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FPGA based design and implementation of low power dual edge triggered flipflop using dynamic signal driving scheme for memory applications

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A B S T R A C T

Power consumption is becoming a massive part of any kind of integrated circuits, and it’s a champion rundown of the most basic three problems that guide the most comprehensive development of semiconductors. In an integrated circuit, the clock diffusion framework and flip-flops use a large amount of energy from which they perform and use a large number of internal transitions. Disperses the clock signal, arranged from a common point in each of the parts required for the clock allocation circuit. This range of synchronization is still necessary, but the thought of the story is given to the characteristics of these clock signals. Due to high frequency operation, the clock functions are controlled with clocked transistors. An efficient method to lessen the limit of clock stack is by limiting the quantity of clocked transistors. In this work to propose a propelled system, to embed this clock gating circuit is evaluated by utilizing the Dynamic Signal Driving scheme (DSD) technique. This model is executed in a series of circuits that are used to simulate a defective Electronic Design Automation (EDA) instrument and use it to analyze down power using the Dynamic Signal Driving Program (DSD). The simulation results show that the dynamic power consumption is reduced to a continuous benchmark in circuits.

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1. Introduction

The power consumption is the main event for any VLSI circuits. The structure is utilized as a part of the brilliant grid innovation do certain autonomous undertakings allocated to them as algorithms actualized reflexive circuits where control needs are planned has limited. Every one of these methods will contain a particular circuit setup using gates and flip-flops. Consequently, in VLSI circuits is being utilized as a base after that any IC has created. A few elements affect VLSI outline: territory, timing and power. An important factor power dissipation and administration have turned into that influences each VLSI chip plan. As the use of microelectronic gadgets increases, versatility. Scaling and speed down of current electronic items increment too along these lines making a requirement for smaller, battery productive and quicker circuits [1,2].

In various VLSI chips, the aggregate chip power use will occur with the power dispersal in the planning structure, including the clock allocation system and flip-flops. This sort of configuration is to utilize extra pipeline stages for high throughput, which will stretch out to various flip-flops in a chip. In this way, it is critical to lessen the entire power usage in clocks and flip-flops. VLSI is the required field which incorporates pressing more method of reasoning contraptions into smaller and more diminutive size regions. Regardless, in the present years, there is an inexorable offering essentialness to the power is being given practically identically and the same as the zone and the speed. The clock systems make a champion among basic areas of no concurrent VLSI chip as it can on a very basic level effect the speed, area and power consumption of the structure. There are four stand-out wellsprings of power dissemination in electronic CMOS circuits [3,4].

The clock exchanging progression of the circuits can be used to find the customary power spread which subsequently helps in checking on the execution of the time [5,6]. The clock exchanging development can be kept in VLSI arrangement by using a methodology called clock gating in any synchronous circuits by clock patterns of flip flop [7,8]. Clock gating is the system for adding extra reason to pick a gated clock which is related to the D flip-flop. Clock gating is seen as the improved power methodology as it lessens the power at the framework level, Resistor Transistor Level (RTL) and clock gate level. Increasingly raised proportions of de-

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Aims and Scope

AIM

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Bipolar Fuzzy Subalgebras and Bipolar Fuzzy Ideals of PS-algebras

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Abstract : The notion of bipolar fuzzy sub algebras and bipolar fuzzy ideals of a PS-algebra is introduced, and several properties are studied. Relations between a bipolar fuzzy sub algebra and a bipolar fuzzy ideal of PS algebra are given. A condition for bipolar fuzzy sub algebra to be a bipolar fuzzy PS-ideal is provided, and the characterizations of a bipolar fuzzy ideal are discussed. The concept of equivalence relations on the family of all bipolar fuzzy ideals of a PS-algebra is considered, and some related properties are discussed.

Keywords : PS-algebra, sub algebra, PS-ideal, bipolar fuzzy PS- sub algebra, bipolar fuzzy PS-ideal.

1.INTRODUCTION

The fuzzy set was introduced by Zadeh in 1965[8] . Since, then many new approaches and theories treating imprecision and uncertainty have been proposed, such as the generalized theory of uncertainty introduced by Zadeh [8] and the intuitionistic fuzzy sets introduced by Atanassov and so on. Among these theories, a well-known extension of the classic fuzzy set is bipolar fuzzy set theory, which was introduced by W.R.Zhang [7] in 1994 and studied in detail by K.M.Lee in 2000[2]. After that, many researchers have investigated this topic and obtained some meaningful findings. In the traditional fuzzy sets, the membership degrees of elements range over the interval [0,1]. The membership degree expresses the degree of belongingness of elements to a fuzzy set. The membership degree 1 indicates that an element completely belongs to its corresponding fuzzy set, and the membership degree 0 indicates that an element does not belong to the fuzzy set. The membership degrees on the interval (0, 1) indicate the partial membership to the fuzzy set. Sometimes, the membership degree means the satisfaction degree of elements to some property or constraint corresponding to a fuzzy set. In the viewpoint of satisfaction degree, the membership degree 0 is assigned to elements which do not satisfy some property. The elements with membership degree 0 are usually regarded as having the same characteristics in the fuzzy set representation.

