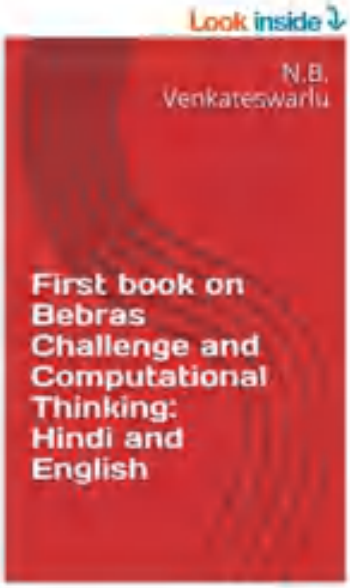

First book on Bebras Challenge and Computational Thinking: Hindi and English: बेब्रस चैलेंज और कम्प्यूटेशनल सोच का परिचय किंडल संस्करण

इनके द्वारा N.B. Venkateswarlu (Author) फ़ॉर्मैट : किंडल संस्करण

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I have first introduced readers to Computational Thinking (CT) and then narrated how Bebras challenge is propagating all over the globe year by year since its inception. The elements of CT, Abstraction, Pattern Recognition, Logic, Algorithms, Decomposition and Evaluation with nice examples and lucid language in both English and Hindi as the book is aimed for Juniors. Also, I have briefly introduced how Bebras challenge got initiated and getting accepted widely around the world.

Mining of EEG Signals for Interpretation of Human Brain Related Ailments: A Survey

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ABSTRACT

In this paper, a detailed analysis of several major works related to study and analysis of Electroencephalography (EEG) signals using imaging and data mining techniques have been presented. The state-of-the-arts methods like spatial analysis, wavelet analysis, frequency domain analysis, artificial neural networks, deep neural networks etc have been discussed with associated contributions in the literature. A comprehensive comparison of all such mechanisms have been done and presented in a tabular manner. This paper also discusses about the existing challenges, shortfalls in present techniques, and future demands of EEG analysis through imaging and data mining techniques.

Keywords: **EEG; image processing; data mining; medical diagnostics.**

1. INTRODUCTION:

Human brain comprises of a huge number of neurons which assume significant job for controlling in general functionalities and conduct of human body regarding inward and outer upgrades. These neurons demonstrate like data transporter from human body to cerebrum. These activities can be captured by Electroencephalography (EEG) as image and signals. The gathered signs and information can be helpful for getting to the human condition yet at the same time it requires the computational knowledge calculation and a model to determine the valuable data. In present age of artificial intelligence, the advancement of the robotized master framework is expected to help the expert master while breaking down the huge measures of physiological information which is required for the wellbeing applications. There are major neurological ailments, for example, Epilepsy, seizure, bruxism, sleeping disorder, rest apnea, quick eye development conduct, night time frontal epilepsy, and brain stroke. Numerous works have been presented so far towards study and analysis of EEG signals through imaging and data mining techniques. These works have significantly contributed towards the advancement in medical science.

The brain of human being is the important organ of the human material structure, and with the spinal string makes up the central indisputable framework. The Framework is the basic steps of the EEG signal processing .Initially the signals are captured with the help of EEG Machine. The pre processing is done for removing the unwanted and noisy data. The feature and characteristics are analysed in feature extraction. The feature selection and optimisation is computed by Data mining, image processing, machine leaning tools and classifiers.

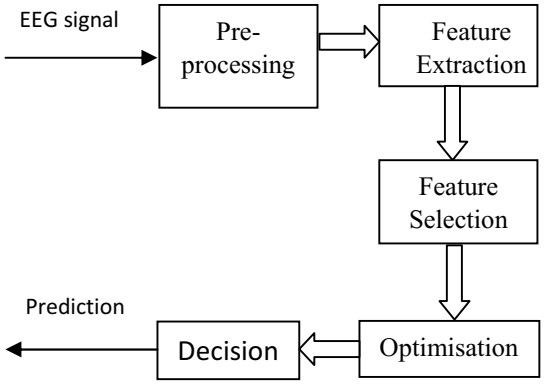

Figure 1 An overview of EEG Signal Processing.

1.1 Electroencephalography (EEG)

EEG was recorded on creature cerebrum in 1875 by Richard Catton. It was first recorded on human mind by Hans Berger in 1929. EEG is the most utilized sign securing strategy due to the high fleeting goals, wellbeing, and convenience. 10-20 standard cathodes position is utilized in EEG signal securing. EEG has low spatial goals and is non-stationary in nature. EEG signals are endangered to ancient rarities brought about by eye squints, eye developments, heartbeat, strong exercises and the electrical cable impedances.

1.1.1. Analysis EEG signals:

The EEG technique is easy, pleasant and overall protected. Besides having tangled hair and possibly feeling to some degree exhausted, you normally

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प्रस्तावना

MIT और Tufts विश्वविद्यालय ने 5-7 साल की उम्र के बच्चों के लाभ के लिए यह अद्भुत SW किया है। इस पुस्तक में, मैं इस अद्भुत SW के साथ एक कंप्यूटर विज्ञान शिक्षक और भविष्य के दादा के रूप में अपने अनुभव को साझा करने की कोशिश कर रहा हूं।

ScratchJr Book in English for 5-7 years old kids: My bonanza for kids, a guided tour for parents, a repository for teachers किंडल संस्करण

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Preface

MIT and Tufts universities are instrumental in bringing this profoundly amazing piece for the benefit of 5-7 old kids. In this book, I am trying to share my interactions with this marvelous piece of SW first as a Computer Science teacher and second as a forthcoming grandfather.

Scratch 3.0 primer for 8-10 years kids: a bonanza for kids and teachers किंडल संस्करण

इनके द्वारा N.B. Venkateswarlu (Author) फ़ॉर्मैट : किंडल संस्करण

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पढ़ने के लिए प्रयोग करें हमारा फ्री ऐप

MIT people are instrumental in bringing this profoundly amazing piece of programming language for the benefit of kids. In this book, I am trying to share my interactions with this marvelous language first as a Computer Science teacher and second as a forthcoming grandfather.

I have included a few hundreds of ready to run projects that spread from very simple ones (tasks) to complex ones (projects). The projects are designed as an interrogating or exploring (or tinkering) manner. Projects are designed along with their learning objectives, learning outcomes.

Some of the important computer science themes such as concise code, iterative solutions, inter process communication through messages, etc., are introduced with live examples. Also, many real life problems are simulated with our example projects.

A Decoupled Low-Frequency Ripple Cancellation Method for High-Power LED Driver circuits

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***Abstract* — Now a days, flickering in LED is a challenge for researchers as it has adverse effect on human health. Using electrolytic capacitor was the initial solution for flickering. However, electrolytic capacitors are not preferred for LED driver owing to short lifetime and more prone to fault. There exists several ripple cancellation (RC) techniques discussed in literature. However, they suffer from complex control structures and high stress across the switches. In this regard, this paper proposes a novel series current RC method to eliminate the double line low frequency ripple and also have removed the electrolytic capacitor. The key features of the proposed RC method include UPF operation throughout without any external circuitry by using the multilevel converter, simple control and reduced smoothing capacitance value. The validation of the proposed method in simulation has been presented.**

***Index Terms* — flickering, LED driver, RC, electrolytic capacitors.**

I. INTRODUCTION

In this new era, meeting the ever-increasing demand for electricity is a growing challenge. Government policies worldwide have been formed and implemented to reduce the lighting consumption which is around 25% of the total electricity consumption globally [1]. The various lamps used for lighting purpose are- incandescent lamps, halogen lamps, CFL(s), high-intensity discharge lamps (HID) etc. However, the efficiency of these lamps degrades with the increase in temperature. In this regard, highly efficient lamps that can operate at high temperatures are essential. In recent years, LEDs that work on electroluminescent principle have turned to be highly efficient, reliable and alternative lighting source. Moreover, there are LEDs having efficacies as high as 100 to 150 lm/W and longer lifetimes typically 80,000h, available [2]. They have characteristically low energy consumption, high luminous efficiency, small size, longer lifetime, pollution-free and faster switching than conventional lamps [2]-[4]. Although, LED lamps are expensive than other lamps but their higher efficiency and longer life (50,000 to 80,000 hours) make them economically more viable to use. LEDs have certain limitations also such as temperature dependence, voltage sensitivity, electrical overstress (over-voltage or current), area light source etc. Moreover, LEDs are low-voltage lighting sources, where a small voltage change produces a considerable variation in current and is not desirable. Thus, LEDs are fed from the grid by an electronic circuit known as LED driver which supply constant DC voltage at constant current. The conventional LED drivers have been characterized into two categories; i) two-stage [5] and ii) single-stage configuration [6]. The two-stage configuration usually achieves high power factor (According to Energy star [7], power factor should be higher than 0.9 for the commercial applications and 0.7 for residential applications) and it is designed specifically to control the load current. However, the system's performance is degraded in terms of poor efficiency and low power density. To overcome such things, a high capacitance electrolytic capacitors are required (~4700 μF) at the output stage of the power factor correction (PFC). The PFC output capacitance value can be reduced to a small value ~1 μF/W [8] but in the process voltage ripple increases. So, there is a trade-off between output capacitance value and voltage ripple.

Single-stage driver circuits still requires a large electrolytic capacitors because of the AC-DC driver's circuit may transmit the 100 or 120Hz ripple to the LEDs, which can cause the double line frequency LED flicker [9]. Flicker can have a bad effect on human body including eyes and headaches. However, electrolytic capacitors are not preferred for LED driver as it suffers from the short lifetime (<5000h [10]), limits the reliability of the driver circuits. According to [10], the electrolytic capacitor life is a degraded when the operating temperature is high. Some solutions have been proposed in the state-of-the-art for reducing this ripple and remove or reduce the electrolytic capacitors.

