

FIXED POINTS OF (ψ, φ) -WEAKLY CYCLIC COUPLED CONTRACTIONS IN S -METRIC SPACES

Venkata Ravindranadh Babu Gutti, Durga Sailaja Pericherla,
and Srichandana Gadhavajjala

ABSTRACT. Let X be an S -metric space and $F : X \times X \rightarrow X$ be a mapping. We introduce (ψ, φ) -weakly cyclic coupled contraction mapping and Kannan type (ψ, φ) -weakly cyclic coupled contraction mapping in S -metric spaces. If $F : X \times X \rightarrow X$ then we prove the existence and uniqueness of strong coupled fixed point of F in complete S -metric spaces where F is of (ψ, φ) -weakly cyclic coupled contraction mapping and Kannan type (ψ, φ) -weakly cyclic coupled contraction mapping. Examples are provided to support our results.

1. Introduction and Preliminaries

Generalization of contraction conditions in proving the existence and uniqueness of fixed points play an important role in nonlinear analysis. In 1969, Kannan [20] proved the existence of fixed points of certain type of contraction mappings which are not continuous and different from contraction mappings. Later Kannan type mappings in various spaces have been considered in large number of works, some of which are in [4], [7], [9], [10], [11]. In 1997, Alber and Guerre-Delabriere [2] introduced the concept of weakly contractive mapping as a generalization of contractive mapping and proved the existence of fixed points for such mappings in Hilbert spaces. Rhoades [30] extended this study to metric space setting. On the other hand, in 2003, Kirk, Srinivasan and Veeramani [22] introduced cyclic contractions in metric spaces and proved the existence and uniqueness of cyclic

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Key words and phrases. S -metric space, Cyclic mapping, Coupled fixed point, Strong coupled fixed point, (ψ, φ) -weakly cyclic coupled contraction mapping and Kannan type (ψ, φ) -weakly cyclic coupled contraction mapping.

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**STRONG COUPLED FIXED POINTS OF α -ADMISSIBLE REICH
TYPE COUPLED MAPPINGS IN S -METRIC SPACES**

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Abstract: In this paper, we introduce α -admissible Reich type cyclic coupled mapping and α -admissible Reich type coupled mapping in S -metric spaces and prove the existence and uniqueness of strong coupled fixed points of such mappings. We give illustrative examples to check the validity of our results.

Keywords and Phrases: S -metric space, cyclic mapping, coupled fixed point, strong coupled fixed point, α -admissible Reich type cyclic coupled mapping, α -admissible Reich type coupled mapping.

2020 Mathematics Subject Classification: 47H10, 54H25.

1. Introduction

In 1972, Reich [34] proved that any Reich type contraction on a complete metric space X has a unique fixed point. After this, more works on Reich type contractions appeared ([1], [7], [19], [25], [33]). On the other hand, in 1987, Geo and Lakshmikantham [17] introduced coupled fixed points of nonlinear operators. Later, Bhaskar and Lakshmikantham [16] developed coupled fixed point theory for mixed monotone operators in partially ordered metric spaces. For more works on coupled



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Strong Coupled Proximal Points of Cyclic Coupled Proximal Mappings Using C_k -Class Functions in S -Metric Spaces

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Abstract. In this paper, we introduce cyclic coupled proximal mapping in S -metric spaces using C_k -class functions and prove the existence of strong coupled proximal points of such mappings in complete S -metric spaces. Also, we provide an example in support of our main result.

1. Introduction and Preliminaries

In 1969, Fan [11] introduced the notation of best proximity point. Later, in 2006, Eldred and Veeramani [10] established results on the existence and uniqueness of best proximity point in a uniformly convex Banach space. Let (X, d) be a metric space. Let A and B be two nonempty subsets of X and $T : A \rightarrow B$. A point $x \in A$ is called a best proximity point of T if $d(x, Tx) = d(A, B)$, where $d(A, B) = \inf\{d(x, y) : (x, y) \in A \times B\}$. It is observed that best proximity point becomes a fixed point when the mapping T is a self-mapping. For more works on best proximity point results, we refer [3], [5], [10]. In 2009, Suzuki, Kikkawa and Vetro [18] extended Eldred and Veeramani [10] theorem to metric spaces by using UC property. Later, in 2012, coupled best proximity point in metric spaces was introduced by Sintunavarat and Kumam [17] and proved the existence of these points in metric spaces. For more works on coupled best proximity point results, we refer [2], [6], [12], [14], [18].

We recall the following definitions.

Definition 1.1. [13] Let A and B be two nonempty subsets of X . A mapping $f : X \rightarrow X$ is cyclic with respect to A and B if $f(A) \subseteq B$ and $f(B) \subseteq A$.

Definition 1.2. [7] Let X be a nonempty set. Let $F : X \times X \rightarrow X$ be a mapping. An element $(x, y) \in X \times X$ is said to be a coupled fixed point of F if $F(x, y) = x$ and $F(y, x) = y$.

Definition 1.3. [8] Let A and B be two nonempty subsets of X . A mapping $F : X \times X \rightarrow X$ is said to be cyclic with respect to A and B if $F(A, B) \subseteq B$ and $F(B, A) \subseteq A$.

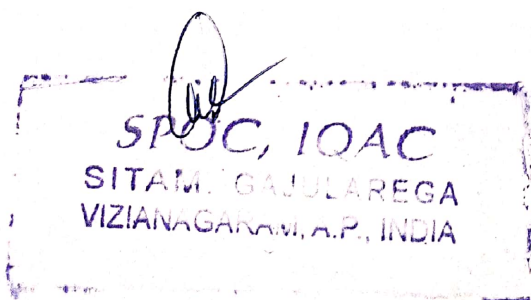
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Keywords. S -metric space, cyclic mapping, coupled fixed point, strong coupled fixed point, strong coupled proximal point, cyclic coupled proximal mapping

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FIXED POINTS OF ALMOST SUZUKI TYPE \mathcal{Z}_s -CONTRACTIONS IN S-METRIC SPACES

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Abstract. In this paper, we introduce almost Suzuki type \mathcal{Z}_s -contractions and prove the existence and uniqueness of fixed points of such mappings in complete S -metric spaces. Our results generalize Theorem 1 from [N. Mlaiki, N. Yılmaz Özgür, Nihal Taş, *Mathematics*, 7 (583) 2019, 12 pages] and Theorem 3.1 from [S. Sedghi, N. Shobe, A. Aliouche, *Mat. Vesnik*, 64 (3) (2012), 258-266]. We give illustrative examples in support of our result.

1. Introduction and preliminaries

In 2008, Suzuki [19] defined a new generalized Banach contraction and proved the existence and uniqueness of fixed points for this contraction in compact metric spaces. After this several authors have extended and generalized the result of Suzuki [19] in different directions [1, 5, 13]. In 2015, Khojasteh, Shukla and Radenović [12] introduced simulation functions and \mathcal{Z} -contractions which generalize the Banach contraction. Following this domain of research, many authors introduced \mathcal{Z} -contractions involving simulation functions and proved fixed point results on various types of metric spaces. For more works on this, we refer to [2, 4, 7, 11, 16, 20].

DEFINITION 1.1 ([12]). A mapping $\zeta : [0, +\infty) \times [0, +\infty) \rightarrow \mathbb{R}$ is called a simulation function if it satisfies the following conditions:

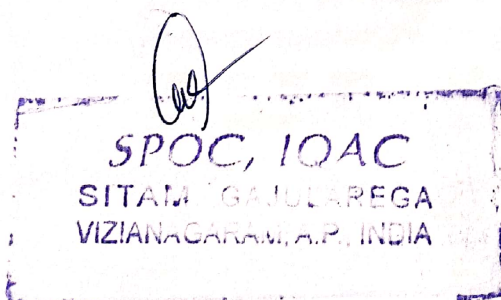
$$(\zeta_1) \quad \zeta(0, 0) = 0;$$

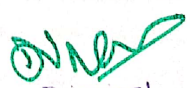
$$(\zeta_2) \quad \zeta(t, s) < s - t \text{ for all } t, s > 0;$$

$$(\zeta_3) \quad \text{if } \{t_n\}, \{s_n\} \text{ are sequences in } (0, +\infty) \text{ such that } \lim_{n \rightarrow +\infty} t_n = \lim_{n \rightarrow +\infty} s_n > 0, \text{ then } \limsup_{n \rightarrow +\infty} \zeta(t_n, s_n) < 0.$$

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Keywords and phrases: S -metric space; \mathcal{Z} -contraction; simulation function; \mathcal{Z}_s -contraction; almost Suzuki type \mathcal{Z}_s -contraction.




