the solar cell and it leads to some fixed losses. This paper proposes a novel PV structure configuration that has the capacity to reduce the effect of partial shading by changing the MPPT control algorithm and an additional sub algorithm. This paper describes the lateral effect of the partial shading and the introduction of the step by step control topology which aids the MPP with the PID for obtaining the optimal output irrespective of optimal load current with a stable DC output. The practical problems of loop delay, feedback noise, feedback filtering and deadbeat controller parameters sensitivity are investigated by linear analysis simulation, experimental implementation and non linear model analysis. This paper presented the simulation, implementation and performance of dead beat control. © 2018, Institute of Advanced Scientific Research, Inc.. All rights reserved.





11(2018-19)

Published: 02 March 2018

Brain tumor detection and segmentation using a wrapper based genetic algorithm for optimized feature set

[S. U. Aswathy](#) , [G. Glan Devadhas](#) & [S. S. Kumar](#)

Cluster Computing **22**, 13369–13380 (2019) | [Cite this article](#)

243 Accesses | 13 Citations | [Metrics](#)

Abstract

The work here intends to develop an algorithm for optimizing the available feature set for identifying tumor from brain MRI images. A set of features are selected based on texture features. From the large set of features relevant features would be selected using wrapper approach. Further, an optimized subset of the relevant features is generated with the help of Genetic Algorithm. The machine learning with support vector machine algorithm is used for detection and segmentation of tumors in the brain MRI image acquired. The superiority of the algorithm is established by comparing it with the state of the art algorithms such as level set method and fuzzy based methods. The authors are using performance measurement tools including manual segmentation and volume based tools for validating the claim.



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12(2018-19)

Journal of Computer Technology & Applications

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Emerging Techniques and Trends in DNA Cryptography

Shilpa George, Biji C.L., Achuthsankar S. Nair, Akhila Mathew

Abstract

Abstract: This paper reviews recent research trends and methods in the field of DNA cryptography. An attempt is made to introduce biological background and the literature concerning the various DNA cryptography techniques mainly comes under Pseudo DNA cryptography and DNA steganography based on biomolecular operations. The paper explains some of the key algorithms in designing Pseudo DNA cryptographic scheme such as (i) DNA Insertion, (ii) DNA Substitution and (iii) DNA Complementary pair method. Later it comes with the approaches adapted in DNA steganography based on biomolecular operations like Polymerase chain reaction (PCR) based DNA steganography, DNA microdot technology, and DNA steganography using recombinant DNA technology. The paper further does a comparative analysis on these methods and argues the various challenges involved in biomolecular operations while designing the DNA ciphers.

Keywords: DNA cryptography, Pseudo DNA cryptography, DNA steganography, PCR, DNA Microdot, Recombinant DNA

Cite this Article: Shilpa George, Biji C.L, Achuthsankar S. Nair, Akhila Mathew. Emerging Techniques and Trends in DNA Cryptography. Journal of Computer Technology & Applications. 2019; 10(3): 29-41p.





13(2018-19)

International Journal of Science and Research (IJSR)

ISSN: 2319-7064

ResearchGate Impact Factor (2018): 0.28 | SJIF (2018): 7.426

Survey on Static and Dynamic Hand Gesture Recognition Techniques

Ophelia M¹, Keerthijith P²

^{1,2}Department of Computer Science and Engineering, Vimal Jyothi College of Engineering, Chempери, Kerala-670632, India

Abstract: *A hand gesture recognition system provides a natural way of non-verbal communication. Human Computer Inter-action mostly involves hand gestures. Vision-based hand gesture recognition techniques have many advantages over traditional devices, giving users a comfortable and more intuitive way of communication between a human and a computer. Hand gestures are of two types: Static hand gestures and Dynamic hand gestures. Hand gestures which can be either static or dynamic, for human computer interaction is an area of active research and with many numerous possible applications. This survey describes different systems used for gesture recognition. This paper presents a literature review on various gesture recognition methods.*

Keywords: Cyber-Glove, Dynamic gesture, Human-Computer Interaction, Gestures, Posture, Skin color detection, Static gestures

1. Introduction

“vocabulary” of actions is defined, that can easily be recognized based on the active contour shape and motion.