One method is proposed to inject odd harmonics into the input current side [11],[12], to remove or minimise the double line current ripple in LED drivers. Another RC method is proposed in [13],[14]. The summary of the above current RC methods are that to trade-off between reducing a double line low frequency current ripple and achieving a high power factor. Irrespective of that, these driver circuits have compromise with complex control strategy, high voltage stress across the switches and high switching frequency which will increase the losses.

In this work, a novel current RC method has been proposed to eliminate the double line low frequency ripple and removed the electrolytic capacitor as shown in Fig. 1. The proposed RC method is based on an H-Bridge inverter coupled with bridge rectifier circuit. H-Bridge inverter is used to

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Implementation of Hysteresis Voltage Control for Different Inverter Topologies

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***Abstract*— Regulation of the load voltage of inverter for intermittencies in source and load is a tedious task. For this purpose, various techniques have been discussed in the state of the art. Among the various methods, the PI controller is widely used. However, the major limitation of this method is complex computations involved in obtaining the values of proportional and integral gains. In this regard, this paper focuses on hysteresis voltage control for inverters in which no complex computations are involved. The major advantage of the hysteresis control is that the load voltage always follows the reference waveform irrespective of the intermittencies. The implementation of the controller for basic inverter topologies has been investigated. Further, the possibility of implementing the hysteresis voltage control for multilevel inverters has been investigated. This method has been applied for a basic half-bridge and full-bridge inverters in the MATLAB/Simulink environment. Further, it has also been validated for the T-type multilevel inverter for various intermittencies.**

***Index Terms*—Hysteresis voltage control, simulations of half-bridge, full-bridge inverters and T-type multilevel inverter.**

I. INTRODUCTION

The DC to AC power electronic converter termed as the inverter is in wide use in various industrial applications. The major applications include UPS, home inverters and even more widely in renewable energy integration [1, 2]. Renewable energy systems are the major harness for electrical power generation in the present scenario due to their reliability and cost competitiveness with the conventional thermal generation systems.

In most of the renewable energy systems, the DC-DC converter is adopted for realizing maximum power from the source. The DC power extracted is converted to AC for commercial applications. However, maintaining the regulated voltage at the load terminals for load intermittencies is essential. For this purpose, the gate signals generated are varied using the different control strategies. Among them, most widely used control strategies are linear PI control, predictive dead-beat control and hysteresis control [3]. The linear PI control requires tuning of control parameters for obtaining the optimal gain values (K_p and K_i) for the desired transient and steady-state response. These parameters can be determined using several methods like Zeigler-Nichols method and optimization-based methods. However, these methods involve high computational efforts for obtaining the optimal values. The dead beat controller even though not widely adopted is as famous as PI controller. However, it does not ensure a zero steady-state error. Whereas, the hysteresis control technique ensures optimal tracking of the reference trajectory. Moreover, this technique requires no prior information of load parameters and has a quick response current loop. Further, the hysteresis control is more competent with respect to switching loss, fault tolerance, and total harmonic distortion.

Hysteresis current control (HCC) has proven to be the most conventional and widely adopted hysteresis control technique. This technique ensures efficient tracking of the load current resulting in a sinusoidal current to the load connected at the inverter terminals [4] - [13]. Even though the current is well regulated and tracked, voltage regulation is equally important. However, HCC fails to regulate

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Control of four tank system using Grasshopper Algorithm

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***Abstract*—The present paper is control of quadruple tank system using nature inspired Grasshopper algorithm. Modeling of quadruple tank system has non-linear dynamics and is controlled by conventional PID controllers. The gains of these controllers are optimally tuned by minimizing the integral square error. In this work Grasshopper algorithm is used for this purpose and the optimally tuned PID gains are used for the control the levels of the quadruple tank system. The results are demonstrated using MATLAB/Simulink.**

Keywords—Four tank system, grasshopper algorithm, level control, optimization

I. INTRODUCTION

Quadruple Tank System is widely adopted system by many researchers since two decades. Control of such system is still a challenge in terms of learning due to non-linearity in the model. The system comprises of four tanks, two drives for pumping of fluid, one reservoir, and control valves. Level in the lower two tanks is the output and voltages to the drives are the input. Johansson [1] has introduced this system as laboratory experiment in his study. Different control strategies that can be implemented in this system provided a wide scope of learning at undergraduate level [2]. Many researchers have proposed controllers to reduce or eliminate the interactions prevalent in the system, decentralized robust control, MIMO PID tuning method [3] and modified PI-D controller implementation [4]. In the recent past, optimization techniques are used for enhanced control of this system. Thamallah [5] has proposed a new constrained PSO for fuzzy predictive control of quadruple-Tank process; data based predictive control scheme in which weights are optimized is studied in [6]. Speed control of BLDC motor has been implemented using optimization methods [7]-[9].

However, it seems from the literature that still optimization techniques for control of this system need to be explored more. The present work proposes recently developed Grasshopper optimization method for level control of quadruple tank system. In which PID controller gains are optimally tuned and implemented in off-line. The validity of the work is done by simulating the system using MATLAB/Simulink environment.

II. QUADRUPLE-TANK SYSTEM

A. Four tank system considered for study

Fig. 1 depicts the setup of the said system [1]. The system consists of four tanks. Liquid from the reservoir is pumped into the tanks by using two drives. Pump1 pumps the liquid from the reservoir into tank 1 and tank 4. Pump2 pumps the liquid from the same reservoir into tank 2 and tank 3. Liquid in the tank 4 falls into tank 2 by gravity and liquid in the tank 3 falls into tank 1 by gravity. Thus interaction is established in the system. The purpose of control theory implementation to this system is to maintain the liquid level in the tanks 1 and 2, designated as h_1 and h_2. These liquid levels h_1 and h_2 are the control variables (CVs) and the inputs are the voltages to the pumps, v_1 and v_2. The ratio of water diverting to tank 1 and tank 4 is designated as γ_1 and the ratio of water diverting to tank 2 and tank 3 is designated as γ_2. These are also known as flow ratios.

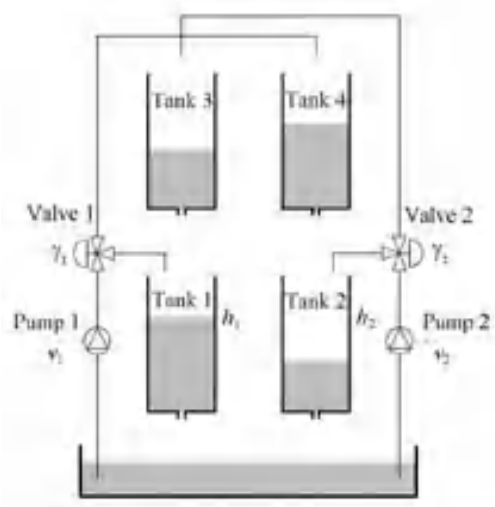

Fig. 1. Quadruple Tank System

B. Model

The system dynamics can be modeled by ordinary differential equations, the dependent variables (state variables) being the height of liquid level in each tank. Equation (1) – (4) represents the mathematical model.

$$\frac{dx_1}{dt} = -\frac{a_1}{A_1}\sqrt{2gh_1} + \frac{a_3}{A_1}\sqrt{2gh_3} + \frac{\gamma_1 k_1}{A_1}v_1 \quad (1)$$

$$\frac{dx_2}{dt} = -\frac{a_2}{A_2}\sqrt{2gh_2} + \frac{a_4}{A_2}\sqrt{2gh_4} + \frac{\gamma_2 k_2}{A_2}v_2 \quad (2)$$

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A Reliable Fault Tolerant Inverter

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***Abstract*—A reliable fault tolerant inverter is presented to overcome switch open-circuit faults. The proposed circuit consists of four uni-directional and two bi-directional switches. The proposed topology delivers 7-levels output voltage in symmetrical configuration. It has six solid-state relays to isolate the faulty switch. These relays help in maintaining output voltage and power magnitude for an open circuit fault in any switch. A comparative analysis of the proposed topology is performed with Cascaded H-Bridge (CHB) in terms of number of switches, number of relays, output voltage magnitude and reliability. The proposed inverter is simulated in MATLAB/SIMULINK and its reliable nature is justified using a developed hardware setup.**

***Index Terms*—Fault tolerance, Multilevel inverter, Open-circuit fault, Reliable inverter.**

I. Introduction

The basic Multilevel inverter (MLI) topologies such as flying capacitor (FC), cascaded H-bridge (CHB) and neutral point clamped (NPC) are very popular for their reduced filtering requirements with improved power quality [1]. These features of MLI intensified the scope of research in reducing switch and component counts to generate maximum number of levels [2]. Various reduced switch topologies are proposed in a view to reduce cost and size of the circuit with enhanced number of output voltage levels [3], [4]. The increase in number of levels further improves the quality of output voltage thereby reduction in cost incurred on filters [5]. The reduction in number of switching devices led to increase in voltage stress across each switch. This enhanced stress on switching devices would increase open-circuit faults in the switches [6].

In conventional MLI, there are redundant states for each level i.e., each voltage level could be obtained by multiple switching combinations. But, with reduced switch topologies, these redundant states are absent leading to cease in operation during switch open circuit faults [7]. To address this issue, the concept of fault tolerant MLI evolved to optimize the component count and redundant states to enable operation of MLI even when there is an open circuit fault in certain switches [8]. Fault tolerant structure based on FC topology is presented in [5], [6]. A bidirectional switch or relay is added across the output of each bridge of a conventional CHB inverter to isolate the corresponding faulty bridge for an open circuit fault in any one of the switches in the bridge [9]. The clamping diodes are replaced with the active switching elements in a basic single phase NPC structure to enhance its fault tolerance [10]. Fault tolerant topologies to address open circuit faults in switches are proposed in [11], [12]. A three phase asymmetrical fault tolerant topology is proposed to address open circuit faults in switches [13]. In [14], one leg of NPC and one leg of CHB are joined with a bidirectional switch to develop a fault tolerant inverter. Maintaining the output power and output voltage magnitude is one of the common issue identified among all these topologies from literature. To address it, this paper proposes a reliable MLI to isolate open-circuit faults in switches by maintaining output voltage magnitude and output power.