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FINITE ELEMENT ANALYSIS OF MHD MIXED CONVECTIVE HEAT AND MASS TRANSFER STAGNATION-POINT FLOW IN A CIRCULAR ANNULUS IN HIGHLY POROUS MEDIUM WITH RADIATION

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Abstract

We investigate the combined effect of thermal radiation and radiation absorption on free and compelled convection flow through a porous medium in a very co-axial cylindrical duct where the boundaries are maintained at constant temperature and concentration. The Brinkman-Forchheimer extended Darcy equations which takes into consideration the boundary and inertia effects are utilized in the governing linear momentum equations. The effect of density variation is confined to the buoyancy term under Boussinesq approximation. The momentum, energy and diffusion equations are coupled equations. so as to get a stronger insight into this complex problem, we are using Galerkin finite element method with quadratic approximation technique. The behavior of velocity, temperature and concentration is analyzed for various parametric values at different axial positions. The rates of warmth and mass transfer have also been obtained for variations within the governing parameters. The local Nusselt number and native Sherwood number are illustrated to point out interesting features of the result.

Keywords:

Heat & Mass Transfer; Thermal Radiation, Radiation absorption, Porous medium, Circular annulus, Finite element technique .

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1. Introduction

The Convective flow and warmth transfer in porous media has been attracting the eye of enormous number of investigators because of its wide applications in engineering as geophysical thermal and insulation engineering, design of pebble-bed nuclear reactors, fossil fuel drilling, ceramic processing, heat conversion, use of fibrous material within the thermal insulation of buildings, catalytic reactors and compact heat exchangers, heat transfer from storage of agricultural products which generate heat as a results of metabolism, petroleum reservoirs, storage of nuclear wastes, etc. The derivation of the empirical equations which govern the flow and warmth transfer in an exceedingly porous medium has been discussed by Vafai [23], Ingham and Pop [9]discussed Transport Phenomena in Porous Media, Further, thermal radiation heat transfer effects on natural

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Optimal Solution for Solving Intuitionistic Fuzzy Assignment Problem by New Labeling Algorithm

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Abstract: In this paper a new labeling algorithm for finding an optimal solution for an intuitionistic triangular fuzzy optimal assignment problem is proposed. The main feature of this algorithm is that we determine the solution by finding an optimal matching in the corresponding bipartite graph by using a new labeling technique.

Keywords: — Assignment Problem, labeling Algorithm, feasible labeling, bipartite graph, Ranking of Intuitionistic triangular fuzzy numbers.

I. INTRODUCTION

Assignment Problem (AP) is used worldwide in solving real world problems. An assignment problem plays an important role in an assigning of persons to jobs, or classes to rooms, operators to machines, drivers to trucks, trucks to routes, or problems to research teams, etc. The assignment problem is a special type of linear programming problem (LPP) in which our objective is to assign n number of jobs to n number of machines (persons) at a minimum cost. Find solution of assignment problems in various algorithms such as linear programming, Hungarian algorithm, Neural network, Genetic Algorithm, Branch and Bounded Technique etc. The proposed Algorithm, in spite of its unfamiliar and peculiar accessories, is a much faster and more efficient tool to handle the Assignment problem than the Hungarian and genetic algorithm. However, in real life situations, the parameters of assignment problem are imprecise numbers instead of fixed real numbers because time/cost for doing a job by a facility (machine/person) might vary due to different reasons. The theory of fuzzy set introduced by Zadeh [14] in 1965 has achieved successful applications in various fields. Chi-Jen Lin, Ue-Pyng Wen [3], A Labelling algorithm for the fuzzy assignment problem, fuzzy Sets and system. Srinivas.B and Sankara rao. B [9] "An Optimal Solution for intuitionistic Fuzzy Assignment Problem Using Genetic Algorithm. Hussain, RJ and SenthilKumar [5], P. Algorithm approach for solving intuitionistic fuzzy transportation problem. Kalaiarasi et.al [6] Optimization of fuzzy assignment model with triangular fuzzy numbers. Different kinds of fuzzy assignment problems are solved in the papers [2,4,7,8].

In Section 2, we provide some basic definitions and results which will be used later. Section 3, Mathematical form of intuitionistic fuzzy Assignment problem, In Section 4, we prove some theorems which are used for proposed method and present a practical procedure. The introduced method is illustrated by solving some examples in Section 5 and conclusions are drawn in Section 6.

II. PRELIMINARIES

Fuzzy Set: Fuzzy sets were introduction by Lotfi A. Zadeh in 1965 as an extension of the classical set theory. Fuzzy sets are sets whose elements have degrees of member ship function valued in the real unit interval $[0, 1]$

Let A be a classical set μ_A be a function from X to $[0, 1]$ A fuzzy set \tilde{A} is defined as a set of ordered pairs $\{(x_i, \mu_{\tilde{A}}(x_i)) : x_i \in A \text{ and } \mu_{\tilde{A}}(x) \in [0, 1] \}$ $\mu_{\tilde{A}}(x)$ is called the degree of membership of X in \tilde{A} .

Fuzzy Number: A fuzzy set \tilde{A} defined on the universal set of real numbers R is said to be fuzzy number if

(i) \tilde{A} is convex fuzzy set

(ii) \tilde{A} is normalized fuzzy set

A STUDY ON INTUITIONISTIC FUZZY PRIME IDEAL OF NEAR RING

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ABSTRACT: In this paper we further study the theory of Intuitionistic fuzzy ideals and intuitionistic fuzzy prime ideals. We have investigated these notions and shown a new result using the intuitionistic fuzzy points and a membership and non-membership functions.

Keywords: Intuitionistic fuzzy ring, Intuitionistic fuzzy ideal, Intuitionistic fuzzy prime ideal, Intuitionistic fuzzy point.

1 INTRODUCTION

In 1986 Atanassov introduced the notion of a intuitionistic fuzzy set as a generalization of Zadeh's fuzzy sets [15]. After the introduction of the notion of intuitionistic fuzzy subring by Hur, Kang and Song [4], many researchers have tried to generalize the notion of intuitionistic fuzzy subring. Marashdeh and Salleh [11] introduced the notion of intuitionistic fuzzy rings based on the notion of fuzzy space, Near-rings were first studied by Fittings in 1932. It is a generalization of a ring. If in a ring we ignore the commutativity of addition and one distributive law then we get a near-ring Hur, K., Kang, H. W. & Song, H. K. [4], Hur, K., Jang, S. Y. & Kang, H. W. [5] and many other researchers have contributed and are contributing the near-ring theory. A fuzzy set is a class of objects with a continuum of grades of membership. Such a set is characterized by a membership (characteristic) function which assigns to each object a grade of membership ranging between zero and one. The notions of inclusion, union, intersection, complement, relation, convexity, etc., are extended to such sets, and



Biocalcification For Stabilisation Of Iron Mine Tailings

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Abstract

Mine tailings consist of fine-grained particles that are deposited into large impoundments. Seasonal temperature and moisture fluctuations can result in dust emissions, an environmental hazard. Accordingly, there is a need for efficient and economical means for controlling dust emissions. Biogeotechnics provides one innovative approach to modifying soil properties. The application of this process to fine-grained materials, however, poses unique challenges. The goal of this work was to demonstrate biocalcification in fine-grained mine tailings to promote the formation of a crust that increased the surface strength of the tailings. Soil box experiments coupled with multiple lines of evidence collected using novel analytical techniques were used to confirm (a) the successful formation of the surface crust by way of ureolysis.

Key Words: Iron, Mine, Tailings.

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Introduction

Mining operations result in the production of massive volumes of waste materials, including the mine tailings that result from the beneficiation of the ore (US EPA, 2010). These fine-grained tailings, with an average size range around 20 mm and a significant portion in the 1-10 mm range, are disposed of in slurry form into large-scale permanent structures called mine tailings impoundments (Vick, 1983). Impoundments can cover several square kilometres and are largely void of vegetation during active filling, which can last many years. The coupling of cold and warm weather temperature fluctuations, moisture variations and wind-induced shear stresses can result in dusting of the tailings particles into the atmosphere. Such storms can have a number of negative consequences, including human respiratory health problems, damage to local ecosystems and vehicle accidents due to poor visibility (Washington State Department of Ecology, 2016). Although many

mining operations apply a number of dust prevention controls, the treatments tend to be expensive and difficult to apply due to the large size of the impoundments and variable trafficability conditions across the impoundment. In addition, conventional approaches used for controlling dust, including application of surface penetrants, admixtures or surface blankets and the use of agronomic techniques (US Army and Air Force, 1987), themselves have several limitations with regard to mine tailings impoundments (Chen et al., 2015). For example, common surface penetration methods such as watering and salt solutions provide only a temporary respite and are less effective in warmer, drier climates. In addition, surface blanket and agronomic approaches are more feasible for an 'end-of-life' goal, where the system is either in a restorative phase or is no longer in use. However, active mine tailings impoundments are dynamic systems because mine tailings are discharged in the impoundment

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Biological Aspects of Microbial-Induced Calcite Precipitation

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Abstract

Microbially-induced calcite precipitation (MICP) is an emerging ground-modification technique. This paper presents the results of laboratory experiments that elucidate some biological factors affecting bioaugmentation and biostimulation strategies of MICP. Co-culture experiments suggest that ureolytic bacterium *Sporosarcina pasteurii* might release the enzyme urease once introduced into a medium containing non-ureolytic bacterium *Bacillus subtilis* due to lysis by the latter, resulting in uncontrolled calcite precipitation. This suggests that exogenous bacteria introduced into a native soil might not survive due to adverse action by indigenous bacteria. It is shown that effective biostimulation of indigenous ureolytic bacteria in low-nutrient sand can be achieved using a stimulation medium containing 200 mM urea, complemented with a simple carbon source (molasses). Changes in microbial population following stimulation were quantified, using genetic enumeration, to show that (a) the net increase in urease activity is not accompanied by increases in the relative abundance of ureolytic bacteria, (b) nitrifying bacteria are part of the enriched indigenous population and (c) nitrifying bacteria can be stimulated by the addition of ammonium only. The use of the lowest effective urea concentration and simple carbon is advocated for sustainable biostimulated MICP, yielding lower ammonium emissions and reduced post-treatment recovery overheads

Key Words: Precipitation, Aspects, Biological.