14(2018-19)



Elm Based Detection of Micro-Calcification in Mammogram using Glcm Features

Jayesh George Melekoodappattu, Perumal Sankar Subbian

Abstract: The breast is made up of many different types of tissue and cells. When the cells in the breast grow or change abnormally and it is called breast cancer. Most breast cancers occur in women who are over the age of fifty. Calcification is the main causes of breast cancer. The deposit of calcium in breast tissue is known as calcification. And it is two types, Micro-calcification and macro-calcification. Large calcium deposits represent the macro-calcification which may relate to non-cancerous. The tiny white dots on mammogram represent the micro-calcification which is the earliest stage of breast cancer and the calcification can be found in different shapes. Mammography is the one of the method to determine the breast cancer. In this paper we are determining the micro-calcification in mammogram using different steps which include preprocessing, enhancement, feature extraction, feature selection and the classification.

Index Terms: Extreme learning machine, Global Swarm Optimization, Gray level co-occurrence matrix, Mammography.

I. INTRODUCTION

Each year in the world lots of women are learned that they have breast malignancy. The incidence of breast malignancy decreasing so as the death rate also decreases. The increased cure rate can be attributed to effective surgical and medical treatment also early find out of breast cancer plays an important role[1]. The size of the breast tumor is detected by annual mammogram is very small compared to the size of a

cancer is developed inside this milk channel. non-invasive and invasive are the two types of breast malignancy. In non-invasive cancers the ducts fill with the cancer cells but there is no evidence of the cancer outside of the ducts. The medical term for this is Ductal carcinoma insitu [5].

A surgical strategy to remove the cancer is highly likely to result in a cure with invasive breast cancer cells have broken down the wall of the duct and are found in the fatty part of the breast.

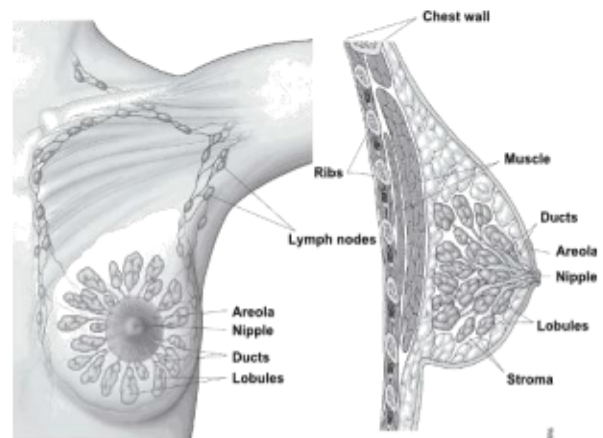


Fig. 1: Breast Tissue

cancer has access to the circulation of the lymph system



15(2018-19)

International Journal of Innovative Technology and Exploring Engineering (IJITEE)
ISSN: 2278-3075, Volume-8 Issue-10, August 2019

Experimental Analysis and Effects of Gasoline as an Additive in Compression Ignition Engine

Appu Kurian, Rameshan K.P, Ryne P.M, Benphil C Mathew

Abstract: A compression ignition engine is a sort of engine where the fuel utilized is diesel. In this current study, various influences on petrol-diesel mixture have been introduced in a mono cylinder vertical diesel engine and investigated factually for various stages. Denouement of 0%, 4%, 8% and 12 % of gasoline by volume is varied with diesel and the outcomes has been registered with the foundation of test perceptions at 1500(rpm). Out of various trial experimental outcomes, it is found out that, with the addition of gasoline fuel the real brake -power output rises at the rate of 4-9% and also the brake specific fuel consumption reduces by relatively 6%. Also, the study found out that increase in the volume fraction of gasoline decreases the fuel density, surface tension and kinematic viscosity. In addition the