Semiconductor switches contribute to 40% of the faults in the inverters and open-circuit faults are the most common faults in inverters [15]. Open-circuit faults occur due thermal stress and lifting contacts with age & stress [15]. Gate driver fault results in stoppage of gate pulse making it a switch open-circuit fault. Short-circuit faults need additional protective components to address them [15]. So, this paper presents a reliable fault tolerant inverter to address switch open-circuit faults.

II. Reliable Inverter

A reliable MLI structure is presented with four uni-directional (S_1, S_2, S_3 & S_4) and two bi-directional switches (S_5 & S_6) as shown in Fig. 1. It comprises of three sources (V_1, V_2 & V_3) developing 7-levels output under symmetrical configuration ($V_1 = V_2 = V_3 = V$). The proposed circuit also consists of six relays (R_1, $R_1^{'}$, R_2, $R_2^{'}$, R_3 and $R_3^{'}$) to reconfigure the system during switch open circuit faults. The relays R_1, R_2, R_3 are complement to $R_1^{'}$, $R_2^{'}$, $R_3^{'}$, respectively.

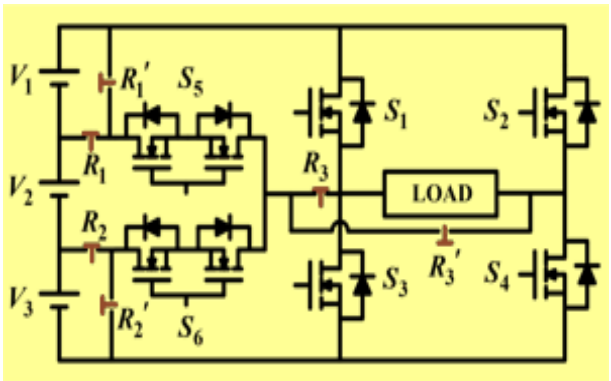

Fig. 1. Proposed reliable fault tolerant inverter.

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Adaptive Sliding Mode Control of PUMA 560 Robotic ARM

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***Abstract* -Adaptive sliding mode control has been successfully applied to the PUMA robotic arm. Nowadays robots are integral part many industrial applications. Hence control of these plays crucial role. PUMA robots are well known and in this present work, adaptive sliding mode control is used to control the position. The efficacy of the presented controller has been validated using MATLAB simulations.**

Keywords – PUMA – robot – adaptive sliding mode contro*l.*

I. INTRODUCTION

Programmable Universal Machine for Assembly (PUMA) was well known for its robotics. The PUMAs were the most popular robots of last decades of twentieth century. The design of such robots was classified into three categories viz., 200 series, 500 series and 700 series. The 200 series comprises of smaller units of desktop size. The 500 series were designed to reach a height of 2 meters and were the most popular ones. The last one among these categories is 700 series which were developed for carrying out works such as paint, welding, assembly line etc. One common thing for all these categories is that the design contains two parts: (i) the mechanical arm and (ii) the control system. These two parts are generally interconnected by two multi-conductor cables where in one cable supplies power to the servo motors and brakes and the second one exercises feedback positioning for each joint of the assembly.

II. MODELING OF PUMA ROBOTIC ARM

The general for of 6-DOF (Degrees of freedom) configuration equation is only utilized in the present work to make into a 3-DOF robot. Here, the lass three joints were kept blocked i.e., the initial states of these joints were assigned zero, however the robot will be moving. This leads to formation of equations for the kinematics of 3-DOF robot which permit us to define a new D-H coordinate system that can be implemented. Here a homogenous transformation matrix relating the 3^{rd} coordinate frame to the first coordinate frame is developed. However, the 3-DOF PUMA will have the same kinematics of its 6-DOF convenient with q_4, q_5 and q_6 set to zero. The following set of equations is considered (1). The robotic arm is shown in Fig.1.

"For the configuration space equation of the robot

$$\Gamma = A(q).\ddot{q} + B(q).\dot{q}\dot{q} + C(q).\dot{q}^2 + g(q)$$

We set $q_4 = q_5 = q_6 = 0$, this yields

$$\ddot{q} = \left[\ddot{q}_1 \ldots \ddot{q}_2 \ldots \ddot{q}_3 \ldots 0 \ldots 0 \ldots 0 \ \right]^T,$$

$$\left[\dot{q}\dot{q}\right] = \left[\dot{q}_1\dot{q}_2 \ldots \dot{q}_1\dot{q}_3 \ldots 0 \ldots 0 \ldots 0 \ldots \dot{q}_2\dot{q}_3 \ldots 0 \ldots 0 \ldots 0 \ldots 0 \ldots 0 \ldots 0 \ldots 0 \ldots 0\right]^T,$$

$$\left[\dot{q}^2\right] = \left[\dot{q}_1^{\,2} \ldots \dot{q}_2^{\,2} \ldots \dot{q}_3^{\,2} \ldots 0 \ldots 0 \ldots 0\right]^T,$$

$$B(q).\dot{q}\dot{q} = \left[b_{112}.\dot{q}_1\dot{q}_2 + b_{113}.\dot{q}_1\dot{q}_3 + b_{123}.\dot{q}_2\dot{q}_3 \ldots b_{223}.\dot{q}_2\dot{q}_3 \ldots 0 \ldots b_{412}.\dot{q}_1\dot{q}_2 + b_{413}.\dot{q}_1\dot{q}_3 \ldots 0 \ldots 0\right]^T \text{ and}$$

$$C(q).\dot{q}^2 = \left[c_{12}.\dot{q}_2^{\,2} + c_{13}.\dot{q}_3^{\,2} \ldots c_{21}.\dot{q}_1^{\,2} + c_{23}.\dot{q}_3^{\,2} \ldots c_{31}.\dot{q}_1^{\,2} + c_{32}.\dot{q}_2^{\,2} \ldots 0 \ldots c_{51}.\dot{q}_1^{\,2} + c_{52}.\dot{q}_2^{\,2} \ldots 0\right]^T$$

The angular acceleration is found as to be

$$\ddot{q} = A^{-1}(q).\left\{\Gamma - \left[B(q).\dot{q}\dot{q} + C(q).\dot{q}^2 + g(q)\right]\right\}$$

Now let $I = \left\{\Gamma - \left[B(q).\dot{q}\dot{q} + C(q).\dot{q}^2 + g(q)\right]\right\} \Rightarrow \ddot{q} = A^{-1}(q).I$

$$I_1 = \Gamma_1 - \left[b_{112}.\dot{q}_1\dot{q}_2 + b_{113}.\dot{q}_1\dot{q}_3 + b_{123}.\dot{q}_2\dot{q}_3\right] - \left[c_{12}.\dot{q}_2^{\,2} + c_{13}.\dot{q}_3^{\,2}\right]$$

$$I_2 = \Gamma_2 - \left[b_{223}.\dot{q}_2\dot{q}_3\right] - \left[c_{21}.\dot{q}_1^{\,2} + c_{23}.\dot{q}_3^{\,2}\right] - g_2$$

A high-gain multi-input DC –DC converter for Vehicle Application

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ABSTRACT

In the present paper a multi-input DC-DC converter with three inputs including one battery storage unit is proposed. This non-isolated converter has shown the significant improvement in the voltage gain. It is suitable for hybrid electric vehicle and Vehicle-to-Grid applications in which two power sources and third input source is battery energy storage unit. The power control is proposed to achieve the better efficiency. The validity of the present work is done through many simulations.

Keywords: High Gain, DC-DC converter, Vehicle-to-Grid applications

1. INTRODUCTION

Air pollution in cities due to vehicle exhausts is rising at an alarming rate, especially Indian cities it is just like an emergency condition. These pollutants create severe health problems and melting of glaciers. Therefore, mitigation of the air pollution by two or three wheelers, cars and trucks can be done through shifting to electric vehicles (EVs). EVs are better than conventional petrol or diesel vehicles in some areas such as low maintenance cost due lesser moving parts, low noise levels, good acceleration of electric drive. However, EVs at present have drawbacks of large battery weight or size, large charging time of batteries, low battery life and high initial cost of the vehicle etc. The schematic diagram of the EV with proposed converter is shown Fig.1.

The EV shown Fig.1 consists of different subsystems in which Battery, Fuel cell & Solar PV as Energy storage and voltage sources respectively, multi-input DC-DC converter as power conditioner, and Electric Motor drive. The present paper is inspired by [1] and is modified to get better voltage gain. The efficacy of the proposed converter is checked trough many simulations using MATLAB/Simulink. The power management of the converter is also described for charging and discharging of the Energy Storage unit.

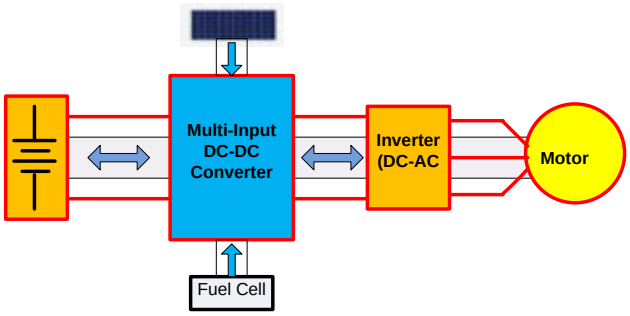

Fig.1 Schematic diagram of multi input converter based EV [1]

There are many works on MIMO converters in the literature. Recently published works are in [2]-[10].

In the present paper, an improved version of power converter is proposed with more voltage gain. This work is inspired by the recent work proposed by [].