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Introduction

Traditionally, geotechnical engineers regarded soil as an inorganic multiphase system comprising solids, fluids and gases. This rational approach stemmed from the early works of Coulomb, Rankine and Darcy, and their twentieth-century followers, such as Terzaghi and Skempton. However, soil is also a living system. Soil is one of the largest terrestrial carbon pools, constituting about 33% of the total terrestrial carbon (Lal, 2008). The organic carbon in the top 1 m constitutes more than 50% of the total soil carbon. Prokaryotes comprise up to 17% of the soil organic carbon (Whitman et al., 1998). These unicellular organisms, mostly bacteria ($0.5-3.0 \times 10^{-6}$ m in size, are about three orders of magnitude smaller than the pore throat size of sand and about the D10 size of kaolinite (Mitchell and Santamarina, 2005). As these bacteria are either motile or fixed to mineral surfaces (grains), their

metabolism may change the chemical and physical properties of their surroundings.

Many bacteria are capable of inducing mineral precipitation through various metabolic paths, in both oxic and anoxic environments. Boquet et al. (1973) showed that most heterotrophic bacteria can induce precipitation of calcium carbonate (CaCO_3), a common natural cementing agent, by various metabolic paths. Hydrolysis of urea ($\text{CO}(\text{NH}_2)_2$), catalyzed by the microbial enzyme urease (Reaction I), is considered to be the most efficient microbial pathway for microbially-induced calcite precipitation (MICP) (Reaction II) (De Muynck et al., 2010).

Depending on the quality and quantity of calcium carbonate precipitation, the stiffness and strength of the soil can be increased, the hydraulic conductivity can be reduced (van Paassen et al., 2010)

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Cost Efficient Reversible Vedic Multiplier for High Speed and Low Power Operations

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ABSTRACT

Multiplier design is always a challenging task; how many ever novel designs are proposed, the user needs demands much more optimized ones. Vedic mathematics is world renowned for its algorithms that yield quicker results, be it for mental calculations or hardware design. Power dissipation is drastically reduced by the use of Reversible logic. The reversible Urdhva Tiryakbhayam Vedic multiplier is one such multiplier which is effective both in terms of speed and power. In this paper we aim to enhance the performance of the previous design. The Total Reversible Logic Implementation Cost (TRLIC) is used as an aid to evaluate the proposed design. This multiplier can be efficiently adopted in designing Fast Fourier Transforms (FFTs) Filters and other applications of DSP like imaging, software defined radios, wireless communications.

KEYWORDS— Quantum Computing, Reversible Logic Gate, Urdhva Tiryakbhayam, Optimized Design, TRLIC.

1. INTRODUCTION

Vedic Mathematics is one of the most popular methodologies used by the Aryans in order to perform mathematical calculations [2]. This consists of algorithms that can boil down large arithmetic operations to simple mind calculations. The above said advantage stems from the fact that Vedic mathematics approach is totally different and considered very close to the way a human mind works. The efforts put by Jagadguru Swami Sri Bharati Krishna Tirtha Maharaja to introduce Vedic Mathematics to the commoners as well as streamline Vedic Algorithms into 16 categories [1] or Sutras needs to be acknowledged and appreciated. The Urdhva Tiryakbhayam is one such multiplication algorithm which is well known for its efficiency in reducing the calculations involved.

With the advancement in the VLSI technology, there is an ever-increasing quench for portable and embedded Digital Signal Processing (DSP) systems. DSP is omnipresent in almost every engineering discipline. Faster additions and multiplications are the order of the day. Multiplication is the most basic and frequently used operations in a CPU. Multiplication is an operation of scaling one number by another. Multiplication operations also form the basis for other complex operations such as convolution, Discrete Fourier Transform, Fast Fourier Transforms, etc. With ever increasing need for faster clock frequency, it becomes imperative to have faster arithmetic unit. Therefore, DSP engineers are constantly looking for new algorithms and hardware to implement them.



Comparison of High Speed and area Efficient German Radix and Split Radix FFT Processors Using Radix-2 Butterfly Units

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ABSTRACT

Split-radix fast Fourier transform (SRFFT) is an ideal candidate for the implementation of a low-power and high speed FFT processor, because it has the lowest number of arithmetic operations among all the FFT algorithms. In the design of such processors, an efficient addressing scheme for FFT data as well as twiddle factors is required. The signal flow graph of SRFFT is the same as radix-2 FFT, and therefore, the conventional address generation schemes of FFT data could also be applied to SRFFT. However, SRFFT has irregular locations of twiddle factors and forbids the application of radix-2 address generation methods. This brief presents a shared-memory low-power SRFFT processor architecture. We also introduce German Radix FFT and show that SRFFT and GRFFT can be computed by using a modified radix-2 butterfly unit. The time constraint and power constraint will be calculated. Both SRFFT and GRFFT is been compared. Implementation is done using MatLab Tool.

KEYWORDS: FFT, Butterfly, Radix 2, SRFFT, GRFFT

1. INTRODUCTION

The fast Fourier transform (FFT) is one of the most important and fundamental algorithms in the digital signal processing area. Since the discovery of FFT, many variants of the FFT algorithm have been developed, such as radix-2 and radix-4 FFT. In 1984, Duhamel and Hollmann [1] proposed a new variant of FFT algorithm called split-radix FFT (SRFFT). Their algorithm requires the least number of multiplications and additions among all the known FFT algorithms. Since arithmetic operations significantly contribute to overall system power consumption, SRFFT is a good candidate for the implementation of a low-power FFT processor. In

general, all the FFT processors can be categorized into two main groups: pipelined processors or shared-memory processors. Examples of pipelined FFT processors can be found in [2] and [3]. A pipelined architecture provides high throughputs, but it requires more hardware resources at the same time. One or multiple pipelines are often implemented, each consisting of butterfly units and control logic.

In contrast, the shared-memory-based architecture requires the least amount of hardware resources at the expense of slower throughput. Examples of such processors can be found in [4] and [5]. In the radix-2 shared-memory architecture, the FFT data are organized

OBSTACLE NAVIGATION AND DETECTION SYSTEM

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ABSTRACT:

Radio detection and ranging uses radio waves to detect the range, angle, altitude, direction or speed of objects. Radars have been used for air traffic control, highway patrol, missile guidance, military exercise etc. An application is developed by using ultrasonic sensors interfacing with arduino micro controller to detect the target in all directions in range. The ultrasonic sensor works on the principle of echolocation. If there is difference between the return pulse and the generated pulse then it will be considered that target or obstacle is detected. If the target is detected then it gives a sound using buzzer. the LCD displays the distance and the angle of the target from the radar system. Already existing method have only 180° object detection system but In this paper we are comparing results of 180° simulation projection using servomotor, LCD Display and processing development environment (visual display)

KEYWORDS:

Ultrasonic sensor, EchoLocation, Arduino microcontroller, LCD display.

I. INTRODUCTION:

The history of radar started with

experiments by Heinrich Hertz in the late 19th Century that showed that radio waves was reflected by metallic objects. During the period 1934 to 1935 Eight major nations developed their own radar systems independently. These Radar systems are essentially used in air traffic control, air craft navigation, ship navigation, guided missiles etc. The term RADAR was coined in 1939 by the united states signal corps as it worked on these systems for the navy. After the war, radar use was widened to numerous fields.