Bipolar-valued fuzzy sets[1] are an extension of fuzzy sets whose membership degree range is enlarged from the interval [0,1] to [−1,1]. Bipolar-valued fuzzy sets have membership degrees that represent the degree of satisfaction to the property corresponding to a fuzzy set and its counter-property. In a bipolar-valued fuzzy set, the membership degree 0 means that elements are irrelevant to the corresponding property, the membership degrees on (0, 1] indicate that elements somewhat satisfy
Aims and Scope

AIM

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- publish original, theoretical and practical advances in Computer Science & Engineering, Information Technology, Electrical and Electronics Engineering, Electronics and Telecommunication, Mechanical Engineering, Civil Engineering, Textile Engineering and all interdisciplinary streams of Engineering Sciences.
Bipolar Fuzzy Subalgebras and Bipolar Fuzzy ideals of PMS-algebras

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Abstract: The notion of bipolar fuzzy subalgebras and bipolar fuzzy ideals of a PMS-algebra is introduced, and several properties are studied. Relations between a bipolar fuzzy subalgebra and a bipolar fuzzy ideal of PMS algebra are given. A condition for bipolar fuzzy subalgebra to be a bipolar fuzzy PMS-ideal is provided, and the characterizations of a bipolar fuzzy ideal are discussed. The concept of equivalence relations on the family of all bipolar fuzzy ideals of a PMS-algebra is considered, and some related properties are discussed.

Keywords: PMS-algebra, subalgebra, PMS-ideal, bipolar fuzzy subalgebra, bipolar fuzzy PMS-ideal.

1. INTRODUCTION

The fuzzy set was introduced by Zadeh in 1965.[10]. Since, then many new approaches and theories treating imprecision and uncertainty have been proposed, such as the generalized theory of uncertainty introduced by Zadeh [10] and the intuitionistic fuzzy sets introduced by Atanassov and so on. Among these theories, a well-known extension of the classic fuzzy set is bipolar fuzzy set theory, which was introduced by W.R.Zhang in 1994 and studied in detail by K.M.Lee in 2000[2]. After that, many researchers have investigated this topic and obtained some meaningful findings. In the traditional fuzzy sets, the membership degrees of elements range over the interval [0,1]. The membership degree expresses the degree of belongingness of elements to a fuzzy set. The membership degree 1 indicates that an element completely belongs to its corresponding fuzzy set, and the membership degree 0 indicates that an element does not belong to the fuzzy set. The membership degrees on the interval (0, 1) indicate the partial membership to the fuzzy set. Sometimes, the membership degree means the satisfaction degree of elements to some property or constraint corresponding to a fuzzy set [1][4]. In the viewpoint of satisfaction degree, the membership degree 0 is assigned to elements which do not satisfy some property. The elements with membership degree 0 are usually regarded as having the same characteristics in the fuzzy set representation.

Bipolar-valued fuzzy sets are an extension of fuzzy sets whose membership degree range is enlarged from the interval [0, 1] to [−1, 1]. Bipolar-valued fuzzy sets have membership degrees that represent the degree of satisfaction to the property corresponding to a fuzzy set and its counter-property. In a bipolar-valued fuzzy set, the membership degree 0 means that elements are irrelevant to the corresponding property, the membership degrees on (0, 1] indicate that elements somewhat satisfy the
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DMEERP: A dynamic multi-hop energy efficient routing protocol for WSN

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Abstracting and Indexing

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Doubt Q-fuzzy Z-ideals in Z-algebras

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Abstract
The intent of this article is to initiate the concept of doubt Q-fuzzy Z-ideals of Z-algebras and to learn its properties. More Evidently, the theory of doubt Q-fuzzy is analyzed over homomorphism and Cartesian product as well.

Keywords: Doubt Q-fuzzy subalgebra, Doubt Q-fuzzy Z-ideal, Homomorphism, Cartesian Product.

1.Introduction
The concept of fuzzy set was initiated by L.A.Zadeh in 1965 [12]. Further, these thoughts have been utilized to other algebraic structures such as groups, graphs, rings, modules, vector spaces and topologies. The concept of Z-algebra is introduced by Chandramouleeswaran.M [1] et.al., in 2017. In 2019, Sowmiya .S and Jeyalakshmi.P [11] fuzzified Z-algebra. In 2021, Sithar selvam P.M.[4] et.al., studied the properties of fuzzy dot Z-algebra over sub algebra and Z-ideals. These works on Z-algebra motivated us to do Doubt Q-fuzzy ideals of Z-algebra as an added feather.