Design and Analysis of Series Loaded Resonant Converter fed by Standalone/PV Source

Design and Analysis of Series Loaded Resonant Converter fed by Standalone/PV Source

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Abstract. The deficiency of power is an enormous issue due to higher growth demands among the utility customers which led the focus on renewable energy sources for electricity generation. Solar energy has gained high popularity due to highly abundant, clean, economical and sustainable when compared to other alternative energy sources. The DC-DC converter topologies are used in solar photovoltaic (PV) applications for power conversion due to less cost, highly reliable, highly efficient, and robust operation. These converters incorporate a wide variety of voltage variations and protection against overvoltage. In the recent times, solar power converters using various soft switching techniques due to high switching frequencies which reduce the size, cost, weight and loss of the converter. The series resonant power converters are one such soft switching converter which is widely employed due to their high - efficiency with the benefit of low switching losses. The paper confers on the analysis of Series Loaded Resonant Converter with low loss switching by applying solar PV as an input source. The converter behaviour is observed in various operating modes concerning the resonant frequency. The design parameters of the proposed converter are validated in MATLAB/SIMULINK environment.

1. Introduction

The demand for energy is increasing at a considerable rate in every country. Higher demand for electrical energy and depletion fossil fuels necessitates the use of renewable energy [10],[11]. This environmental aspects put restrictions on the use of conventional energy sources. Various types of power converters are used in such applications. For applications involving PV and battery, DC-DC converters are commonly used. In certain instants, there may be need to step-up and step-down the dc input supply. In some applications, there is need for bidirectional power transfer. They are used to match the loads of the power supply. Because of this ease, today the DC-DC converters are increasingly found in applications such as regulated power supply, domestic, automobile, battery charging, etc. These converters are also useful as power sources with multiple outputs for control circuits. [1].

In the last few decades, the attempts were redirected towards the use of resonant converters. The idea was to include a resonant tank in the converter to create sinusoidal waveforms of current and/or voltage using lossless/soft switching [4]. These low loss switching such as zero-voltage switching (ZVS) or zero-current switching (ZCS) can be shaped for power switches for achieving transient free waveform and also allows the switches to work at higher frequencies and in turn reduces electromagnetic interference (EMI). The performance of SLRC will undergo low loss switching, when the switching frequency is higher or

Transformer Based MLI to Integration of PV Using Power Angle Based MPPT Controller

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Abstract - **With the increased demand of energy, the grid integrated renewable systems have gained high popularity in the recent past. This integration has increased the use of power electronic converters in the power system, which increased the control complexity of the systems. The increased semiconductor count in tracking the maximum power point, conversion process decreases the efficiency and increases the size, cost and controller requirements of the system. In this regard, this paper proposes a grid connected PV system without DC-DC converter and power angle based MPPT controller. Further, this paper also proposes a distribution transformer based multi-level inverter (DTMLI) which produces two different levels of AC voltages (415 V and 11kV) to integrate with grid and supply the local AC loads in a distribution system. The objectives of MPPT and switching pulses of DTMLI are controlled by the proposed power angle controller. The use of DTMLI reduces the semiconductor count and since only a single controller is used for dual purpose the control complexity of the system will be significantly reduced. The proposed system with the power angle controller has been validated in the MATLAB/ Simulink environment for source and load intermittences.**

Keywords - **DTMLI, power angle, MPPT**

I. INTRODUCTION

In the recent years, with the depletion of fossil fuels, demand for renewable energy resources is increasing day by day[1]. At present, one of the key research areas in renewable energy are grid connected photovoltaic systems (GCPS). The cost reduction of photovoltaic (PV) panels, environmental benefits, increased demand of energy, integration with existing grid, and advances in power electronics are some of the reasons for the focus on the grid connected photovoltaic systems. In a grid connected photovoltaic system, the key performance criteria are conversion efficiency, maximum power point (MPP) tracking, and total harmonic distortion (THD) of the power injected into the grid. All these performance criteria are highly dependent on the choice of the inverter topology and the control technique utilized for the inverter.

Inverter plays a vital role in energy conversion process from DC to AC in grid connected system. In past decade, multilevel inverters have gained high popularity in renewable energy application. Generally three types of multilevel inverter topologies namely diode clamped MLI, flying capacitor MLI and the cascaded H-Bridge MLI are utilized for high voltage and high power application. In diode clamed MLI, diode count increases with increase in the output voltage levels, in flying capacitor MLI capacitor count has its dominance and in CHB the number of DC sources[2], [3]. Reduced switch multilevel inverter topologies have developed to overcome the drawback of conventional multilevel inverter topologies regarding the component count. A potential drawback of all these topologies is high number of independent floating DC voltage sources that makes their practical use quite questionable. In this regard this paper mainly concentrates to eliminate the utilization of multiple DC sources in multilevel inverter topology with reduced count of semiconductors and passive elements.

In existing Medium voltage(MV) Grid connected PV system consisting of DC-DC converter to extract maximum power from PV array, inverter / multi-level inverter to convert DC to AC and distribution transformer to match the inverter voltage to grid voltage[4], [5]. In this paper a new structure and adaptive controller is proposed for integration of PV system to grid. In this structure, DC-DC converter and MLI are replaced by distribution transformer based multilevel inverter (DTMLI). Further, to reduce the number of controllers, a power angle based controller is proposed to extract maximum power point (MPP) from PV array.

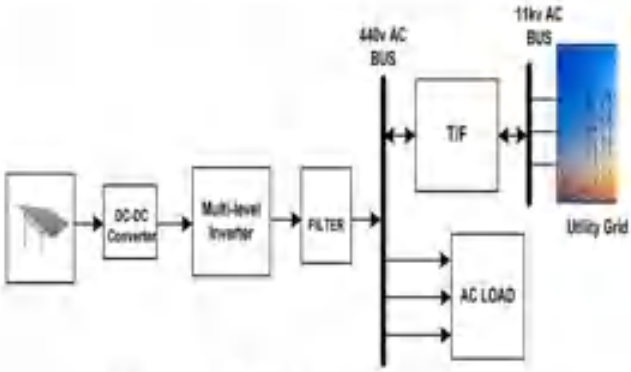

Fig.1. Block diagram of conventional system

II. PROPOSED PV INTEGRATION SYSTEM

The proposed PV integration system is depicted in Fig.2. consists of two three phase three winding transformers to produce multilevel output[3]. The primary windings of the three winding transformer is connected to PV array through power electronic switches and remaining two windings in the transformer is used to create two AC buses. AC bus-1 is high voltage bus which connected to 11kV utility grid and AC bus-2 is low voltage bus and feeds the local loads. Further, the

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Adaptive sliding mode controller design for a Single input –Multiple output (SIMO) DC–DC converter in Electric Vehicle Application

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Abstract
In the present work, a single input and multiple output converter is designed and implemented for EV application where in single input of a battery is converted into multiple outputs of desired voltage levels. It is also tested with solar PV with peak power tracking algorithm in place of battery.
The output voltage of the converter can fed to a BLDC motor (or) any motor drive and is controlled using recently developed an adaptive sliding mode controller (ASMC). ASMC is used in the inner current controller to achieve the better performance of closed loop control. The efficacy of the present work has tested with many simulations using MATLAB/Simulink.

Keywords: *Adaptive sliding mode controller, SIMO DC-DC converter, Electric Vehicle*

1 Introduction

The landscape of the mobility is changing across the world and in which usage of electric vehicles will influence the financial position of a country. In an electric vehicle, battery, electric motor drive and power distribution are the major subsystems in addition to other mechanical systems.
The Fig.1 is schematic version of the proposed work where in outputs are connected to different parts of the EV.

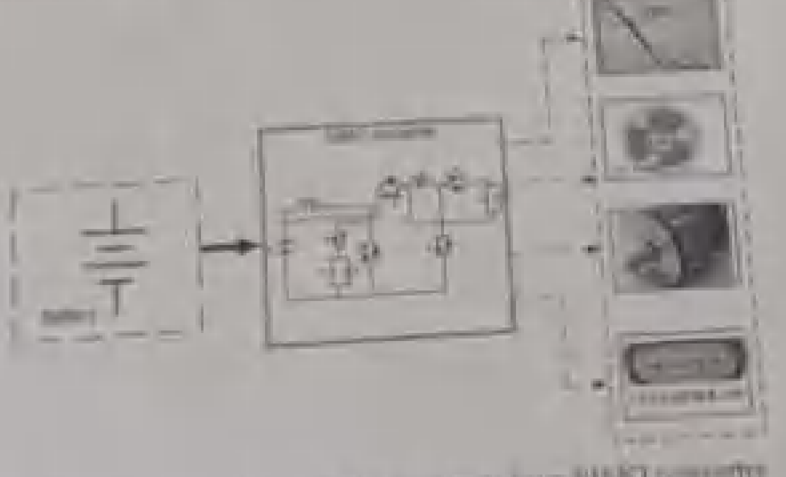

Fig.1 Schematic diagram of DC outputs from SIMO converter

Reliability analysis of Multiple Input Converter

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***Abstract*—Multi input converters (MICs) emerged as an alternative to the conventional single input DC-DC converters and are widely used for integrating renewable energy sources. MIC topologies have evolved and are still evolving for different applications. The state of art reported different topologies, however, a limited literature details about the performance and its life time under different operating conditions. The estimation of current state of health and life time remaining helps to reduce the maintenance cost and gives an idea on suitability for real time implementation. In this regard, this paper aims to carry out the analysis of reliability for a MIC which possesses simple and modular structure and provides high control flexibility. The estimation procedure adopted could be used to estimate the reliability of any power converter. Further, the effect of parametric variation of the components used on reliability has also been discussed.**

Keywords— Multi input converter, Reliability, rate of failure

NOMENCLATURE

λ_{sys} system failure rate
λ_b base failure rate
π_A application factor
π_Q quality factor
π_E environmental factor.
π_T temperature factor
T_J junction temperature
T_a ambient temperature
θ_{JA} junction to thermal resistance
π_S electrical stress factor
π_C contact construction factor
π_C as capacitance factor
π_{SR} series resistance factor
π_V voltage stress factor
T_{HS} hot spot temperature
P_S total power dissipated across the switch
P_D power dissipated across the diode
T_A, the ambient temperature

I. INTRODUCTION

The multi input converter (MIC) has been paid tremendous attention of researchers in the recent past, especially to integrate sources. The MICs possess the key features of modular and simple structure, high control flexibility among the loads and sources[1]–[4]. The initial development of MICs mainly focused on the development of topologies for integration of sources with different voltage-current characteristics for grid connected applications. Later, the development has focused on the topologies employing energy storage systems for electric vehicle applications and photovoltaic applications as a solution for partial shading problems.