Under the classification of Internal Combustion Engines, a Diesel engine plays the role of one of the most dynamic liquid fuel combustion prime movers. However, on the other side, a diesel engine experiences various disadvantages. One of the disadvantages is their limited speed range, particularly for high terrain and heavy load vehicle applications. Because of ignition delay, the rotational speed (rpm) of CI engine is not applicable for higher levels [3]. Due to this reason and also the various accoutrements such as low equivalence ratios, tremendous pressure differences, etc., normally a diesel engine is much heavier than gasoline engine of equivalent power [4]. Meanwhile, the Ignition delay period shall be



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Criterion: 3.3.1

16(2018-19)

Modeling of a Gasifier Using Cycle-Tempo for SOFC Applications

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Abstract. Gasifier-SOFC system is an excellent choice for waste to energy conversion. Optimization of process parameter is an issue faced in such complex energy systems. CYCLE-TEMPO is the world leading software used for thermodynamic analysis of energy systems. In this paper a downdraft gasifier is modelled using CYCLE-TEMPO and process parameter like equivalence ratio are optimized for maximum yield. Three agricultural residues namely coconut shell, rubber wood and bamboo which are locally available were tested as a feed. Gasifier model is validated using a downdraft gasifier experimental setup. Gasifier is then integrated with a SOFC unit. From the simulation carried out it was found that the coconut shell will be the best biomass for quality syngas production at an equivalent ratio of 0.2. But the syngas contain other impurities so that gas cleaning is necessary and the purified syngas can be supplied to the solid oxide fuel cell (SOFC).

INTRODUCTION

Biomass gasification is the thermochemical conversion of biomass feed stocks into combustible gas. It is the major contender for conversion of waste to energy apart from biomethanation. Unlike other renewable sources of energy, as wind and photovoltaic, the bio energy sector is characterized by a high level of complexity, due to the close interaction between industry and the agro-forestry field. The crucial problem is a lack of biomass markets, primarily because of a scarce demand, and a lack of conversion plants able to use this potentially available energy source. However, the use of biomass in the heat and power generation is becoming more and more common. Modeling of gasifier-SOFC systems are very much of importance for optimizing the parameters and experimenting such systems for a wide range are not possible due to cost and other practical limitations.

Fortunato et al. [1] modeled a downdraft gasifier in cycle tempo in which pyrolysis, oxidation and reduction





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NAAC Cycle 2

Criterion: 3.3.1

17(2018-19)

BIOMASS DENSIFICATION OF AHL POWDER MECHANICAL PROPERTIES USING RSM

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Abstract

The study of agricultural wastes into biomass is an approach on the way to the growth of alternative energy sources. Artocarpus Heterophyllus Leaves (AHL) powder can be utilized as an alternative energy source to coal. Densification of scum's depends upon its physical properties and process parameters. In this article





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NAAC Cycle 2

Criterion: 3.3.1

18(2018-19)

Interciencia Journal

ISSN: 0378-1844

2019 44(11)

THERMAL DEGRADATION ON BIOMASS BRIQUETTES OF ARTOCARPUS HETEROPHYLLUS LEAF POWDER

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ABSTRACT

Biomass briquettes replace fossil fuels such as coal or oil and have versatile relevance's in emergent countries. These briquettes are a renewable energy source and limit the carbon emission to the atmosphere. We use Artocarpus Heterophyllus leaves (AHL), a kind of waste collected from the Jack fruit tree mainly from village side. In order to make selection, the properties of the material taken and the cost of the binder





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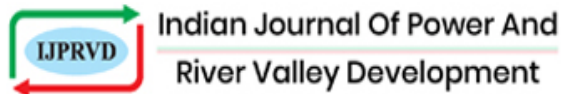
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19(2018-19)



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Grid frequency regulation by hybrid system using energy storage system

Aug 2019 / by M Pradeep Kumar, S. Durairaj and P. Sridharan

Nowadays, wind and solar power are one of the greatest demand in the electricity market. Due to the inherent variability and uncertainty in grid frequency, a combination of the hybrid system of wind, solar, thermal and ESS brings numerous difficulties in power systems, particularly when generation is not equal to demand. Power systems possess a lot of difficulties like quality, stability, and reliability. In this paper, grid frequency is regulated by means of a hybrid system of wind and solar power with batteries (ESS). The use of energy storage system seems to be one of the best solutions in the power system network. The model of the power system studied in this paper is established on the MATLAB/SIMULINK platform.