2. Preliminaries
Definition 2.1 [1] : Let X be a nonempty set with a constant 0 and a binary operation ‘ * ’. It is called as Z-algebra, if it satisfies the following conditions.
(1) a *0  = 0
(2) 0 * a = a
(3) a * a = a
(4) a * b = b * a whenever a ≠ 0 ; b ≠ 0 for all a , b ∈ X
In X, a binary relation ≤, we illustrate as, a ≤ b if and only if a * b = 0.
Definition 2.2 [1] : If X is a Z-algebra and I , a subset of X, is called as Z-ideal of X, provided following axioms are true.
1. 0 ∈ I
2. a * b ∈ I and b ∈ I ⇒ a ∈ I for all a,b ∈ X.
Definition 2.3 [1,3,5] : A non empty sub set S of a Z-algebra X is to be a sub algebra of X if a*b ∈ S, for every a , b ∈ S.
Definition 2.4 [6,7] : A map g : X → Y is called a homomorphism if g (a * b) = g(a) * g(b) , for all a , b∈ X, where X and Y are Z-algebras.
Definition 2.5 [2,8,9] : Let X be a non-empty set. A fuzzy subset λ of the set X is a mapping from X to [0,1]. (i.e) λ: X → [0,1].
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Double domination on bipolar fuzzy graphs with strong edge and its properties

R. Muthuraj * and A. Kanimozhi

Abstract
In this article, the definition of double dominance is introduced in the bipolar fuzzy graph. It provides descriptions of the size, order, degree etc of a bipolar fuzzy graph. With sufficient examples, the double dominance number of a bipolar fuzzy graph has been clarified. It addresses the properties of double dominance on the bipolar fuzzy graph. Some simple theorems have also been proposed relating to the claimed supremacy.

Keywords
Bipolar fuzzy graph, dominating set, double dominating set, doubledomination number on bipolar fuzzy graph.

AMS Subject Classification
03E72, 03E55.

1 Introduction

From the definition of fuzzy relation introduced by L.A. Zadeh [13] in the year 1965, Kaufmann. A, first presented the idea of fuzzy graph. Another comprehensive definition was introduced by Rosenfeld [10] in 1975, including fuzzy vertex and fuzzy edges and other fuzzy analogues of graph theoretical concepts such as paths, cycles, connectedness, etc. In 1998, A. Somasundaram, S. Somasundaram [11] studied the definition of dominance in fuzzy graphs. In the year 2000, Harey and Haynes [2] introduced the idea of double dominance in Graphs. In the year 2011, Muhammad Akram [5,6] first presented the idea of a bipolar fuzzy graph (BFG) and also presented the idea of a regular BFG in 2012. In the year 2015, Nagoor Gani, Muhammed Akram and Anupriya [9] defined the concept of double dominance on intuitionistic fuzzy graph. In this article, the idea of double dominance is extended to BFG and discussed its properties.

2 Preliminaries

The basic definitions of a BFG are redefined and explained with suitable example. Throughout this paper,

(i) The edge between the vertices \( r \) and \( t \) as \( rt \).

(ii) \( G = (A, B) \) be a BFG, mean that \( G \) be a BFG with underlying graph \( G^* = (M, N) \).

Definition 2.1 ([6]). A fuzzy set \( \alpha \) on a set \( X \) is a map \( \alpha : X \rightarrow [0, 1] \). A map \( \beta : U \times U \rightarrow [0, 1] \) is called a fuzzy relation on \( X \) if \( \beta(r,t) = \min(\alpha(r),\alpha(t)) \) for all \( r, t \in X \). A fuzzy relation \( \beta \) is symmetric if \( \beta(r,t) = \beta(t,r) \) for \( r, t \in U \).

Definition 2.2 ([5]). Let \( U \) be a non-void set. A bipolar fuzzy set \( H \) in \( U \) is an object having the form

\[
H = \{(r, \alpha_H^P(r), \alpha_H^N(r)) / r \in U\},
\]

where, \( \alpha_H^P : U \rightarrow [0, 1] \) and \( \alpha_H^N : U \rightarrow [-1, 0] \) are mappings. The positive membership degree \( \alpha_H^P(r) \) to denote the degree of satisfaction of an element with the property corresponding to a bipolar fuzzy set \( H \), and the negative membership degree...
About the journal

Aims and scope

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Study the performance about the implementation of variable speed constant frequency Aircraft Electrical Power System

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Abstract

In this paper deals with, the novel control technique of Aircraft Electrical Power System (AEPS) is implemented to study the performance of the system. Subsystem of Power Electronics has to increase the cruel face up to aircraft power electrical system in expressions during the energy distribution period. So that eliminates the harmonics in the line using compact new formation of Active Power Filter System (APFS) during unbalanced load condition that also regulate load terminal Voltage (VL), and Control the Excitation of Synchronous Generator System (SGS) by Using different Control techniques like PI controller. This performance of the system is studied with frequency rating from 400 Hz (Minimum) to 800 Hz (Maximum) with dissimilar load systems like a DC and AC loads. Simulation results endorse the method.

Keywords

Aircraft Electrical Power System; Synchronous generator system; APFS; PI controller; Regulated voltage
Effect of catalyst coated piston and antioxidant additive on decrease in pollutants in diesel engine using neat biodiesels (B100)

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Abstract

The present work aims at to analysis the impact of ZrO$_2$ and L ascorbic acid (200mg) (LA200) on working behaviors in (B100) operated diesel engine. These are nerium, mahua and calophyllum. From the tests, the ZrO$_2$ with LA200 in B100 of nerium fueled diesel engine showed better brake thermal efficiency (BTE), brake specific fuel consumption (BSFC) and reduction in pollutants such as monoxide of carbon (CO), hydrocarbon (HC), oxides of nitrogen (NO$_x$) and smoke than diesel and B100 of other biodiesels.