Despite of the various topologies discussed for various applications, the traditional single input converters are widely in use in most of the applications. One of the major reasons might be the limited literature on calculating the effect of the parameters and their contribution in the performance of the MIC. One of the most important attributes of performance is reliability.

Reliability in [5], [6] is defined as the possibility of a device to carry out the necessary functions for an anticipated time period under stated operational and environmental conditions. A system's reliability is highly dependent on the time and typically decreases with progress in time. It also depends on other factors like the devices and power modules that are used in the power converter. Further, this analysis also quantify the level of risk involved and determines the critical components/parameters, and also their maintenance strategy.

An exhaustive survey on reliability of power electronic converters has been discussed in [7]. In [8] a survey on reliability of power converters has been presented and also, the statistical reports on fragile components report that are more prone to fault parts are capacitors and semiconductor switching devices [9] illustrated in Fig.1. Further, the reliability analysis of the converter estimates the present state of health [8].

The advancements made especially in the power semiconductor sector increased the efficiency of power converters nearly above 98%. However, the reliability of the converters is of major concern especially in the renewable energy systems like photovoltaic applications [10], [11]. This is due to the fact that the PV panels have about 20 years of life time and hence the converters should have low failure rates in the entire period. Hence, a reliable power converter is essential to reduce the risks of failure under operation which results in reduced maintenance cost. This motivates the researchers to develop reliable power converter topologies or evaluate the reliability of the existing power converters to validate their real time implementation.

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Review on General Architecture and Selection of Multiple Input Converters

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***Abstract*—DC-DC converters are the major power electronics interface units that are being widely used in diverse fields. With the increase in demand for renewable energy sources, the demand for converters that integrate these sources led to the transformation to multiple input converters (MICs) from single input converters (SICs) to in the recent past. MICs penetrated into several applications ranging from millivolt to kilovolts and milliwatt to megawatt for effective and efficient integration of sources with different voltage-current characteristics. With the advent increase in MIC topologies, it becomes quite challenging and confusing to select one with desired specifications for a specific application. Depending on the characteristics, MICs have been categorized and each of them possesses both advantages and limitations. The general categorization and comprehensive review based on the characteristics of MIC have been presented in this paper. The idea of the paper is to present a clear picture, general rules and framework of MIC topology for selection with respect to the application. Further, the advantages and limitations of few recently proposed MIC topologies, followed by the selection for different applications are discussed.**

Keywords— Multi Input Converters, Non-isolated, Gain

I. INTRODUCTION

With the drastic increase in usage of renewable energy sources (RES) in both medium and high level power generation, the demand power electronic converters proportionally increased to meet the requirements of regulated voltage and power levels. Moreover, solar or wind individually fails to meet the load requirements due to high intermittencies in the environmental conditions, which compels the integration of various energy sources [1]. Employing individual converters for integrating the sources to a common dc bus is conventional means. This technique, even though highly popular and widely used, it suffers from major difficulties in designing a complex controller for each source and also, has high component count, that increases the cost and control complexity of the overall system [2]. Further, when adopted in grid-connected/ standalone applications, establishment of communication among the sources is one of the major limitation resulting in a complex control and increased cost [3].

In order to address these issues, a family of new converters, named as MIC has evolved. These converter topologies have been developed so as to integrate multiple sources and connect them to the common dc bus [3]. These converters effectively integrate sources possessing dissimilar characteristics. The key features of MIC that made them to gain high popularity include simple and modular structure, low device count, reduced number of conversion stages and high degree of control freedom. The several applications of MICs include electric/hybrid vehicles, uninterrupted power supplies, satellite and aerospace applications, grid, and standalone systems, and hybrid systems with and without energy storage [3]–[7].

With the technological development, employing MICs, for various applications, this has become one of the prime areas of focus for researchers [8], [9], [18]–[20], [10]–[17]. With this increasing demand, the researchers have developed and are still developing topologies with more emphasis on application. In general, an MIC selected can be adopted for a group of applications, and similarly, an application can adopt more than one MIC, which is a challenging task to pick one up from the state-of-art topologies for desired application. Further, every MIC topology has its unique feature(s) and area of applications and hence finding a solution satisfying all the needs is quite challenging. In this regard, this review will be a valuable source for industry and academic readers as well to realize MIC for precise applications and identify their respective advantages and limitations. Motivated by the approach for application-oriented developed in the state of the art, this paper intends to offer "one-stop" solution for selection of a MIC topology for an application.

The paper is organized as follows: Section 2 categorizes the MICs based on their characteristics. Further, Section 3 provides guidelines for the selection of proper MIC topology for a specific application. A brief discussion on the applications has been discussed in Section 4 followed by remarkable conclusions in section 5.

II. CATEGORIZATION OF MICS

The general categorization of MICs is depicted in Fig.1 and discussed in this section

(*a*) Based on Isolation Requirement
(i) Non-isolated

"Non-isolated" imply the absence of isolation between the source and the load. Non-isolated converters are simple in design and control aspects whose general structure is illustrated in Fig.2. The combination of source with diode or switch or both is referred to as "cell." A number of such cells are combined to develop a converter and then connected to a dc bus. Due to the absence of transformers, these converters possess the benefit of less cost and weight. The structures are developed with either a common ground [9], [19] or with few inputs grounded [6], [20] while few others have return paths connected through the ground, however, the ground is not electrically connected. These non-isolated structures are formed both with and without magnetic coupling for several applications. If the application demands high gain, magnetically coupled MIC is advantageous else MIC without magnetic coupling is highly preferred, to reduce the cost of the system. For high power applications, MIC with high gain using magnetic coupling is preferred to improve the system

Reliability Assessment of a Hybrid PV/Battery Converter

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Abstract

Renewable energy systems with individual converters have drawn the attention of researchers in the recent past due to several reasons. However, individual converter for sources increases the size, control complexity and cost of the system. In this regard, this paper proposes a multiple input converter that integrates PV and battery. The proposed converter possesses the advantages like simple structure, high control flexibility and efficient integration of sources. Most of the emerging MIC topologies fail to estimate the lifetime of the converter which is an essential parameter for real-time implementation. Therefore, this paper aims to evaluate the reliability and effect of various parameters on reliability of the proposed MIC. Further, the reliability of the system depends on various factors such as on the on-state resistance of the switch, junction temperature and values of passive elements. In this regard, the effect of major factors on reliability has been discussed and the mean time to failure has been evaluated. This evaluation aids in estimating the failure rate of the components and thereby improving the reliability of the proposed MIC.

Keywords

Multi-input DC–DC converter Hybrid PV Reliability assessment

Nomenclature

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A Note on Detection of Communities in Social Networks

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Abstract:
The modern Science of Social Networks has brought significant advances to our understanding of theStructure, dynamics and evolution of the Network. One of the important features of graphs representing the Social Networks is community structure. The communities can be considered as fairly independent components of the social graph that helps identify groups of users with similar interests, locations, friends, or occupations. The community structure is closely tied to triangles and their count forms the basis of community detection algorithms. The present work takes into consideration, a triangle instead of the edge as the basic indicator of a strong relation in the social graph. A simple triangle counting algorithm is then used toevaluate different metrics that are employed to detect strong communities. The methodology is applied to Zachary Social network and discussed. The results bring out the usefulness of counting triangles in a network to detect strong communities in a Social Network.

Keywords: Strong, communities, Triangle counting, Social Networks, Clustering Coefficient.

1. Introduction

In recent years, there is a growing interest in understanding the structure, dynamics and evolution of complex Networks such as World Wide Web (www), Biological Networks, Technological Networks, Social Networks etc., [1].A network is basically a set of items called the vertices or nodes with connections between them called edges. As graphs are a ubiquitous data representation that can be used to model complex relations in a wide variety of applications ranging from Social Sciences to Information Systems [2], graph theory can be used to study the complex networks modeled as graphs. The social network provides a record of global human interactions at a scale that is hitherto unprecedented and these are aninvaluable resource for analyzing social allegiances, discovering entities with shared interests and identifying the key players in the social media [3]. It is observed that the size of social networks such as Facebook, Twitter, Instagram etc. with hundreds of millions of users and billions of social connections are growing day by day and an analysis of such networks is highly difficult. However, Graph theory provides techniques for fruitful analysis of these networks. Social network analysis can be used to identify important social actors, highly or sparselyconnected communities and interactions among the various entities in the underlying network [4]. The Social networks differ from most other types of networks in two important ways namely network transitivity and assortative mixing or positive correlations [5]. Social networks are often seen as emerging from various social processes or mechanisms and the pattern of network ties in themtend to reveal the processes that have given rise to them [6]. Furthermore, in a social network, thedistribution of edges is not only globally, but also locally inhomogeneous

With high concentration of edges within special groups of vertices and low concentration between these groups leading to the concept of community structure [7]. The community structure plays a significant role in the analysis of social networks and intense studies on this, is bound to reveal important patterns in the network aiding theanalysis of the dynamics and structure of the system. The community structure is closely related

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Image integrity verification using blockchain

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ABSTRACT

Digital image processing today has become simple thanks to powerful computers, advanced tech services for photo-editing and equipment for high resolution photography. Verifying the credibility of photographs and identifying tampering traces without requiring additional and significant prior understanding of the image material or any embedded watermarks is Scope of Science. An effort is made to research the new trends in the world of digital identification of picture forgery and also full bibliography on blind approaches for detection in Forgery. No clear prior data is required for blind or passive approaches about a N image. In this paper a novel Image Integrity verification method is proposed by combining RSA and Hash Based Message Authentication. In the proposed method images are key-hashed and stored in chronological chained fashion The verification process is done in same manner by generating hash values which are compared with hashes stored on blockchain. This research is significant in establishing the trust between any two parties.