20(2018-19)

Image & Signal Processing | [Published: 15 May 2019](#)

A Hybridized ELM for Automatic Micro Calcification Detection in Mammogram Images Based on Multi-Scale Features

[Jayesh George Melekoodappattu](#)  & [Perumal Sankar Subbian](#)

Journal of Medical Systems **43**, Article number: 183 (2019) | [Cite this article](#)

424 Accesses | 25 Citations | [Metrics](#)

Abstract

Detection of masses and micro calcifications are a stimulating task for radiologists in digital mammogram images. Radiologists using Computer Aided Detection (CAD) frameworks to find the breast lesion. Micro calcification may be the early sign of breast cancer. There are different kinds of methods used to detect and recognize micro calcification from mammogram images. This paper presents an ELM (Extreme Learning Machine) algorithm for micro calcification detection in digital mammogram images. The interference of mammographic image is removed at the pre-processing stages. A multi-scale features are extracted by a feature generation model. The performance did not improve by all extracted feature, therefore feature selection is performed by nature-inspired optimization algorithm. At last, the hybridized ELM classifier taken the selected optimal features to classify malignant from benign micro calcifications. The proposed work is compared with various classifiers and it shown better performance in training time, sensitivity, specificity and accuracy. The existing approaches



21(2018-19)

Automatic diagnosis of diabetic retinopathy with the aid of adaptive average filtering with optimized deep convolutional neural network

TV Roshini ✉, Ranjith V Ravi, A Reema Mathew, Anoop Balakrishnan Kadan ✉, Perumal Sankar Subbian

First published: 03 April 2020 | <https://doi.org/10.1002/ima.22419> | Citations: 17

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TOOLS



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Abstract

The most effective treatment for diabetic retinopathy (DR) is the early detection through regular screening, which is critical for a better prognosis. Automatic screening of the images would assist the physicians in diagnosing the condition of patients easily and accurately. This condition searches out for special importance of image processing technology in the way of processing the retinal fundus images. Accordingly, this article plans to develop an automatic DR detection model with the aid of three main stages like (a) image preprocessing, (b) blood vessel segmentation, and (c) classification. The preprocessing phase includes two steps: conversion of RGB to Lab, and contrast enhancement. The Histogram equalization process is done using the contrast enhancement of an image. To the next of preprocessing, the segmentation phase starts with a valuable procedure. It includes (a), thresholding the contrast-enhanced and filtered images, (b) thresholding the keypoints of contrast-enhanced and filtered images, and (c) adding both thresholded binary images. Here, the filtering process is performed by proposed adaptive average filtering, where the filter coefficients are tuned or optimized by an improved meta-heuristic algorithm called fitness probability-based CSO (FP-CSO).



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NAAC Cycle 2

Criterion: 3.3.1

22(2018-19)

Analysis of pH Neutralization Using ANFIS based Queuing Algorithm

 T. Pravin Rose and Dr.G. Glan Devadhas

Abstract

A novel Queuing systems (QS) is used in everyday life and all industries, business areas. In our existing systems has two problems, first one is time and cost optimization, and second one is not been sufficiently explored. This especially applies to logistics systems, where a large number of transportation and storage units appear. In this paper, the optimization technique is used, which is important to pH neutralization process. The objective of this work is to develop an ANFIS (Adaptive neuro-fuzzy inference system) model in a pH neutralization process for defining QS optimization parameters. This techniques directly affects the efficiency of the system, but also improve the overall costs that this system. The developed ANFIS model was compared to the existing system with a mathematical model through a sensitivity analysis, simulation provides a optimize analysis. Then the mathematical model showed outstanding results, which justifies its development and application.