Key words: B100, ZrO$_2$, LA200, diesel engine, pollutants, BTE.

1. Introduction

The vegetable methyl ester can be used as alternative for petroleum derive fuels in diesel engine [1]. The biodiesel in diesel engine showed reduction in pollutants except NO$_x$ than diesel. There is slight power loss of about 2.8% at full load for apricot biodiesel (B100) with respect to diesel. Also there is a maximum increase of brake specific energy consumption (BSEC) of about 4.8% is observed for B100. Further, the reduction in pollutants with slight increase in NO$_x$ was achieved [3]. The biodiesel shows the higher NO$_x$ than diesel [4]. The HC of camelina biodiesel (B100) is 68.8% lesser, while the NO$_x$ is 58.8% higher than diesel. Further, the BSFC increases to a maximum of 56.25% for B100 [5]. The biodiesel concentration is increased from diesel to B20 and also from B20 to B100 increases the NO$_x$[6]. Among the four biodiesels, calophyllum possesses higher calorific value, which is much closer to that of diesel. Further, it has been found that NO$_x$ is increasing for all biodiesels [7]. Among different proportions of waste biodiesel, B100 showed maximum emission of NO$_x$ and particulate matter.
The *IEEE Transactions on Power Electronics* journal covers all issues of widespread or generic interest to engineers who work in the field of power electronics. The Journal editors will enforce standards and a review policy equivalent to the IEEE Transactions, and only papers of high technical quality will be accepted. Papers which treat new and novel device, circuit or system issues which are of generic interest to power electronics engineers are published. Papers which are not within the scope of this Journal will be forwarded to the appropriate IEEE Journal or Transactions editors. Examples of papers which would be more appropriately published in other Journals or Transactions include: 1) Papers describing semiconductor or electron device physics. These papers would be more appropriate for the *IEEE Transactions on Electron Devices*. 2) Papers which deal with the application of power electronics to specific systems. These papers would be more appropriate for the *IEEE Transactions on Industry Applications*. 3) Papers which deal with the application of power electronics to specific processes. These papers would be more appropriate for the *IEEE Transactions on Industrial Electronics*.
Design of Speed Control and Reduction of Torque Ripple Factor in BLdc Motor Using Spider Based Controller

M. Pandi Maharajan and S. Arockia Edwin Xavier

Abstract—It is a very difficult process to achieve smooth drivers for the motor operating under variable speed mode. In brushless direct current motor (BLdc) when back electromotive force waveform is of trapezoidal type, the developed torque is constant in ideal conditions. However, practically, torque ripple is present in the output torque because of the physical design of the motor and its parameters. Also, the produce ripples are associated with the control and drive side of the motor. In the previous literature, the drive without a dc-link capacitor is presented but the torque ripple reduction is not effective. Hence in another work, the usage of the small capacitor is recommended and the results are improved. In this work, the quick stabilization with torque ripple reduction is presented using a bio-inspired algorithm-based technique in a BLdc motor drive. A Spider based controller is built to generate the pulsedwidth modulation signals applied to the inverter and the control signal applied to the capacitor. The effect of utilizing small dc-link capacitor, on the torque ripple reduction and speed control is investigated. The performance is also compared with the case of large capacitor utilization and without a capacitor case. The proposed control strategy is verified experimentally by implementing with dsPIC30F4011 and the hardware circuit.

Index Terms—Brushless direct current (BLdc) motor, dc-link capacitor, PWM sequence, spider based controller, spider web construction.

I. INTRODUCTION

In recent years, brushless dc (BLdc) motors are widely utilized in various industrial and home applications for example computer peripheral devices, electric vehicles, etc. This motor has numerous advantages like more power density, high power factor, high efficiency, increased reliability, high torque, small size, large life, less noise, less maintenance, and simpler control mechanisms. As the BLdc motor is brushless, the commutation process is performed electronically in this motor. In this kind of commutation, position sensors are employed to obtain rotor position concerning the stator winding. A three-phase BLdc motor

requires information about rotor position at every 60 electrical degrees. Hence, three Hall Effect sensors are used. The back-EMF waveform of a perfect BLdc motor belongs to the type of a trapezoidal back-EMF. For this kind, the obtained torque ripple on applying a rectangular current waveform is zero. However, practically, the exact trapezoidal wave is not obtained by the reason of non-uniformity of the magnetic element and design tradeoffs. As a result, torque ripple is present even on the application of a rectangular current. Additionally, as the motor windings are an inductive type, the current controller often fails in generating the required waveform during the commutation process since the supply voltage to the dc bus is finite. Therefore, the torque ripple is produced which is known as commutation torque ripple. This torque ripple fluctuates with speed and touches 50% of the average torque. Moreover, they produce noise, vibrations, and generate serious faults in sensor less motor drives. Hence, it essential to reduce this torque in BLdc motor to use it for home applications.