II. IMPLEMENTAION:

The components required in this implementation is

- Ultrasonic Sensor
- Arduino UNO
- Servo Motor
- LCD Display
- LED's

III. HARDWARE DESCRIPTION:

Ultrasonic Sensor:

An ultrasonic sensor is an instrument that measures the distance to an object using ultrasonic sound waves. An ultrasonic sensor uses a transducer to send and receive ultrasonic pulses that relay back information about an object's proximity. Ultrasonic

INDOOR HYDROPONIC FARMING USING IOT FOR CHAMBER 2 LAYER

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ABSTRACT:

The effects of the global warming make more difficult for planting in uncontrolled environment. In traditional farming method, farmers require fine quality of soil with natural mineral strengths. It also requires working cost for ploughing and removal of weeds and also needs large amount of space and water. In case of seasonal plants, the yield does not satisfy the customer needs and the expectation off armoring productivity. For these reasons, a farming method which needs lesser requirements in cost factor and also it easy to maintain and control the important factors such as light, water level temperature, and humidity throughout the year is needed. This proposed work presents a Hydroponic style of farming which is the method of growing plants without soil & sunlight. In this method the plants are grown with only their roots exposed to the mixture of ash fertilizer with water instead of underground soil. This method is a type of indoor agriculture style which is independent of weather, and it also avoids the cost of ploughing and labor works. Watering and controlling of humidity is done with the help of a microcontroller Kit connected to Wireless sensor network with internet which senses the humidity, temperature and water level. With the help of this IoT technology, the real time status of plant's growth could be monitored by the authorized person from remote location. This technology helps efficiently for the agricultural development with minimum resource utilization.

KEY WORDS: IOT, Node MCU, Dht11 L293D, Pink LED Strips

INTRODUCTION:

Our day-to-day life Hydroponic plant become an integral part of life as technology advances and improve people living standards. Not only the hydroponic plant decorates the environment Hydroponic is an eco-friendly system to growing crop without soil. Currently the hydroponic system is used in the agriculture sector also. Hydroponics is an agricultural method of producing plants in an artificial environment without using the soil – nutrients which are provided through water – and by optimizing the growing conditions to improve the production. Hydroponically cultivated plants have a growth rate that is much faster and highly yielding than plant grow in the soil. Because they are cultivated in containers, pest. We can grow any terrestrial plant by this method. Already, where land costs are high, there crops are grown using hydroponic system in ground water, rooftops and greenhouses perhaps you would like to

start a garden for grow own vegetables. Plants are usually dissolved in water instead of nutrients taken from the soil only, and roots of plants are flooded, suspended, depending on the hydroponic system used so that plant can get the ingredients. In future, everything around us could be connected and they are able to sense and cooperatively communicate over the Internet, thereby giving birth to the Internet of Things (IoT). The basic idea behind IoT is the pervasive and ubiquitous presence of the things or objects around us like mobiles, sensors, radio frequency identification (RFID) tags, etc. This leads to the Generation of huge amount of data that need to be stored, processed, and presented in an energy efficient manner.


EXISTING METHOD:

In any hydroponic system, they are several parameters that should be maintained within range, such as pH, temperature of the surroundings, and water level of the container. An automatic hydroponic system should adjust and maintain these parameters within its suitable value automatically. There are actually not using the latest technology that much work faster, some of them are the Arduino at mega versions are they are using, they may get the crop in less time.

PROPOSED METHOD:

The sustainable agriculture using IOT based hydroponic systems have contributed in increasing the production of the following crops. The crops production of Lettuce, Fenugreek, spinach have increased by using the internet of things based Hydroponic systems. The IOT devices contain Radio frequency identification. The development of these hydroponic system by using the IOT system makes use the farmers in the futuristic method.

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REAL TIME DROWSINESS DETECTION FOR HUMAN SAFETY

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ABSTRACT:

Drowsiness especially in long distance journeys is a key factor in traffic accidents. In this paper a new module for automatic driver drowsiness detection based on visual information and Artificial Intelligence is presented. The aim of this system is to locate, track and analyze both the driver's face and eyes to compute a drowsiness index to prevent accidents. Both face and eye detection is performed by Haar-like features and AdaBoost classifiers. In order to achieve better accuracy in face tracking, we propose a new method which is combination of detection and object tracking. Proposed face tracking method, also has capability to self correction. After eye region is found, Local Binary Pattern (LBP) is employed to extract eye characteristics. Using these features, an SVM classifier was trained to perform eye state analysis. In this video we were able to track face by an accuracy of 100% and detecting eye blink by accuracy of 98.4%. Also we can calculate face orientation and tilt using eye position which is valuable knowledge about driver concentration. Finally, we can make a

decision about drowsiness and distraction of the driver. Experimental results show high accuracy in each section which makes this system reliable for driver drowsiness detection.

Keywords:

Eye blinking, Face detection, Viola-Jones algorithm, Eye and Mouth status, Drowsiness detection, Head position.

1) INTRODUCTION:

Each year hundreds of people lose their lives due to traffic accidents around the world. Unfortunately Iran ranks first in the world in terms of road fatalities and each year approximately thirty thousands of fellow countrymen lose their lives in these events. The role of human factor in accidents cannot be ruled out. According to national statistics in 90 to 95 percent of car accidents in Iran, human factor plays a pivotal role. In general, the driver fatigue accounts for 25 percent of accidents and approximately 60 percent of road accidents result in death or serious injury. In a study by the National Transportation Research Institute (NTSRB) in which 107 random car accidents had been selected, fatigue accounted for 58% of the all accidents. A main cause of fatigue is sleeplessness or insomnia. Drivers' drowsiness is a major contributing factor in severe road accidents that claims thousands of lives every year. According to accident statistics presented by Oklahoma Transportation Institute, which showed 22 percent of all accidents were due to driver's

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IoT Based Garbage Monitoring System

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Abstract:

The IoT Garbage Monitoring System is designed by ease the problems people or Organization face while managing their waste. The system allows the user to keep watch on the garbage bins by utilizing buzzer and IoT service. The system has a buzzer on it which sets off an alarm on fulfillment of the garbage bin, other than this the user can also watch over the bins from anywhere using IoT service. The system is constructed using a Raspberry Pi Pico, which works as the brain of the system. To keep watch on level of garbage in the bins, the system consists of a couple of Ultrasonic Range Finder Distance Sensor Module. The Ultrasonic sensor is designed to measure the distance using ultrasonic wave to determine the distance of an object from the sensor. The sensor helps the system to sense the level of garbage in the bins. The Raspberry Pi is equipped with Wi-Fi connectivity, thus making it suitable to watch the system using IoT, from anywhere. As so the system works towards ease the garbage management.

Key words: *Raspberry pi Pico, Ultrasonic sensor, Node MCU, LCD Display, Buzzer.*

I. INTRODUCTION

According to research, the population growth is directly proportional to waste generation. Clean environment is the most important part of a healthy life. We have developed internet of things(IoT) based waste management system for streets which managed the disposal of garbage from garbage bins on time and efficiently. When to street garbage bin is about to be full, the notification in the form of a text message and email will be sent to municipality office, which shows exact location of garbage bin in a street that needs to be clean. This paper presents an efficient street waste management system for a healthy environment. IoT based intelligent waste management system is developed by using Raspberry pi Pico, ultrasonic sensors and other electronics. This system will continuously monitor the garbage level in a garbage bin and will prompt an altering signal to the respective garbage collection team in a municipality office in the scenario of a nearly filled garbage bin. Solid waste management dispute is the major contest to the local administration of both small and large cities.

II. LITERATURE REVIEW

A Smart Dustbin based on IoT in which the smart bin was built on a platform which was based on Raspberry pi Pico which was interfaced with an ultrasonic sensor. The sensor was placed on the top of the bin. A threshold level was set as 5cm. As the garbage reaches the level of threshold, the sensor

BIOMETRIC VOTING SYSTEM

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ABSTRACT

This project describes design of biometric voting machine using fingerprint scanner and Arduino Nano. The hardware proposal has a Finger print scanning sensor which is used to compare the finger print of the user with the pre-stored finger print of the user. During the voting process, the finger print of the voter will be compared to the pre-stored finger prints for matching and if it does not match, then the voter will not able to vote. For the selection process Keypad is used. LCD is used to provide instructions to the user. Fake voting cannot be done since finger print is unique for each person. The voting process is done only if the finger print matches with the stored value. When the finger print is matched the user is ready to vote the indication is displayed in LCD display. If the person tries to vote twice then the buzzer will be activated.

Keywords: *Arduino Nano, fingerprint module, lcd display, keypad.*

1)INTRODUCTION

Election is a feature of democratic government in which people govern themselves and are able to express their choices regarding various issues, such as constitutional amendments, piece of legislation or choosing the right person as their leader. An electoral system is present to layout the rules of the election. Political election is the most common form of election but there are many different fields where election is vital part of their organizational functions. Election is vital for business, informal organizations and nonprofit organizations. Election is the way of democratic world but conducting an election in fair manner has been the challenge of every electoral body especially in the country with high corruption, weak rule or law and less transparency. On the top of that conducting election cost millions and billions of dollars.