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1. Introduction

The fast development in applications for image recognition and large-scale developments in digital cameras have given rise to quantities of doctored photographs with no visible signs, generating a strong market for the identification of automated forgery algorithms to assess the reliability of a applicant graphic. The validity of photos has an significant position as these images are widely used as supporting facts and historical documents in a growing phase shown in Fig. 1. The number and large range of forensic applications Investigation, news photography, criminal investigation, insurance premiums and medical allegations, law enforcement. Detection of Digital Image Forgery the area has received great interest [1] from the science community. Owing to the technological progress in recent years, legislation it was important for law enforcement to keep up to date with emerging technological advances and their use in science about violence.

SWGIT offers information about the appropriate usage of multiple imaging tools in the criminal justice system and employee usage. By releasing documents such as the best SWGIT Documents on procedures

2. Forgery detection approaches

Different methods of identification of image forgery are classified in Fig. 2. The object of image forgery detection is to verify authenticity of a visual picture. The solution for image authentication is divided into two groups. (1) Responsive and (2) Passive or blind. An recognised authentication uses aggressive forgery identification methods, such as digital watermarking or digital signatures. Code inserted before the images in the picture material they're sent via an insecure public platform. Through testing ifsuch an authentication code is available, authentication can be shown through contrasting it with the original inserted code. How-ever, in order to inject the authentication code into the image before the image is transmitted, this approach involves specific hardware or software. The technique of passive or blind forgery detection utilises the image collected for determining its validity through Integrity, without any signature or watermark from the sender of the original picture. It is built on the premise that although digital forgeries-not leave any contextual hints, they will most definitely be disrupted after being tampered with.

The property of the underlying statistics or picture accuracy of a image of a natural scene that adds new objects this leads in multiple types of contradictions. One may use these inconsistencies to classify the forgery. This technique is popular because no prior

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INTELLIGENT *SYSTEMS*

Advances in Biometric Systems, Soft Computing, Image Processing, and Data Analytics

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Contents

CHAPTER 1

Intelligent Techniques: An Overview

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ABSTRACT

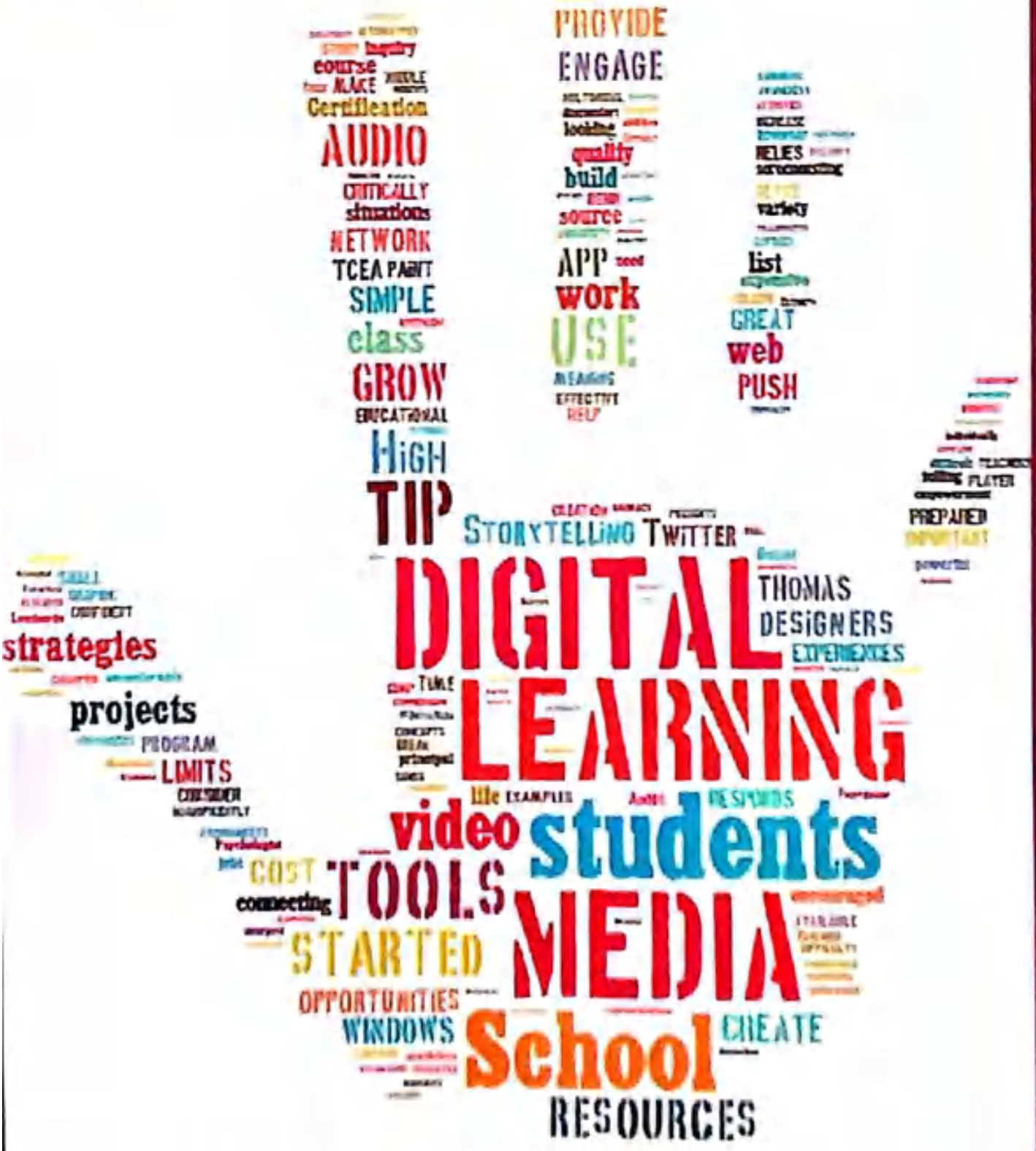
With the impression of enhancing the proficiency and effectiveness of image processing and biometric system, this article provides an insight to the leading intelligent techniques that could be employed to enrich the biometric image analysis process. Leading techniques like expert system, artificial neural network, fuzzy system, genetic algorithm, and rough computing are being investigated in this review for their suitability of implementing in a biometric system. However, one technique does not fit for all problem domains. Hence basing on the complexity involved in uncertainty data, it has been found as which technique could be employed for a particular problem to elicit the desired knowledge out of it. This study can be helpful for designing an intelligent system, which can be tailored for the organizations basing on their domain and nature of data.

1.1 INTRODUCTION

Conventional computing known as hard computing works on accurate analytical model with a lot of computation time. Real world problems exist in a non-ideal environment fails to compute accurately by many analytical models. Soft computing (SC) differs from hard computing and unlike hard computing, it is tolerant of imprecision, uncertainty, partial truth, and an approximation. The guiding principle of SC is to exploit the tolerance for imprecision, uncertainty, partial truth, and approximation to achieve tractability, robustness and low computation cost. The names of several SC tools are fuzzy systems, neural networks, evolutionary computation, machine learning, and probabilistic reasoning. Different SC tools can be used in different phases of the planned analytical models. Information processing and analysis such as removing noise, hierarchical classification and clustering, searching, decision-making, and predicting the data in order to build a smarter, efficient, adaptable system to assist human in decision-making in the fields of information systems and business intelligence, internet computing, image processing, robotics, systems and control, bioengineering, and financial services and engineering. Different SC techniques can be used to solve above mentioned issues such as wavelets for removing noise, wavelets, fuzzy logic, and neural network for the hierarchical classification and clustering, evolutionary algorithms for searching, fuzzy systems for decision-making, artificial intelligence (AI) specifically suited to different tasks, such as waveform analysis, monitoring electronic data streams in the field of healthcare, energy market, currency exchange, stocks, and several other nonlinearity, unusual high volatility, and chaotic nature of data to predict the important trends.

SC techniques such as expert systems (ESs, case-based reasoning (CBR), artificial neural networks, genetic algorithm (GA), fuzzy systems are considered as AI techniques since it involves some kind of human like learning, decision making, and acting. These techniques assist decision makers to select effective actions in real-life especially in critical decision scenarios. Besides this, it reduces information overflow, facilitate current information, enable communication required for collaborative decisions, and deal with uncertainty in decision problems. Diverse range of intelligent techniques are represented in Figure 1.1.