 Volume 11 | 06-Special Issue

 Pages: 1610-1617





23(2018-19)

Journal of Intelligent & Fuzzy Systems 35 (2018) 6269–6276
DOI:10.3233/JIFS-171892
IOS Press

6269

Fractional order controller design for SEPIC converter using metaheuristic algorithm

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Abstract. Fractional order proportional, Integral and a derivative controller is a special kind of controller which is used to regulate the output voltage of a class of sepic converter to the desired level. Tuning of fractional Proportional, Integral and Derivative controller (FOPID) is achieved by different metaheuristic algorithm and the optimization performance target is chosen as minimizing the integral square error (ISE). This paper presents a performance analysis of Single Ended Primary Inductance Converter (SEPIC) by time response specifications such as rise time, settling time and steady-state error and further, the results are compared with the controllers designed by Genetic Algorithm (GA), Particle Swarm Optimization (PSO) and Queen Bee based Genetic Algorithm (QBGA). The design and implementation of fractional order controller for a closed loop control of converter is done by utilizing a MATLAB/SIMULINK environment. Results show that QBGA algorithm exhibit better performance as compared to other optimization technique for voltage mode controller in terms of disturbance rejection.

Keywords: SEPIC converter, fractional PID controller, GA, PSO, QBGA

1. Introduction

DC-DC converters have been widely used in industrial applications such as communication equipment, computer systems, electric vehicle charging and DC motor drives due to its buck-boost abilities. There are different types of DC converters such as boost, buck, and buck-boost converters are required for different applications. Buck-boost converter has an inverted output, high voltage stress and pulsating input current. These drawbacks can be overcome by SEPIC converter. The SEPIC converter is a type of DC-DC converter allowing the voltage at its output to be less than, greater than, or equal to that of its input with the ability to provide noninverting polarity with respect to the input voltage. This converter acts as a buck-boost converter due to its voltage gain flexibility. By varying the duty cycle of the converter from 0 to 1 the output voltage can be varied.

Generally, the sepic converters are inherently nonlinear characteristics due to the operation of switching devices and load variations. The response of the sepic converter is easily influenced by external disturbances. The SEPIC converter shown in Fig. 1 has two inductors, two capacitors and a power switch thus it is a fourth order nonlinear system and also exhibits nonminimum phase system. Due to these nonlinearities, the stability analysis, designing and evaluating the controllers are difficult. The converter is stable when operating under nominal operating conditions for small perturbation in linearized and small signal model [1]. Many controlling techniques like sliding mode, back stepping can be used for nonminimal phase systems while for minimal phase systems modal reference adaptive control technique is required [2]. The transfer function of the new inverter topology for the positive and negative cycle is derived and the control to output transfer function is analyzed using root locus [3]. The root locus method is studied for variation in components value to determine the shift of the poles and zeros of the

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24(2018-19)



International Journal of Recent Technology and Engineering (IJRTE)
ISSN: 2277-3878, Volume-8 Issue-4, November 2019

Watermarking Schemes for High Security with Applications and Attacks: Research Challenges and Open Issues



Rahul Ajithkumar, K. Satyanarayan Reddy, G.Glan Devadhas

Abstract: Recently, the growth of the internet is increased day by day also the digital data such as videos, images and audio availability to the public get increased rapidly. The society required intellectual property protection. To protect the media from other attack intruders and avoid business loss is the requirement of digital media produced. Introducing watermarks can be useful to safeguard copyright. In this review an effort is made to explore various aspects of watermarking, algorithms used, and to carry out a comparative study of these techniques based on their classifications.

Keywords: Watermarking, Capacity, Robust, DCT, DWT, PCA, Spread Spectrum

I. INTRODUCTION

With the usage of any digital media, the useful information is hidden by watermarking process [40]. The user checks a digital media authentication by water marking process. The Steganography is interlinked with video. text. audio and

Therefore, the moving and non-moving fraction of the frames are the classification of Non-blind color video frame watermarking algorithm [4], [11]. The round causing errors are corrected with the help of Cat Swarm Optimization (CSO) [47] [48] [49]. The image transformation process of frequency domain to spatial domain image with the real number conversion into integer is to cause the errors [29]. When

compared to the DCT-based method, the performances of DWT-based watermarking method are optimal and produce better results

[36]. The barcodes is considered as a watermark for obtaining well secure and robust watermarking process [37].