Biometrics is the science and technology of measuring and analyzing biological data. Biometrics refers to technologies that measure and analyze human body characteristics, such as DNA, fingerprints, eye retinas and irises, voice patterns, facial patterns and hand measurements, for authentication purposes. The field of biometrics was formed and has since expanded on to many types

of physical identification. Among the several human fingerprints remain a very common identifier and the biometric method of choice among law enforcement. These concepts of human identification have lead to the development of fingerprint scanners that serve to quickly identify individuals and assign access privileges. The basic point of these devices is also to examine the fingerprint data of an individual and compare it to a database of other fingerprints. In our project we have used fingerprint for the purpose of voter identification or authentication. As the thumb impression of every individual is unique, it helps in minimizing the error. A database is created containing the fingerprint images of all the voters as required. Illegal votes and repetition of votes is checked for in this system with accurate coding. Hence with the application of this fingerprint based EVM system elections could be made fair and free from rigging. Further that the elections would are no longer a tedious and expensive job

RF ID BASED ATTENDANCE AND RANDOMIZED SITTING ARRANGEMENT SYSTEM

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Abstract:

Attendance management is important to every single organization; it can decide whether or not an organization such as educational institutions, public or private sectors will be successful in the future. Organizations will have to keep a track of people within the organization such as employees and students to maximize their performance. Managing student attendance during lecture periods has become a difficult challenge. The ability to compute the attendance percentage becomes a major task as manual computation produces errors, and wastes a lot of time. For the stated reason, an efficient Web-based application for attendance management system is designed to track student's activity in the class. This application takes attendance electronically and the records of the attendance are storing in a database. This article examines the contribution of classroom students' seating positions to learning gains. Data were gathered from a sample of 1907 students who sat for the same seat twice over an interval of about 10 months. They were drawn from a random selection of 72 low and high performing primary schools. Results of a multi-level regression show that seating in the front row in a classroom led to higher learning gains of between 5 percent and 27 percent compared to seating in other rows that are farther away from the chalkboard. The policy implication to education is that student's seating position can be manipulated in a way that it optimizes learning gains for slow learners.

Keywords: *Arduino, Radio frequency Identification Card Reader, Real time clock.*

I. INTRODUCTION

Attendance automation requires little to no effort from the teacher, which means a reduced workload on the teacher^[1]. All that the students have to do is punch-in or flash the Radio Frequency Identification (RFID) card in front of the device, in case of biometric or RFID attendance. Whereas attendance marked with an app merely requires 60 seconds from the teacher. No paperwork, no manual attendance, and no wastage of time lead to reduced hassle and enables the already overburdened teacher to concentrate more on teaching in a school, college or university can save up to thousands of rupees monthly by automating student attendance. If a teacher has 7 lectures a day and requires 10 minutes to mark attendance for each lecture then nearly 70 minutes are consumed in marking attendance. If there are 50 teachers in the institution then each day 58 hours are required for the mundane task of marking attendance. The 58 hours can easily be reduced to 1 hour, and the considerable amount of teachers' time saved can be utilized towards improving student outcomes^[1].

Since the attendance is automated, you can be sure that the data is accurate and error-free. Once the attendance is marked, the captured data gets stored in the student attendance management system, from where anyone having the rights can view the attendance details. This feature is especially useful while locating a particular student or while analyzing trends. Student attendance records are required by compliance & accreditation agencies such as The National Board of Accreditation (NBA) and National Assessment and

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GAS LEAKAGE DETECTION USING INSECT ROBOT

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ABSTRACT:

The explosion due to gas leakage has become a serious problem in our country's daily activities. Now the world is evolving with technology, so it is necessary to use technology, if possible, in every case. Placing sensors at each section of pipe is very costly process. LPG gas to resolve the accident occurred we can prevent it through technology. The system is based on a microcontroller, which uses gas sensors and GSM along with GPS and a robot car moving in a forward and backward direction. It is designed for LPG Gas Leakage Detection and Alert System using Arduino Uno with an MQ5 sensor. This circuit contains an MQ5 gas sensor, microcontroller, L298N 2A Dual Motor Driver, GPS and GSM. The Robot Car moves forward and backward directions MQ5 sensor will detect the gas leakage and transmit the information to the microcontroller. Based on that information, the microcontroller makes a decision and then sends a warning message on the mobile, and the location will be sent to the user via GSM. The uses of the Arduino micro controller with Arduino provide a suitable platform for implementing an embedded control system, and it is possible to modify it to meet our future requirements easily and quickly.

Keywords: LPG, GSM, GPS, MQ5 sensor, Arduino Uno, Robot, Motor Driver.

1. INTRODUCTION:

LPG Gas leaks have been increased from 0.72% of all kitchen accidents to 10.74% of all kitchen accidents. The small LPG cylinder of weight 5kg in which the burner is located immediately over the cylinder without using a rubber tube, is safer than the one which uses a rubber pipe as this subway has the hazards of getting cracked, which can make

way to leakage. A computer program to run online to detect the leakage locations has been originated. It functions as the automatic supervisor of the pipelines in remote areas Simple Gas leak detector is a simple device which is used to detect the leakage of gas. If the gas leak occurs, an equivalent message is conveyed by means of an LCD screen and a buzzer and with the help of the GSM module, it is capable of broadcasting messages to the stakeholders about the LPG leak.

This device is at its initial level of development and with modification. In future, this device will also trip off the mains supply to ensure better safety and surety. The gas leak detector device can find applications not only in residential homes but also it is applicable to hotels, restaurants and even in industries where LPG gas is used for some other purposes. Robots are indispensable in many manufacturing industries. The reason is that the cost per hour to operate a robot is a fraction of the cost of the human labour needed to perform the same function. More than this, once programmed, robots repeatedly perform functions with a high accuracy that surpasses that of the most experienced human operator.

Human operators are, however, far more versatile. Humans can switch job tasks easily. Robots are built and programmed to be job-specific. You wouldn't be able to program a welding robot to start counting parts in a bin. Today's most advanced industrial robots will soon become "dinosaurs". Robots are in the infancy stage of their evolution. Internal hardware such as accelerometers, gyroscopes and proximity sensors are used by some applications to respond to additional user actions, for example, adjusting the screen from portrait to landscape depending on how the device is oriented. Android allows users to customise their home screens with shortcuts to

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A Study On Impact Of Employee Retention In Information Technology Sector With Reference To Employer Branding

pdf (<https://journalppw.com/index.php/jpsp/article/view/12381/8027>)

Mr. JAGADEESH KUMAR G , Mr. DODDIGARLA ANAND PRASAD , Ms. BRINDA M , Dr. RAVIKUMAR.PENKI

Abstract

Everybody is seeking for good jobs. Employment is first concern for the society now a-days. Working in a reputed institution has become a status symbol as well. As we are choosing any product by checking their credibility through the brand image they are having, in the same way people are seeking for jobs in the organizations having good brand image in the market. Employer brand is the image which helps the organization in attracting good talent in the market. To understand the importance of it, this study focused on employer branding on the employee retention among 230 respondents from selected IT Companies (TCS, Wipro, IBM and Accenture) in Bangalore. This study used a convenience sampling method to collect primary data through Google Forms. It is found that there is relationship between Employer Branding and Employee Retention selected IT Companies and also evident that retention strategies of selected IT companies are significantly influence on the employer branding.

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Section

Articles

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Detecting the Covid-19 From X-Rays by Using Deep Learning

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ABSTRACT

Most detection methods of corona virus disease 2019 (COVID-19) use classic image classification models, which have problems of low recognition accuracy and inaccurate capture of modal features when detecting chest X-rays of COVID-19. This study proposes a COVID-19 detection method based on image modal feature fusion. This method first performs small-sample enhancement processing on chest X-rays, such as rotation, translation, and random transformation. Five classic pretraining models are used when extracting modal features. A global average pooling layer reduces training parameters and prevents overfitting. The model is trained and fine-tuned, the machine learning evaluation standard is used to evaluate the model, and the receiver operating characteristic curve is drawn. Experiments show that compared with the classic model, the classification method in this study can more effectively detect COVID-19 image modal information, and it achieves the expected effect of accurately detecting cases using CNN Algorithm.

Keywords: COVID-19, Deep Learning, Convolutional neural network (CNN),

1. Introduction

Deep learning is based on the branch of machine learning, which is a subset of artificial intelligence. Since neural networks imitate the human brain and so deep learning will do. In deep learning, nothing is programmed explicitly. Basically, it is a machine learning class that makes use of numerous nonlinear processing units so as to perform feature extraction as well as transformation. The output from each preceding layer is taken as input by each one of the successive layers. Deep learning models are capable enough to focus on the accurate features themselves by requiring a little guidance from the programmer and are very helpful in solving out the problem of dimensionality. Deep learning algorithms are used, especially when we have a huge no of inputs and outputs. Since deep learning has been evolved by the machine learning, which itself is a subset of artificial intelligence and as the idea behind the artificial intelligence is to mimic the human behavior, so same is "the idea of deep learning to build such algorithm that can mimic the brain". Deep learning is implemented with the help of Neural Networks, and the idea behind the motivation of Neural Network is the biological neurons, which is nothing but a brain cell. Deep learning is a collection of statistical techniques of machine learning for learning feature hierarchies that are actually based on artificial neural networks. So basically, deep learning is implemented by the help of deep networks, which are nothing but neural networks with multiple hidden layers. Deep learning is implemented with the help of Neural Networks, and the idea behind the motivation of Neural Network is the biological neurons, which is nothing but a brain cell. Deep learning is a collection of statistical techniques of machine learning for learning feature hierarchies that are actually based on artificial neural networks. So basically, deep learning is implemented by the help of deep networks, which are nothing but neural networks with multiple hidden layers.