DIGITAL MEDIA IN TEACHING AND LEARNING



DR.C.THANAVATHI

DIGITAL MEDIA IN TEACHING AND LEARNING

ABOUT AUTHOR

Dr.C. Thanavathi is working as an Assistant Professor in History at V.O.C. College of Education, Thoothukudi, Tamilnadu since 2008. She has guided 3 M.Phil. scholars and 10 M.Ed. scholars. She has completed ICSSR, New Delhi major project in 2014 doing a Major Research Project of NCERT-ERIC, New Delhi and has applied for so many research projects. She has written 27 research articles at state, national, international level peer reviewed and impact journals. She has presented 76 papers in state, national and international seminars, workshops and conferences. She wrote 3 B.Ed., and 8 M.Ed., subject books. Her chapters were published in 7 different edited books. She was received 4 national and 7 international awards for her outstanding achievements. She is having 13 Life Time Membership, Review Membership and Editorial Board Membership in various research journals. She organized NET/SET and TET Coaching class. She is working as Statistical Packages of Social Sciences (SPSS) Tutor. Participate in B.Ed., and M.Ed., Theory and PracticalExaminer of TNTEU,Chennai. She acted as a Resource Person of various Competitions and Camp Programmes inSchools and Colleges. She is one of the in charge of Placement Officer and she is one of themembers of Research Advisory Committee. She is one of the in charges of WebsiteCommittee and Technical committee member of a Research Journal 'EDUREACH' of V.O.C.College of Education. She is a Faculty member of IQAC, NAAC Committee of V.O.C.College of Education from June 2019. She has more technical skills and using social media in her teaching and learning.

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Chapter 22

DIGITAL LEARNING INITIATIVES IN INDIA

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Introduction

The 21st century has been rightly termed as the digital era. Whether on a computer, a games console or mobile device, children and young people are increasingly accessing the Internet whenever they can and wherever they are. Emerging technologies, social media and the Internet are becoming an integral part of everyone's lives. One such aspect where people are benefited through the internet is education. The E-Education has certainly ignited the teaching sector.

The inclusion of digital learning in the classrooms can vary from simply using tablets instead of paper to using elaborate software programs and equipment as opposed to the simple pen. This could entail using sites, services, programs, teaching tools, and technologies like study aids, built for at-home use. Even social networks and communications platforms can be used to create and manage digital assignments and agendas. Irrespective of how much technology is integrated into the classroom, digital learning has come to play a crucial role in education.

Digital Learning Initiatives in India

OPERATION DIGITAL BOARD

ODB aims at converting a classroom into a digital classroom. In addition to availability of e-resources at any time and at any place to students, it will also help in provisioning of personalised adaptive learning as well as Intelligent Tutoring by exploiting emerging technologies like Machine Learning, Artificial Intelligence and Data Analytics.

NATIONAL DIGITAL LIBRARY

This project is a framework of a virtual repository of learning resources with a single-window search facility. NDL India is designed to hold content of any language and provides interface support for leading Indian languages. It is being arranged to provide support for all academic levels including researchers and life-long learners, all disciplines, all popular forms of access devices and differently-abled learners.

UNNAT BHARAT ABHIYAN

Unnat Bharat Abhiyan is inspired by the vision of transformational change in rural development processes by leveraging knowledge institutions to help build the architecture of an Inclusive India. Its mission is to enable higher educational institutions to work with the people of rural India in identifying development challenges and evolving appropriate solutions for accelerating sustainable growth.

GLOBAL INITIATIVE FOR ACADEMIC NETWORKS

The Global Initiative of Academic Networks (GIAN) is a new and catalytic programme with potentially far reaching impact. It aimed at tapping the talent pool of scientists and entrepreneurs internationally to encourage their engagement with the institutes of Higher Education in India so as to augment the country's existing academic resources, accelerate the pace of quality reform, and elevate India's scientific and technological capacity to global excellence.

IMPRINT INDIA

It addresses the major science and engineering challenges that India must address and champion to enable, empower and embolden the nation for inclusive growth and self-reliance. This novel initiative is aimed at creating a road map to pursue engineering challenges. IMPRINT provides the overarching vision that guides research into areas that are predominantly socially relevant.

SMART INDIA HACKATHON

Smart India Hackathon is a nationwide initiative to provide students a platform to solve some of the pressing problems we face in our daily lives, and thus inculcate a culture of product innovation and a mind-set of problem solving. In SIH 2020, the students would have the opportunity to work on challenges faced within various Ministries, Departments, Industries, PSUs and NGOs to create world class solutions for some of the top organizations.

MICRO, SMALL AND MEDIUM ENTERPRISES

India has made rapid strides in expanding the MSME (Micro, Small and Medium Enterprise) sector and adopting digital technologies. It has introduced various digital initiatives in this regard. It helps entrepreneurs across the country to directly register their cases relating to delayed payments. It serves as a platform for job seekers (passed out trainees / students of 18 MSME Technology Centres) and recruiters to register themselves for getting employment. Digitisation improves the governance of enterprises and reduces the costs of operation of the MSME.

FREE/LIBRE AND OPEN SOURCE SOFTWARE FOR EDUCATION

The FOSSEE project promotes the use of FLOSS tools in academia and research. It is proposed to be implemented through Information and Communication Technologies. The minimum requirements placed to fund a project through this mission are that it has to be inter-institutional, it should be development oriented in any general field of college level education and any material development through this mission has to be delivered as open source.

VIRTUAL LABS

It is a collection of ninetyone virtual laboratories containing hundreds of experiments in nine disciplines of science and engineering. The project aims to provide remote access to laboratories in various disciplines of science and engineering for students at all levels from under- graduate to research. It also intends to develop a complete Learning Management System where the students can avail the various tools for

learning, including additional web-resources, video-lectures etc.

E-YANTRA

E-Yantra is an initiative to spread education in embedded systems and Robotics. The objective is to provide hands-on learning to engineering students who have limited access to labs and mentors. The goal is to create the next generation of (Embedded Systems) engineers in India with a practical outlook to take on challenging problems and provide solutions.

QUICK RESPONSE CODES

QR codes can be scanned by smartphones to reveal the information that they encode. That way, information is shared precisely and with ease to each student. With QR codes, the possibility of use in every grade level, with every subject as well, is demonstrated.They can also be used to hold URLs of online applications commonly used in the classroom, thus saving time logging in.

NATIONAL REPOSITORY OF OPEN EDUCATIONA RESOURCES

The National Repository of Open Educational Resources (NROER) is a solution developed to address the challenges faced by the education sector of our country. It intends to reach the unreached, include the excluded and prioritizes to extend education to all. It brings together all the digital resources for a school system such as educational videos, audio, images, documents and interactive modules.

SHAGUN PORTAL

ShaGun (Shala-school: Gun i.e.. Gunvattn-quality) is developed to enhance the accessihiiity of information relating to schools and to ensure a holistic approach to transform the education sector. The websitc will also provide information on schools nearby. and navigablc vis-a-vis aerial distance between schools so as to help policy-makers in making informed decisions.

NATIONAL ACADEMIC DEPOSITORY

National Academic Depository (NAD) is a National System set-up to facilitate Academic institutions to digitaily, securely and quickly issue Onliue Academic Awards to the Students directly in their oniine NAD Account. The vision of National Academlc Depository (NAD) is born out of an initiative to provide an online store house cf all academic awards which are accessible in a secure manner at all times.

TALK TO TEACHER PROGRAM

The facility of Talk to a Teacher online for interacting with him / her off-line has been active on SAKSHAT. This feature ensures that students are able to olarify their doubts and are not left at tha mercy of the e-content alone. This feature wouid become more popular as more and more students take to web learning.

E-ACHARYA

E-acharya is an integrated c content portal developed under National Mission for Education through ICT. The portal provides a facility to search and browse ali E-learning materiais througb a single interface. The portal covers quality

learning resources from top institutions in the country in eight subjects viz Agriculture Sciences, Biological Sciences, Chemical Sciences, Physical Sciences, Medical and Health Sciences, Engineering and technology, Social Sciences, and Arts and Humanities.

E-KALPA

An integrated android based mobile app 'e- kalpa' was developed for better reaching out to farming communities. It has a GPS enabled platform, developed to connect stakeholders of the plantation sector with emphasis to coconut, areca nut and cocoa. E-kalpa is the integration of five major services viz., farmers issue reporting and supporting, synchronized farming, farmer diary, knowledge base and notifications.

VIDWAN

VIDWAN is the premier database of profiles of scientists/researchers and other faculty members working at leading academic institutions and other R & D organisation involved in teaching and research in India. It provides important information about an expert's background, contact address, experience, scholarly publications, skills and accomplishments, researcher identity, etc.

TEXT TRANSCRIPTION OF VIDEO CONTENT

An audio file is provided for download along with the transcript of each file. The transcribed files given as pdf are also being used to provide subtitles to the video and can be used in the future for providing local language translations. The project to provide transcription of all the videos is carried

out by NPTEL. Currently there are videos summing up to more than 11,500 hours and will likely swell to about 20,000 hours in a year or so.

SOS TOOLS

SOS TOOLS is a free MATLAB toolbox for formulating and solving sums of squares (SOS) optimization programs using a very simple, flexible, and intuitive high-level notation. The programs can be solved using SeDuMi, SDPT3, CSOP, SDPNAL, SOPNAL+, CDCS and SDPA. SOS TOOLS internally handle all the necessary reformulations and data conversion.

E-PG-PATHSHALA

E-PG Pathshala is an initistive of the MHRD under its National Mission on Education through ICT. High quality, curriculum-based, interactive e-content in 70 subjects across all disciplines of social sciences, arts, fine arts and humanities, natural & mathematical sciences, linguistics and languages have been developed by the subject experts working in indian universities and other R & D institutes across the country. It is a gateway for e-books up to PG.

Conclusion

Digital Education has brought a positive impact in the lives of students and working professionals. All the digital learning platforms induced by the Indian government empower the teaching-learning process in education. The quality of education has improved by Digital learning and even it has become easy for students to refer to the content as

per their leisure. In the era of digitalization the scope of Digital learning increases even more and will be beneficial for students, professionals and also institutions. The digital learning and teaching community, as well as the learners, can take comprehensive advantage of the technology and can make their profession more interesting thereby breaking the shackles of conventional teaching methods.