The watermarking algorithms are inserted based on the nature of each algorithm and the approaches are distinct in nature [24]. Fig 1 represents the watermarking algorithm. The encryption of solution visual impacts and computational overheads are minimized as well as high efficiency video



25(2018-19)



International Journal of Innovative Technology and Exploring Engineering (IJITEE)
ISSN: 2278-3075 (Online), Volume-9 Issue-1, November 2019

Corrosion rate of Al-Si Alloy Reinforced with B₄C Nanoparticle prepared by Powder Metallurgy Method using RSM



Abraham Subaraj. M, Bensam Raj. J, Malkiya Rasalin Prince. R, Glan Devadhas.G, Christopher Ezhil Singh. S

Abstract: The current work aims to optimize the Al-Si alloy reinforced with B₄C nanoparticles prepared through powder metallurgy technique. The sample was prepared with different weight percentage 0, 4 and 8; the size of the sample was 20 mm x 20mm and sintered in a furnace upto 500°C with argon gas and their by furnace cooled to room temperature. The samples were brushed to remove the slag present in it, and polished by emery paper. Then the samples were weighed in an electric balancing apparatus to measure the initial weight of the sample before dipping it into acid solution. The weight loss was measured to calibrate the corrosion rate of the samples for 9 days. Response surface methodology was designed for three factors at three levels with a response as corrosion rate. The Analysis of Variance (ANOVA) was used to identify the most influencing factor on corrosion rate. The normal probability plot, residual plot, and desirability plot demonstrates the influence of corrosion rate of the composites.

Keywords: Al-Si. Boron Carbide. ANOVA. Powder Metallurov

metals at present in trend, which are predominantly suitable for aircraft uses. If metal matrix materials have to agree maximum strength, they need maximum modulus strengthening. The strength-to-weight ratios of subsequent composites could be maximum than best alloys. In this general RSM design was utilized for the reason that this kind of design is appropriate for products and process design, process enhancement and industrial investigation. In accumulation, after confident high-order interactions are possibly insignificant, evidence on the key effects and low-order interactions might be achieved by consecutively only a RSM design [5- 7]. Hence, this current work is an effort made to scrutinize the effort of reinforcement, acid and time input factors and arithmetical model to forecast weight loss of Al-12Si-x B₄C composites utilizing a Box-Behnken Design (BBD), analysis of variance, the probability and weight loss plot.



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NAAC Cycle 2

Criterion: 3.3.1

26(2018-19)

International Journal of Applied Engineering Research ISSN 0973-4562 Volume 14, Number 4 (2019) pp. 977-983
© Research India Publications. <http://www.ripublication.com>

Development of an Adaptive PID Controller for a Nonlinear Process

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Abstract

It is a crucial task to control the head of cone shaped tanks which is widely used in many industries like food manufacturing industries, petroleum industries and hydrometallurgical industries. The nonlinearity due to the tapered bottom area of the tank makes the level control in the conical tank the toughest task. The conventional controllers will not give a clear solution for this case. Obtaining the equilibrium conditioning by balancing the inflow rate and the out flow rate is the normal level control problem. Different shapes of the tanks implies different equilibrium and operating

regimes. The entire system can be divided in to low middle and high regimes in order to consider the system as piece wise linear and varying controller parameters are required at these points. This work deals with development of a suitable controller for such process. This work start with the development of conventional three mode controller and further it is enhanced with Internal Model Controller and the Adaptive technique. The controllers developed are simulated in SIMULINK environment.

Keywords: Adaptive Controller, ID Controller, Conical Tank, IMC Controller, Nonlinear System

NOMENCLATURE

SLNO	SYMBOLS	SPECIFICATION
1	q	Flow rate(LPH)
2	A	Cross sectional area of conical tank(cm ²)