By employing separate current sensors, the commutation torque ripple in the BLdc motor can be decreased, since the current regulation in each phase is obtained with the independent current sensors. Smooth torque is very important for obtaining better performance in industrial applications and hence it is indispensable to attain ripple-free instantaneous torque. Generally, the torque in BLdc comprises three types, as shown in Fig. 1.

In a BLdc motor, since the stator is coreless stator, the flux linkage harmonics are absent and the harmonics induced by back-EMF are absent. Hence the cogging and reluctance torque
SPLIT TOTAL STRONG (WEAK) DOMINATION IN BIPOLAR FUZZY GRAPH

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Abstract: In this paper, we define Split Total strong (weak) domination in Bipolar Fuzzy Graph and its various classifications. Size, Order and Degree of Split Total strong (weak) domination in Bipolar Fuzzy Graph is derived with some examples. Some basic parametric conditions are introduced with suitable examples. The properties of total strong (weak) domination number and Split total strong (weak) domination number in Bipolar Fuzzy Graph are discussed.

Keywords: Bipolar Fuzzy Graph, dominating set in BFG, strong (weak) dominating set in BFG, total strong (weak) dominating set in BFG, split total strong (weak) dominating set in BFG.

1. Introduction

The concept of fuzzy graph was proposed by Kaufmann, from the fuzzy relations introduced by Zadeh[8]. Although, in 1975, Rosenfeld introduced another elaborated concept, including fuzzy vertex and fuzzy edges and several fuzzy analogues of graph theoretic concepts such as paths, cycles, connectedness and etc. In the year 1998, the concept of domination in fuzzy graphs was investigated by A. Somasundaram, S. Somasundaram.[2] In the year, 2004 A.Somasundaram investigated the concepts of domination in fuzzy graph - II. In the year 2003, A.NagoorGani and M. Basheer Ahamed [9] investigated Order and Size in fuzzy graph. In 2010, C.Natarajan and S.K.Ayyasamy[10] introduced on strong (weak) domination in fuzzy graph. In 2011, Muhammad Akram[1] introduced Bipolar fuzzy graphs. In the year 2012, Muhammad Akram was proposed regular bipolar fuzzy graphs. In 2012, P.J. Jayalakshmi[7] et.al introduced total strong (weak) domination in fuzzy graph.
Abstract: Wireless Sensor Network (WSN) is composed of several low powered, tiny and cheap sensors deployed over a geographical area to monitor the environment. WSN can be set out in various real-time applications like security and surveillance, healthcare monitoring, smart grids, smart buildings, environmental monitoring and industrial applications etc. A WSN includes numerous spatially dispersed sensor nodes or motes that sense the environment, transfer them to a computing device through hoping and processes them to result in useful information. Since motes are low-powered and operate on limited energy resource, prolong usage of same nodes to transfer data may lead to network failure. Clustering provides an efficient technique to increase the longevity of network by efficiently using the residual energy in the motes. We propose a reasonable energy aware routing protocol that implements energy efficient cluster formation through Energy efficient Cluster Head Election (ECHA) algorithm that increases the network performance to a greater extent.

Index Terms: Clustering, Cluster-head Election, Energy-aware Routing, Energy Efficiency.

I. INTRODUCTION

WSN can be described as a network of self-configuring sensor nodes (motes) that are deployed over a geographical area. The motes sense, communicate the gathered information and actuate through wireless mode using radio signals. In disparity with MANETS, WSN nodes interact with physical world rather than human where the communication network is implanted in an environment like an industry, a military field, a jungle, etc. Sensor motes sense the real world and accumulate environment information. These are transferred to a base station for processing and the motes are actuated accordingly.

Each mote has a sensing unit, processing unit, communication unit and a power unit. Sensing unit is comprised of sensors and ADC components to gather physical world and transfer them from analog to digital signals. The processing unit has a memory enabled microprocessor to extract useful data from the captured information. The processor works in three modes namely – sleep, process and idle. The communication unit encompass radio transceiver that sends and receives information to and from other networks / base station. The power unit is usually AA battery or coin batteries or solar panels.

Energy consumption is the major issue in any WSN. When all the motes send data from them to sink using intermediate nodes, resulting in node death due to lack of energy and data loss due to congestion. The problem can be resolved using Clustering. Clustering performs division of motes into small groups called clusters with each group having a coordinator node known as Cluster Head (CH). The sensed information is communicated to the CH which is integrates data from all its sub-nodes and then transfers the same to the base station / sink node.

II. RELATED WORKS

WSN is mainly used to monitor a remote environment where human intervention is impossible. While deploying the sensor nodes over an environment, the nodes have two main functionalities to do, namely – send the sensed data to the sink node and relay the transmitted data from the neighboring nodes [1]. This process of sending the data is achieved through routing mechanism. Routing performs the transmission of data through hoping. The routing protocols in a wireless environment shall be classified based on Network structure as

(i) Location-based
(ii) Data Centric-based
(iii) Group-based and
(iv) Hierarchical-based routing.