1.1. CONVOLUTION

A convolution is a mathematical calculation on two functions named f and g that gives a third function ($f * g$). This third function reveals how the shape of one is modified by the other. Convolution is very important. It can manipulate Blurred, Sharped, Edge detection, Noise reduction images. 3 A mask (g) - a small matrix whose values are called weight. A twodimensional matrix represents it. It is also known as filtering. It's interesting point is that it should be in odd numbers. Otherwise, it is difficult to find the mid of the mask. Image (f)- preprocessed images.

- It is a mathematical calculation-based approach.

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Multi-Lesion Segmentation of Diabetic Retinopathy Using Deep Learning

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Abstract: Diabetic Retinopathy (DR) and Diabetic Macular Edema (DME) are the two major complications of diabetes and have a significant impact on working individuals of the world population. DR doesn't give any early symptoms. Therefore, it is important to diagnose DR at an early stage. The two above mentioned diseases usually depend on the presence and areas of lesions in fundus images. The four main related lesions include soft exudates, hard exudates, microaneurysms, and haemorrhages. Since lesions in retinal fundus images are a pivotal indicator of DR, analyzing retinal fundus images is the most popular method for DR screening. The examination of fundus images is time-consuming and small lesions are hard to observe. Therefore, adopting deep learning techniques for lesion segmentation is of great importance. In this project, we use one of the deep learning techniques called U-Net, which is a variant of Convolutional Neural Networks (CNN) for multiple lesion segmentation.

Keywords: U-NET, Lesions, Retinal fundus, Segmentation, Deep Learning.

I. INTRODUCTION

In recent times, India and other parts of the world have been faced with an increase in age and society related diseases like diabetes. According to recent survey, 24% of the country population has been diagnosed of diabetes disease alone and it have been recognize and accepted as one of the main cause of blindness in the country if not properly treated and managed. Early detection and diagnosis have been identified as one of the way to achieve a reduction in the percentage of visual impairment caused by diabetes with more emphasis on routine medical check which the use of special facilities for detection and monitoring of the diabetes. Diabetic related eye diseases are the most common cause of blindness in the world. Diabetic Retinopathy is a severe and widely spread eye disease, which can be regarded as manifestation of diabetes on retina. Diabetic Retinopathy is a specific micro vascular complication of both insulin dependent(type 1) and non insulin dependent (type 2) diabetes. The prevalence of retinopathy s strongly linked to the duration of diabetes. After 20 years of diabetes nearly all patients with type one diabetes and over 60% of patients with type 2 diabetes have some degree of retinopathy. Vision losses often, late symptoms of advanced diabetic retinopathy, many patients remain undiagnosed even as their disease is causing severe retinal damage. Hence there is an urgent need for mass screening retinal examination for the early detection and treatment of diabetic retinopathy

II. PROBLEM STATEMENT

Diabetes effects the circulatory system of a person, including that of the retina, which leads to DR. The oxygen supply to the visual system is reduced to a huge extent and it causes swellings on the retinal vessels. Also retinal lesions are formed which includes haemorrhages, microaneurysms and exudates. These are the symptoms for the disease, which will not be visible in the initial stages of the disease. Therefore, unless the patient takes regular examination of the disease, it cannot be identified and thus not cured. For a given collection of retinal fundus images (1...N), where N is greater than 100, the purpose is: (i) Precise classification of input images into normal, mild, moderate, severe. (ii) To increase classification accuracy and analyze the efficiency of the proposed work with the existing algorithms.

A. Risk Factors

All people with diabetes mellitus (Type I diabetes and Type II diabetes) are at risk. The longer a person has diabetes, the higher the risk of developing some ocular problem. After 20 years of diabetes, nearly all patients with Type I diabetes and greater than 60% of patients with Type II diabetes have some degree of retinopathy. It has been shown that the widely accepted WHO and American Diabetes Association diagnostic cutoff for diabetes of a fasting plasma glucose ≥ 7.0 mmol/l (126 mg/dl) does not accurately identify diabetic retinopathy among patients.



WEATHER FORECASTING BASED ON STATISTICAL MODELLING AND DATAMINING TECHNIQUES

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Abstract One the biggest challenge in weather forecasting is its unpredictable and dynamic climate data sets, which can frequently change according to global climatic changes. Several techniques have been applied and proposed out of which data mining is considered as the most reasonable approach towards Weather forecasting. Weather forecasting is the application of science and technology to predict the conditions of the atmosphere for a given locality and time. Weather forecast includes prediction of rain, fog, winds, clouds, lightening, storm etc. The paper is emphasized an attempt is made to build a weather prediction model based on the spatial and temporal dependencies among the climatic variables composed with forecasting analysis.

Keywords—Data mining, Statistics, Weather forecasting, Weather Prediction, Atmosphere.

1. INTRODUCTION

Weather forecasting is well thought-out as the most demanding problem both theoretically and scientifically by the world in the last decade. Weather predicting is the presentation of science and technology to forecast the circumstances of the atmosphere for a specified locality and time. This eventually resulted into a unlimited demand for evolving models which assist towards active prediction of the weather data. A large number of the meteorologists have made tremendous progress in weather forecasting using time series-based models. In most of the time series based models, weather data analysis is done by considering a few variables for data analysis. However, the attributes of the weather play a considerable role in weather forecasting. The models described above ignored the fact and built models to analyze the behavior of the weather. The developments in science and technology facilitated in suggesting dynamic approaches for the prediction of weather by using analytical methods.

Method for Weather forecasting:

In Weather forecasting, there are three methods available.


a) .Synoptic Weather forecasting

b) Numerical Weather forecasting

c) Statistical Weather forecasting

a).Synoptic Weather forecasting

In metrological center, deliver synoptic chart for every day. In a Specific time, dissimilar weather parameters are detected. Different data collection and the study of observational data detected from thousands of weather stations.


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A DEEP LEARNING TECHNIQUE FOR OPTICAL WORD RECOGNITION FOR INDIC SCRIPT

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Abstract: This paper presents an Indic Script Optical Character Recognition approach using deep learning techniques called Convolutional Neural Network (CNN) and Recurrent Neural Network (RNN) learning techniques for different national language of India. Detecting and recognizing text in natural scene images is a challenging, yet not completely solved task. In recent years several new systems that try to solve at least one of the two sub-tasks (text detection and text recognition) have been proposed. In this project giving a step towards convolutional neural networks for scene text recognition that can be optimized end-to-end. In contrast to most existing works that consist of multiple deep neural networks and several pre-processing steps are applied to use a deep neural network that learns to detect and recognize text from natural images in a supervised way. This network that integrates and jointly learns to detect text regions in an image, and a text recognition network that takes the identified text regions and recognizes their textual content.

Keywords: *Deep learning, CNN, VGG16 neural network, RNN, Lstm, Blstm.*

1 INTRODUCTION

In modern times, data records in the form of printed paper, consisting of passport documents, invoices, bank statements, printouts of static-data, or any appropriate documentation are being stored in the form of digital copies. It is a common practice to digitize printed texts so that it can be edited, searched and stored, and can be used for text mining electronically. Optical character recognition is a method of converting handwritten, typed or printed text in an image to the machine-encoded text that can later be edited, searched and used for further processing. Optical Character Recognition (OCR) can be used to convert printed texts into a digital representation. In the 1900s, an early form of optical character recognition (OCR) was used in

the technologies such as telegraphy and reading device for blind people. In 1914, Emanuel Goldberg invented a device that could read characters and translate them into standard telegraphic code. In general, OCR is used to identify and read a natural language from an image and convert it into standard representation. In 1967, the research work of Anderson R.H, there has been a surge in interest for extracting patterns from images for representing them in markup form, which is a correct semantic representation of the images. 1.1 Deep learning: Deep learning is an artificial intelligence function that imitates the workings of the human brain in processing data and creating patterns for use in decision making. Deep learning is a subset of machine learning in artificial intelligence (AI) that has networks capable of unsupervised learning from data that is unstructured or unlabeled. Also known as deep neural learning or deep neural network. Deep learning is a specific approach used for building and training neural networks, which are considered highly promising decision-making nodes. An algorithm is considered to be deep if the input data is passed through a series of nonlinearities or nonlinear transformations before it becomes output. An Example of Deep Learning: If the machine learning system created a model with parameters built around the number of dollars a user sends or receives, the deep-learning method can start building on the results offered by machine learning. Each layer of its neural network builds on its previous layer with added data like a retailer, sender, user, social media event, credit score, IP address, and a host of other features that may take years to connect together if processed by a human being. Deep learning algorithms are trained to not just create patterns from all transactions, but also know when a pattern is signalling the need for a fraudulent investigation. The final layer relays a signal to an analyst who may freeze the user's



SECURE IMAGE TRANSFER USING SMTP

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Abstract: Confidentiality is major task for every sector, keeping things confidential among the organization is the most important factors. Providing security for information is also major concern for the fast growth of the digital exchange of data storage and transmission. As there is rapid growth of using images in many fields, so it is important to protect the private image data from intruders. In this paper, we propose Email authentication for encrypted and decrypted image.