Kumar A, Shwe H Wong K and Chong P [2] stated that the location-based routing algorithms or geographic routing work on sending data from source to destination based on the distance between them. Each sensor node will be fixed with a low power localization device like GPS module shall be used to know the location information about its neighbour which is at one hop distance from the corresponding node. The routing follows a greedy technique that transmits data to the destination by hoping to the node which is closest to the destination. The algorithms include MECN, SMENC, GAF, GEAR, GeRaF, M-GeRaF, SPAN, ALERT, GWRR, LARP, LMR and DECA etc.
The current work focused on maximizing the lifetime of the cluster head. The CH is selected such that has the maximum energy when compared to all other nodes. Also HelperCH is selected to assist CH when CH loses its energy below the threshold. The results show that the CH and HelperCH are the nodes with maximum energy at any particular point. Further, works can be extended in reducing the number of hops in reaching the destination. Also a soft computing technique shall be applied on the input parameters such as energy, density of nodes, distance etc. to increase performance.

REFERENCES


AUTHORS PROFILE

Mrs. V. Niveditha, pursued her Bachelor’s Degree in Information Technology from Anna University, Chennai in the year 2008. She received her Master’s Degree in Computer Science and Engineering in the year 2011 from Karpagam University, Coimbatore. She is currently pursuing her Ph.D. degree in the Faculty of Information and Communication Engineering, Anna University, Chennai. She has 8 years of Experience in reputed Engineering colleges. She is presently working as an Assistant Professor in Department of CSE, SSM Institute of Engineering and Technology, Dindigul, Tamilnadu, India. She is a life member of Indian Society for Technical Education (MISTE). She has presented six papers in International and National Conferences.

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About the journal

Aims and scope  Editorial board  Abstracting and indexing

- Current Contents - Physical, Chemical & Earth Sciences
- Current Technology Index
- INSPEC
- PHYS Database
- Research Alert
- Science Citation Index
Optimization of laser welding process parameters in dissimilar joint of stainless steel AISI316/AISI1018 low carbon steel to attain the maximum level of mechanical properties through PWHT

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Microstructure and mechanical properties of laser-welded dissimilar joint of
AISI316 stainless steel and AISI1018 low alloy steel
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Abstract
Effect of laser welding parameters such as welding speed, laser power, and shielding gas after welding on the tensile strength of Austenitic Stainless Steel (AISI 316) to Low Alloy Steel (AISI 1018) joint was examined. Response surface methodology was used to analyze the experiments and Design expert software was used to investigate the effect of process parameters and find an optimum condition. The microstructure, mechanical properties and chemical element distribution of weld and weld interfaces of the optimum condition were analyzed by Optical Microscope (OM) and Energy Dispersive X-ray (EDX). The hardness of the join was analyzed by Vickers microhardness test with HV₀.₅. Results revealed that laser power, welding speed, and shielding gas were the maximum effective process parameters hierarchically. Optimum laser power of 3250W, welding speed of 1m/min and shielding gas of 25lit/min were defined as the optimum process parameters to join the steel sheets. Martensitic structure with chromium carbide (Cr₂₃C₆) was observed in the weld zone and AISI 316 interface. The interface between AISI 1018 steel and WZ and the interface between AISI 316 stainless steel and WZ had higher hardness compare with both base metals and weld metal (WM) due to the formation of ferrite and martensitic structure. Heat affected zone (HAZ) of AISI 1018 steel had a mixed structure of acicular ferrite, bainite, and martensitic was observed.
International Journal of Parallel Programming, one of the oldest journals in the field, published continuously for over 25 years, is a forum for the publication of peer-reviewed, high-quality original papers in computer science, focusing specifically on parallel computing systems. Such systems are characterized by the coexistence over time of multiple coordinated activities. The journal publishes both theoretical and experimental papers in all areas of parallel computing, including parallel algorithms, parallel architectures, parallel software development, and parallel programming models.

For authors

Submission guidelines
Ethics & disclosures
Fees and funding
An Area Efficient and Low Power Consumption of Run Time Digital System Based on Dynamic Partial Reconfiguration

R. Saravana Ram1 · A. Gopi Saminathan2 · S. Arun Prakash3

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Abstract Digital signal processing besides multimedia applications needs plenty of data, real-time processing capacity, and high computational power. Thus, adaptable architectures with run-time reconfiguration abilities have gotten expanded consideration. Basically, Reconfiguration computing is going towards advancing the application adaptability at runtime. A reconfigurable structure can be attained by working up the strategy aimed at configuring an array of programmable logic reprogramming. Field Programmable Gate Arrays (FPGAs) is made with the intention of reconfiguring the array system with interconnects as well as the configuration of logic blocks. To implement a high-performance FPGA device and also to enhance, the given paper proposes a proficient design strategy. The proposed strategy count upon the employment of dynamic partial reconfiguration (DPR) to derive from one mode then onto the next utilizing time-multiplexing on the same chip region. Furthermore, reconfigure modules to spare considerable area and enable the low-cost FPGAs usage. In the given work, reconfigurations of the modules accompanied by the memory are finished. The DPR is implemented betwixt these modes to shift from one mode then onto the next. The pro-

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² SSM Institute of Engineering and Technology, Dindigul, India

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Abstract – Recent technological advancements like internet of things, home automation, disaster management etc shed light on wireless sensor networks. Thousands of micro sensor nodes are geographically located to capture a remote environment. The communication and computing process consume more energy from the nodes. Prolong usage of same path to transfer data may lead to decrease of the residual energy in the sensor nodes, thus causes the node to death. Power conservation in the nodes is the major concern in hostile environments. Clustering is an energy saving scheme that enables the nodes to communicate data to the nominated cluster heads, from where the cluster heads communicate the gathered data to the sink. This gain focus on two factors of increasing the node life time, namely - the selection of cluster head that has more residual energy and the periodic change of cluster heads. This paper surveys on various energy-aware clustering schemes involved in routing data from the sensor nodes to sink.