In our framework, first, the confidential image will be encrypted using a symmetric key algorithm, Advanced Encryption Standard (abbreviated as AES) by the sender and the encrypted image will be send via Email to receiver. The Cryptographic algorithms provides security to the image, as we proposed AES to our framework it will become more difficult to crack the original image for intruders.

Moreover there are some other encryption algorithms to encrypt and decrypt the image but Advanced Encryption standard has its unique features like it protects from brute-force attack and image takes less rounds to encrypt, etc. that gives more security compare with other symmetric algorithms. And Email provides a secure transmission of encrypted image.

The above results and analysis for crypto system based on AES algorithm give a high performance. So we have reason to believe that use of this method to encrypt and decrypt the image and sending via Email will have a very good prospect in the future.

Keywords—Image, Cryptography, Encryption, Decryption, AES, SMTP, security analysis

I. INTRODUCTION

A major issue for computer networks is to prevent important information from being disclosed to illegal users. For this reason, encryption techniques were introduced. Most encryption techniques have an easy implementation and are widely used in the field of information security. During the last decade, the use of computer networks has grown spectacularly, and this growth continues unabated. New networks are being installed and connected to the global internet. The internet is commonly seen as the first incarnation of an information superhighway. Today, the information transmitted over the internet is not only text but also contains multimedia like images, audio, etc. Most images are used. However, the more extensively the images are used, the more important their security will be. For example, it is important to protect military image databases, ensure confidential video conferencing, and protect personal online photo albums. However, with the growth of computer processors processing power and storage, illegal access has become easier. As a result image security has become an important topic in the current computer world. Most traditional or modern cryptosystems have been designed to protect textual data. The original plain text is converted into cipher-text (a hidden form of the message) which is stored or transmitted over a network. Upon reception, the cipher text can be transformed back into the original plain text by using a decryption algorithm. However, the images are different from the text. Although the traditional cryptosystems, such as RSA and DES-like cryptosystems may be used, to encrypt images directly, it is not a good idea for two reasons. One is that the image size is always much greater than that of the text. Therefore, the traditional cryptosystems need much time to directly encrypt the image data. The second is that the decrypted text must be equal to that of the original text. However, this requirement is not necessary for image data. This is due to the characteristics of human perception; a decrypted image containing small distortion is usually acceptable. A digital image is defined as a two-dimensional (2D) rectangle array. The elements of this array are denoted as pixels. Each pixel has an intensity value (digital number) and a location address (row, column). For protecting the stored 2D data, they must be converted to one-dimensional (1D) arrays before using various traditional encryption techniques. The raster sequence of image data can be encrypted into blocks by using a block cipher or a stream cipher. A product cipher can also be used to encrypt a file of image data. However, it is more efficient to encrypt an image after employing some compression techniques. This will reduce the computational requirement and also increases the speed of processing (which is of high importance in a

real-time scenario).

HUMAN POSE ESTIMATION USING DNN ALGORITHM

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ABSTRACT

Human pose estimation has been an important research topic for computer vision community. Human pose estimation and tracking is a computer vision task that includes detecting, associating and tracking semantic key points. It has been in focus like human computer interaction, action recognition, surveillance, picture understanding, treat prediction etc. It's difficult to cover all aspects of this domain because of the diversity of its application areas, therefore this review is focused on the most significant contributions in Human Pose Estimation methods from a single two-dimensional image. We start our study with the traditional pictorial structures, go through a discussion of the use of Deep Neural Networks that improved the human pose estimation significantly and then the most recent, more famous approach namely Stacked Hourglass. Modern methods are based on training, evaluating and comparing on some common datasets using different architectures of Deep Learning modules.

Keywords: Human Pose Estimation, Pictorial Structure, Deep Neural Networks, Hour Glass.

I. INTRODUCTION

Human motion analysis in Computer Vision studies and develops methods and applications in which the images are processed to produce information based on the apparent human motion in the images and videos. The concept of the Human motion analysis in Computer Vision is presented Aggarwal et al. in 1999. In recent years, research on Human motion analysis has attracted more and more attention and develops fast. A famous conference, IEEE International Conference on Automatic Face and Gesture Recognition (FG), was human motion analysis as an important component and its range of topics tracks the development of the field. More complicated models and advanced devices were used for pose and gesture recognition.

II. OVERVIEW

Human motion is a concept that includes several components of object information in images and videos: low level components such as locations and movement of entire human bodies and body parts, and high-level components such as human actions, which are reflected by low level components. Human motion contains human detection, human tracking, human pose estimation and human action recognition. Although in practice different systems employ different processing strategies, usually it is a consecutive procedure of these four topics: human bodies need to be detected first, then tracking and body structure analysis can be executed, and finally actions recognized. Human pose estimation classifies human bodies to pose categories. Human Pose Estimation can be considered as a problem of multi-class classification that categorizes samples to several signal-processing-based or machine-learning-based models

III. MODELING AND ANALYSIS

HUMAN DETECTION:

Human detection is the task of locating all instances of human beings present in an image, and it has been most widely accomplished by searching all locations in the image, at all possible scales, and comparing a small area at each location with known templates or patterns of people.

Single-Processing-Human pose detection

Single processing based human detection is defined as a kind of method that matches single information at specific locations. Usually, these methods use template matching techniques in order to find that are similar to the pre-defined templates in the input images. The most common templates are the contours of human bodies, such as the edges are treated as specific locations on which information of pixels such as intensity and orientations are used for matching.

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Framework for Selecting Teacher of the Year.

Journal of Operations Management . Nov2021, Vol. 20 Issue 4, p44-63. 20p.
edula, Ramamurthy; Pinninti, Venkata Ravi Ram; Krovvidi, Vijaya Bhaskar

essential aspect in managing operations in most educational institutions is choosing a 'Teacher of the Year' awardee. Typically, a committee is constituted, invites nominees considered. Though this is done in almost all the educational institutions, rigorous data collection methodology that feeds algorithmic sequencing procedures is apt to fill that gap and does so by modeling such selection process as a Multiple Attribute Decision Making (MADM) methodology, and lays down a quantitative framework for Teacher of the Year. As it is not humanly possible to be the perfect, or an ideal teacher, the Technique for Order Preferences by Similarity to an Ideal Solution (TOPSIS) method, which is who comes closest to the ideal teacher, is the most appropriate tool among the MADM methods. The paper also includes a case illustration worked out with MAT, a national institution to demonstrate the effectiveness of the methodology. This paper thus offers managers of educational institutions and regulators a ready solution for date and managing their operations in a demonstrably more professional and credible manner.

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Optimization | Published: 27 October 2021

Minimizing the total completion time on a multi-machine FMS using flower pollination algorithm


N. Sivarami Reddy , D. V. Ramamurthy, M. Padma Lalitha
& K. Prahlada Rao

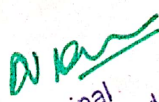
Soft Computing **26**, 1437–1458 (2022)

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Abstract

This paper deals with simultaneous scheduling of machines, automated guided vehicles (AGVs) and tools in a multi-machine flexible manufacturing system (FMS) considering the transfer times of jobs to minimize makespan (MSN). Only one copy of each type of tools is made available due to economic restrictions, and the tools are stored in a central tool magazine (CTM) that shares with and serves for several machines. Jobs and tools among machines are carried by AGVs and tool transporter (TT). This simultaneous scheduling problem is highly complex in nature as it involves job operations sequencing on machines, allocation of tools and AGVs to job operations and associated trip operations including the times of dead heading trip and loaded trip of AGVs. This paper presents a nonlinear mixed integer programming (MIP) formulation to model the combined scheduling of


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Abstract

Scheduling jobs and tools is a significant problem for manufacturing systems. Inefficient job scheduling and tool loading planning may result in under utilization of capital intensive machines and a high level of machine idle time. Therefore, efficient scheduling of jobs and tools enables a manufacturing system to increase machines' utilization and decrease their idle times. This paper addresses machines' and tools' joint scheduling with alternate machines in a multimachine flexible manufacturing system (FMS) to minimize makespan (MSN). Only one copy of each type of tool is made available in FMS where tools are expensive. The tools are stored in the central tool magazine (CTM), which shares and serves them to several machines in order to reduce the cost of duplicating the tools in every machine. The problem is to select machines from alternate machines for job-operations, allocation of tools to the job-operations and job-operations' sequencing on machines for MSN minimization. This paper presents nonlinear mixed integer programming (MIP) formulation to model this simultaneous scheduling problem and crow search algorithm (CSA) built on the crows' intelligent behavior for solving this problem. The results show that CSA is providing better solutions than Jaya algorithm and the usage of alternate machines for the operations can reduce MSN.