Keywords- Wireless Sensor Networks, Energy Consumption, Clustering, Cluster head selection, Routing protocols.

I. INTRODUCTION

Wireless Sensor Network (WSN) is a network of nodes with each node connected to several autonomous sensors that are distributed spatially over a geographic area. They work cooperatively to sense the real world parameters spontaneously, measure and organize the acquired data. The collected data are transferred from the node through wireless medium to a central gateway that is linked to an external network [1].

II. COMPONENTS OF WSN

A typical WSN consist of five main components, namely – sensors, nodes, transmission medium, gateway, and base station. Sensors collect information from the physical environment and transmit them to the node which is connected by wired/wireless medium.

Sensors are low cost, low power and have very short transmission range. They are used in a wide range of applications to measure temperature, humidity, sound and so on. They transmit data by hoping to the nearest neighbors and the process continues until it reaches the destination node, known as sink.

Nodes collect the data from sensors and processes, analyze and organize the data using software. A sensor node that performs both sensing and processing of measured data and is also known as a mote. The data is transferred by wireless links using infra red or radio interface. Gateway acts as an interface between the wireless sensor network and the device that requires the data. It possesses protocols to transfer data between heterogeneous networks [2].

Each sensor has mainly four parts, namely – the sensing unit, processing unit, communication unit and the power unit. The sensing unit is comprised of sensor and analog to digital converter. The sensor captures physical environment and converts it into electrical signal. The ADC converts the electrical signals into digital form of the signal.
About the journal

Aims and scope

Abstracting and indexing

- Conference Proceedings Citation Index
- INSPEC
- Scopus
Optimization of CO2 Laser Beam Welding Process Parameters to Attain Maximum Weld Strength in Dissimilar Metals

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Abstract

In this study, influence of CO2 laser beam welding (LBW) process parameters such as laser power (P), welding speed (S), focal distance (F) on dissimilar metals of low carbon steel (AISI 1018) and austenitic stainless steel (AISI 316) was examined by using central composite design (CCD) based response surface methodology (RSM). The response variables, namely weld strength and weld penetration, were optimized using Design Expert software. The performance of the CCD model was validated by conducting experiments. The results revealed that the weld strength was improved by increasing the laser power and welding speed, while decreasing the focal distance.
Advances in Natural and Applied Sciences

Country: Jordan - SIR Ranking of Jordan

Subject Area and Category:
- Agricultural and Biological Sciences
- Agricultural and Biological Sciences (miscellaneous)
- Biochemistry, Genetics and Molecular Biology
  - Biochemistry, Genetics and Molecular Biology (miscellaneous)
A Literature Survey in ECG Feature Extraction

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ABSTRACT

In this paper discusses the comparative study of Electro Cardiogram (ECG) feature extraction for the prediction of ventricular arrhythmia using a unique set of ECG features extraction and classifier algorithm. This ECG feature extraction is one of the important significant roles in diagnosing most of the cardiac diseases. In ECG, P-QRS-T waves provide the one cardiac cycle in heart beat activity. This ECG feature extraction measured the amplitudes and intervals in the ECG signal for subsequent analysis. The amplitudes and intervals value of P-QRS-T segment measuring the working of heart beat in every human. Recently, several research and techniques have been implemented for analyzing the ECG signal. All these techniques and algorithms have their merits and demerits. This paper discusses the various techniques and transformations proposed earlier in literature for extracting feature from an ECG signal.

KEYWORDS: Artificial Neural Networks, Cardiac Cycle, ECG signal, Feature Extraction, and Support Vector Machines.

INTRODUCTION

A Sudden Cardiac Death (SCD), which happens within one hour of onset of symptoms because of cardiac causes. The health data accumulated from more than 190 countries show heart disease remains the No.

1 global cause of death with 17.3 million deaths each year, according to “Heart Disease and Stroke Statistics from the American Heart Association (AHA). That number is expected to rise to more than 23.6 million by 2030, the report found. In every year no of deaths are increases and in most cases is the final result of ventricular tachycardia (VT) or ventricular fibrillation (VF).

An Arrhythmia is an abnormal rhythm of the heart function and it is caused by problems with our heart’s electrical system. The electrical impulses may occur too fast, too slow, or irregularly - causing the heart beat too fast, too slowly, or erratically. When the heart beat doesn't happen properly, it can't pump the blood effectively. So blood pump doesn’t flow the lungs, brain and all other organs can’t work properly and may shut down or be damaged and it causes the sudden death.