Keywords: Scheduling of machines and tools • alternate machines • crow search algorithm • makespan • metaheuristics

We recommend

Optimum scheduling of machines, automated guided vehicles and tools without tool delay in a multi-machine flexible manufacturing system using symbiotic organisms search algorithm

Padma Lalitha Mareddy, Sivarami Reddy Narapureddy✉, Venkata Ramamurthy Dwivedula, Prahlada Rao Karanam

First published: 06 April 2022

<https://doi.org/10.1002/cpe.6950>

Abstract

This article deals with machines, automated guided vehicles (AGVs) and tools simultaneous scheduling in multimachine flexible manufacturing system (FMS) *with the lowest possible number of copies of every tool type without tool delay* considering jobs' transport times among machines to minimize makespan (MSN). The tools are kept in a central tool magazine (CTM), which is shared by and serves many machines. Tool transporter (TT) and AGVs shift tools and jobs among machines respectively. This concurrent scheduling problem is extremely complex in nature as it involves determining the lowest possible tool copies of every type of tool, allocation of AGVs and tools copies to job-operations, job-operations sequencing on machines, and associated trip operations including the dead heading trip and loaded trip times of AGVs. This paper proposes nonlinear mixed integer programming (MIP) formulation to model this problem and symbiotic organisms search algorithm (SOSA) for solving this problem. Verification is carried out using an industrial problem in a manufacturing firm. The results show that employing two copies for one tool type and one copy each for the remaining tool types results in no tool delay and reduction in MSN which causes a reduction in cost, and SOSA is providing better solution than Jaya algorithm.

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DATA AVAILABILITY STATEMENT

No data are available

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Research Article

Integrated simultaneous scheduling of machines, automated guided vehicles and tools in multi machine flexible manufacturing system using symbiotic organisms search algorithm

Dr. N. Sivarami Reddy , Dr. D.V. Ramamurthy, Dr. M. Padma Lalitha & Dr. K. Prahlada Rao

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ABSTRACT

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This paper deals with ***machines, automated guided vehicles and tools simultaneous scheduling in multi-machine flexible manufacturing system***

considering jobs' transport times among machines to minimize makespan. Only one copy of every tool type is made available due to economic restrictions. The

<https://www.tandfonline.com/doi/abs/10.1080/21681015.2021.1991014?journalCode=tjci21>

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HAND GESTURE CONTROLLED WHEEL CHAIR

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Abstract:

This paper presents real time monitoring system by which humans interacts with wheel chair through gestures. This is an immense aid for people for whom mobility is a great challenge. There is a dire need for vision based interface over speech recognition as it failed to mandate the robots because of modulation and varying frequency. Gesture recognition consists of three stages: capturing of image, image processing and data extraction. The implementation is achieved by navigation of the robot through various gestures. By the impact of this project, life of physically challenged people becomes less challenging. From further research it will benefit various areas including applications in military and high security bases. A robot is the system which deals with construction, design and operation. This system is related to robot and their design, manufacture, application. Robotics is currently focused on developing systems that modularity, flexibility, redundancy, fault tolerance and some other researchers are on completely automating a manufacturing process or a task, by providing sensor based to the robot arm. Recently developing industry and man power are critical constraints for completion of task. To save human efforts the automation playing important role in the system. This system is used for regular and frequently carried work. One of the major and most commonly performed works is picking and placing of jobs from source to destination. In the earlier systems, the motion of the human hand is sensed by the robot through sensors and it follow the same. As the human travels their hand, the accelerometer also start moving accordingly motion of the hand sensor displaces and this sensor senses object or parameter according to motion of hand

Keywords— *Arduino, Radio frequency, motor driver, motors.*

I. INTRODUCTION

Recently, strong efforts have been carried out to develop intelligent and natural interfaces between users and computer based systems based on human gestures.

Gestures provide an intuitive interface to both human and computer. Thus, such gesture-based interfaces can not only substitute the common interface devices, but can also be exploited to extend their functionality.

Robots are playing an important role in automation across all the sectors like construction, military, medical, manufacturing, etc. After making some basic robots like line follower robot, computer controlled robot, etc., we have developed this accelerometer based gesture controlled robot by using Arduino Uno. In this project we have used hand motion to drive the robot. For this purpose we have used accelerometer which works on acceleration.

A gesture controlled robot is controlled by using hand in place of any other method like buttons or joystick. Here one only needs to move hand to control the robot. A transmitting device is used in your hand which contains RF Transmitter and accelerometer. This will transmit command to robot so that it can do the required task like moving forward, reverse, turning left, turning right and stop. All these tasks will be performed by using hand gesture.

Here the most important component is accelerometer. Accelerometer is a 3 axis acceleration measurement device with $\pm 3g$ range. This device is made by using polysilicon surface sensor and signal conditioning circuit to measure acceleration. The output of this device is Analog in nature and proportional to the acceleration. This device measures the static acceleration of gravity when we tilt it and gives a result in form of motn or vibration.

According to the datasheet of adxl335 polysilicon surface- micromachined structure placed on top of silicon wafer. Polysilicon springs suspend the structure over the surface of the wafer and provide a resistance against acceleration forces. Deflection of the structure is measured using a differential capacitor which incorporate independent fixed plates and plates attached to the moving mass. The fixedplates are driven by 180° out-of-phase square waves. Acceleration deflects the moving mass and unbalances the differential capacitor resulting in a sensor output whose amplitude is proportional to acceleration. Phase-sensitive demodulation techniques are then used to determine the magnitude and direction of the acceleration. An important aspect of a successful robotic system is the Human-Machine interaction.

In the early years the only way to communicate with a robot was to program which required extensive hard work. With the development in science and robotics, gesture based recognition came into life. Gestures originate from any bodily motion or state but commonly originate from the face or hand. Gesture recognition can be considered as a



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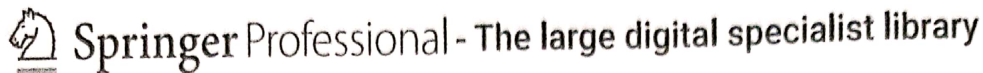
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Electric Vehicle chare control with Resonant DC-DC Bidirectional converter

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Abstract This study describes a bidirectional DC to DC resonant converter for bidirectional power transfer applications, particularly battery charging/discharging in electric vehicles and motor loads. It is symmetrical for operation in both the forward and backward directions, similar to an LLC resonant converter, but for bidirectional capability, an additional inductor and capacitor have been included in the secondary side of the circuit. The switches in the inverting stage are guaranteed to operate with zero voltage switching (ZVS). Additionally, under ZCS, the rectifier diodes on the secondary side shut down. By minimizing losses and enabling high frequency operation, ZVS and ZCS enable smaller magnetic elements and filter capacitors, which in turn reduce size, weight, and volume while enhancing power density. In order to thoroughly analyze the converter voltages and currents, an equivalent model of the converter with motor load is first built in this study. The converter with motor load is then simulated to ensure that the conceptual design is implemented.

Keywords DC/DC Converter, ZVS, Motor Load, Electric Vehicle, Rectifier Diodes

1.0 Introduction

Research in the field of on-board charging/discharging units for electrical cars or plug-in electrical vehicles (EV/PHEV) has been focused on bidirectional DC/DC converters with enhanced efficiency and high power density.

The isolated bidirectional DC to DC converters have been the subject of extensive investigation [1]. Dual active bridge (DAB) converter topologies are extremely common. However, there are a few issues with the standard DAB converter. For instance, utilizing the modulation approach of the phase-shifted primary and secondary bridges, soft switching can be achieved for a relatively limited output and loading range. Numerous DAB control strategies have been put out in the literature [2]–[7] to increase the soft switching range of a DAB converter. But it doesn't fulfill the standards of the voltage range of the on-board charging and discharging equipment. In addition, there is a significant issue with the body diode recovery and turn-off losses of MOSFET switches. Thus, IGBT switches are used by the majority of DAB converters. Recently, resonant topologies, which provide soft-switching over a wide load range, have attracted a lot of attention. The LLC resonant converter in particular has been suggested and investigated to overall effectiveness, as this converter has soft-switching capabilities [8] through [14]. However, a