Ventricular arrhythmia is an abnormal ECG rhythm and is responsible for 75% to 85% of sudden deaths in persons with heart problems unless treated within seconds [1]. Ventricular Fibrillation (VF) is one type of rhythm characterized by the disordered activation of ventricles, and it causes abrupt stop of blood circulation and degenerates further into a pulseless or flat ECG signal indicating no cardiac electrical activity. There are two basic kinds of arrhythmias. Bradycardia is when the heart function rate is too slow - less than 60 beats per minute (bpm). Tachycardia is when the heart function rate is too fast - more than 100 (bpm).
Advances in Natural and Applied Sciences

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H Index: 19
A Literature Survey in ECG Feature Extraction

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• **5 Year Impact Factor**: the average number of citations received by articles in the journal within a five-year window.

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Optimization and metallurgical studies of CO₂ laser welding on austenitic stainless steel to carbon steel joint

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Aims and scope

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Speed

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Data Locality Aware Fast and Secured Retrieval Of Web Services Using Secure Service Discovery System In Hadoop

A. Rani, D. Shanthi
Published 2016 • Computer Science • Transylvanian Review

Objective of the work: Nowadays, web service discovery (WSD) play vital role in Service Oriented Computing. Performance of traditional web service discovery approaches does not offer relevant service based on given user query due to lack of quality of service satisfaction. And also traditional web services discovery system cannot handle large volume of web service to find the relevant web service. To carry all those complications and also focuses on discovering potentially value added web services, novel architecture is proposed in this work namely SSDH (Secure Service Discovery using Hadoop). This proposed framework concentrates on performing better web service discovery with the satisfaction of user constraints level. In addition to that, proposed work also concentration of automatic web service decomposition which will select the web services that can be composed together. To achieve the higher user satisfaction level, this work utilizes the hadoop environment that can process large volume of web services, so that user required web services can be attained. The execution time and bandwidth is reduced considerably in the proposed frame work by performing the data locality aware scheduling in the map reduce concept. Twig tree and similarity measure measurement concepts are integrated in this work to retrieve accurate result with more accuracy and less time complexity and also for providing security XML based
Aims and Scope: The International Journal of Applied Engineering Research (IJAER) is an international research journal, which publishes top-level work from all areas of Engineering Research and their application including Mechanical, Civil, Electrical, Computer Science and IT, Chemical, Electronics, Mathematics, Environmental, Education, Geological etc. Researchers in all technology and engineering fields are encouraged to contribute articles based on recent research. Journal publishes research articles and reviews within the whole field of Engineering Research, and it will continue to provide information on the latest trends and developments in this ever-expanding subject.

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INDEXING: SCOPUS(2010-2017), EBSCOhost, GOOGLE Scholar, JournalSeek, J-Gate, ICI, Index Copernicus IC Value 82.67 and UGC Approved Journal - 2017 (Journal No. 64529)

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DOI No. DOI:10.37622/000000
Abstract- Brushless motor makes it possible to achieve system flexibility, which poses high reliability with high efficiency and also lower cost in comparison with brushed motors. In recent times the speed control of brushless DC motor is challenging one for non-linear system to obtain high efficiency. The sensor less control of Z-source inverter fed brushless dc drive using sliding mode control is proposed in this paper. The objective of this paper is to control the brushless dc drive without the use of sensor where the traditional system uses sensor which increases the cost of the system and to increase the ruggedness of the brushless DC drive. The purpose of Z-source inverter is to increase the stability and safety of the system which provides ride through during voltage sags without any additional circuit as well as it improves the power factor and reduces harmonic current. A non-linear speed control for the brushless DC drive using sliding mode control algorithm is to optimize the speed control performances with different disturbances and uncertainties.

Keywords – Z-Source, Brushless DC drive, sliding mode control.

I. INTRODUCTION

The BLDC motors are normally powered by conventional three Phase voltage source inverters (VSI) or current source inverters (CSI) which are Controlled based on the rotor position information obtained from hall sensors, resolvers or absolute position sensors. But these position sensors have numerous drawbacks like increase in cost, complexity in control, temperature sensitivity requiring special arrangements. These sensors reduce the system reliability and acceptability. Traditional BLDC drives use VSI that utilize hard switching, thereby generating switching losses and entail the use of large heat sinks. VSI needs a huge dc link capacitor that is inherently unreliable and is one of the most expensive components of the drive. Hence, a CSI is used to replace the hard switching by soft switching thereby eliminating the heat sinks as well as the large dc link capacitor. A controlled rectifier together with a large inductor acts as a current source, the only disadvantage is the large value of the dc link inductor and the huge number of turns needed to achieve these values of the inductances lead to huge resistive losses.

A number of sensor-less technique have been developed for BLDC motor. The back EMF detection method using DSPIC is discussed in [1]. The zero crossing point detection of back EMF is discussed in [2]. The comparison of sliding mode approach and PI controller is discussed in [3]. The drawbacks of VSI and CSI fed adjustable speed drives are also discussed in [4]. To overcome this z-source inverter is used with sensor-less brushless DC drive system in this paper. The performance of current source inverter and Z-source inverter is compared by using the sliding mode control algorithm.

Figure 1. Block diagram of the proposed system