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Influence of Ruthenium on flexible polyvinylidene fluoride/$BiKFe_2O_5$ multiferroic nanocomposite

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ABSTRACT

In the present work, we report synthesis, structural, magnetic and dielectric studies of Ruthenium (Ru) doped BKFO ($BiKFe_2O_5$) multiferroic nanocomposite. The Multiferroic nanopowders were synthesized using coprecipitation method and annealed powders were dispersed in Polyvinylidene fluoride (PVDF) matrix. The heat treated nanopowders were characterized using X-ray Diffraction, Transmission Electron Microscopy, Vibration Sample Magnetometer, and Dielectric measurements were carried out on films. All the reflections from XRD spectrum are indexed with orthorhombic structure (space group Pbnm). Particle size measured from TEM is observed as less than 100 nm. The EDS spectrum confirms the presence of all the elements in respective concentrations in the synthesized samples. Enhancement in Ferromagnetic nature and influence on dielectric behaviour was observed with Ru doping.

Selection and peer-review under responsibility of the scientific committee of the First International conference on Advanced Lightweight Materials and Structures.

1. Introduction

Multiferroics are the next generation intelligent materials and exhibit simultaneous ferroelectric and ferromagnetic effects, which makes them suitable to serve in wide range of applications like sensors, phase shifters, amplitude modulators, optical wave devices, photovoltaic and other multifunctional devices. Among these, single phase $BiFeO_3$ (BFO) multiferroic attract researchers due to its high Curie and N'eel temperatures (T_C = 1103 K, T_N = 643 K) [1]. The presence of room temperature ferroelectric nature and weak ferromagnetism (G-type) makes them unanimous choice for multifunctional applications. On the other hand, achieving pure, room temperature saturation magnetization, low coercivity and reducing leakage current are the important challenges to obtain rich functionality at device level [2]. The leakage current in BFO is prominently due to the valence fluctuations in Iron (between Fe^{2+} and Fe^{3+}). Attempts have been made and reported in terms of modifying chemical composition, synthesis and substituting several dopants in place of Bi to reduce the drawbacks of BFO [3-6]. Y.Wang et.al. reported Influence of alkali metal ions like K^+, Na^+, and Li^+ in BFO [7]. Syed et. al. observed enhancement in ferromagnetic nature and strong influence on dielectric nature with increasing Potassium substitution in place of Bismuth [8]. BKFO was recently studied brownmillerite multiferroic composite with orthorhombic structure, derived from BFO having lower band gap suitable for energy harvesting application. Zhang et.al reported low band gap of 1.6 eV with good multiferroic and photosensitive properties [9]. The BKFO possibly crystallize in to two different crystal systems namely, Orthorhombic and Monoclinic, depending on the temperature and pressure conditions.

Recently, Ru has attracted a special interest due to its conductive 4d electron because of wide energy band, enhances ferromagnetic nature and reduced the leakage current in BFO ceramics and films [10-14]. Ru complexes absorb light rays of visible spectrum, and useful in manufacturing solar cells. The substation of Ru in BKFO significantly modifies the structural and magneto-electric properties due to the Interaction between 4d (Ru) and 3d (Fe) electrons. In the literature, to the best of our knowledge, there are so far no reports on Ru doped BKFO multiferroic synthesized via coprecipitation method. In this work, we report preliminary results of Ru doping on structural, magnetic and dielectric properties of BKFO multiferroic.

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Selection and peer-review under responsibility of the scientific committee of the First International conference on Advanced Lightweight Materials and Structures.

2. Experimental details

2.1. Synthesis of BKFO and PVDF-BKFO

Polycrystalline Ru doped BKFO nanopowders were prepared using simple inexpensive coprecipitation route. Bismuth (III) nitrate, Potassium nitrate, Iron (III) nitrate and Ruthenium (III) chloride were weighed as per the stoichiometric equation and dissolved in deionized water separately. These individual nitrates and chlorides are stirred vigorously for 30 min. The final metal precursors were combined and again stirred for one hour to achieve homogenous solution. Further, 2 M of NH_4OH added drop wise to this metal nitrates solution, until the pH of the solution reached to 9.3. A thick brown colored precipitate has been formed and this precipitate was collected and washed several times with deionized water. The final precipitate was dried in oven at 60 °C for 1 hr. The as prepared powders were then annealed at 700 °C for 3 hr in a muffle furnace with a heating rate 5 °C/min and naturally cooled to room temperature. The final nanopowders were ground and dispersed in Polyvinylidene difluoride (PVDF) dissolved in N,N-Dimethylformamide (DMF) solvent and casted in circular Petri dish. These are dried at room temperature to develop flexible nanocomposite films.

2.2. Characterization

The crystal structure and phase of the nanopowders were characterized by X-ray powder diffraction (XRPD) using a Bruker D8 Advance with Cu-Ka radiation (40 kV, 40 mA). The powder samples were scanned over a range from 20° to 60° (0.02/step). The compositional details of the samples were achieved using energy dispersive X-ray spectrometer (EDS) model ZEISS EVO MA10. Particle size and shape of nanopowders were analyzed using JEOL JEM-1400 Transmission Electron Microscope. Low temperature magnetic measurements were carried out using a vibrating sample magnetometer (5 T mini VSM from Cryogenic Ltd.). Further, PVDF films were electrode by air dry Ag paint to form electrodes on both sides of the films. The electrode specimens were characterized for their dielectric measurements room temperature using PSM-1735 Impedance Analyzer.

3. Results and discussions

The phase and crystalline nature of the annealed nanopowders were determined X-ray Diffraction with Cu Kα radiation with 2θ in the range 20° to 60° is shown in Fig. 1a.The XRD spectrum was indexed by orthorhombic structure (space group Pbnm) for both pristine (a = 8.4588 Å, b = 7.9841 Å and c = 6.0138 Å) and Ru doped BKFO (a = 8.4488 Å, b = 7.9617 Å and c = 6.004 Å) multiferroic. The experimental lattice parameters are found to decreased with the substitution of Ru due to the difference in the ionic radii of Bi^{3+} and Ru^{3+} ions. The sharp diffraction peaks are evident for high crystalline nature, which is also resembled in TEM. Fig. 1b represents the Energy dispersive spectra of Ru doped BKFO multiferroic. It is clear that all the elements are present in the in respective concentrations in the sample.

Fig. 2 shows typical TEM image of pristine and Ru doped BKFO sample. It is clear that, nanoparticles are well crystallized and the sizes are about 100 nm. The size and shape of the nanoparticles are influenced by Ru doping.

The magnetization versus magnetic field (M–H) hysteresis loop of pure and doped BKFO nanopowders with a maximum applied magnetic field of 4kOe at temperature 5 K is shown in Fig. 3. It is evident that Ru doping enhances the ferromagnetic nature, remnant magnetization and the narrow loop suggests the low loss. Since K^+ and Bi^{3+} are both nonmagnetic, these magnetic features must be attributed to the Ru^{3+} and Fe^{3+} atoms. It is also observed that magnetic saturation is not achieved in the test range applied magnetic field. In this study, the observed results are in consistent with the literature where Ru doped in respective multiferroics [12,13,15].

The dielectric constants of thin films are influenced by orientation and size of grains and grain boundaries, porosity. In order to understand the functionality of material, pure and doped BKFO nanopowders were dispersed in PVDF using solution casting method. Dielectric measurements are carried out on pure and Ru doped PVDF-BKFO films using PSM-1735 Newton 4th Ltd. in the frequency range 100 Hz to 1 MHz. Fig. 4 shows room temperature dielectric constant (ε') and loss tangent (Tan δ)as a function of applied frequency in the 100–1 MHz.

The value of dielectric constant is calculated from the following Eq. (1)

$$\varepsilon' = C_p d/\varepsilon_o A \quad (1)$$

where ε_o is permittivity of free space, C_p parallel capacitance, d is thickness of the film, and A is area of the device. Dielectric loss was calculated using (2):

$$\mathrm{Tan}\delta = 1/2\pi\ \mathrm{f}\ \varepsilon_o\varepsilon\rho \quad (2)$$

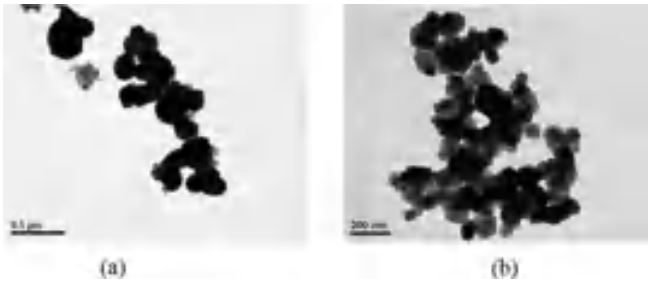

Fig. 2. TEM image of (a) BKFO and (b) Ru doped BKFO multiferroic.

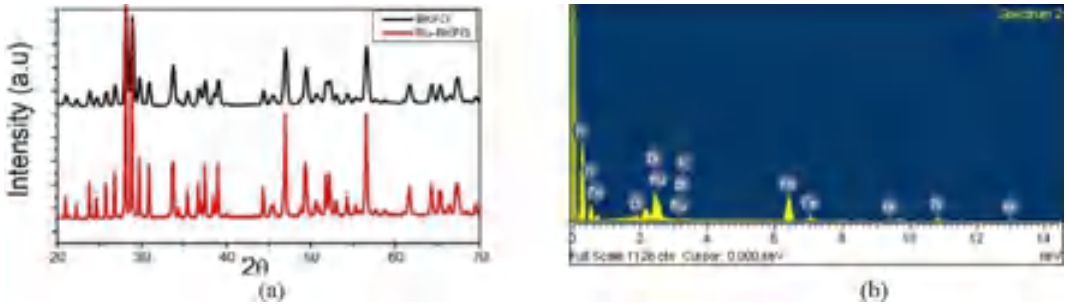

Fig. 1. (a) XRD patterns (b) EDS of BKFO and Ru doped BKFO multiferroic.

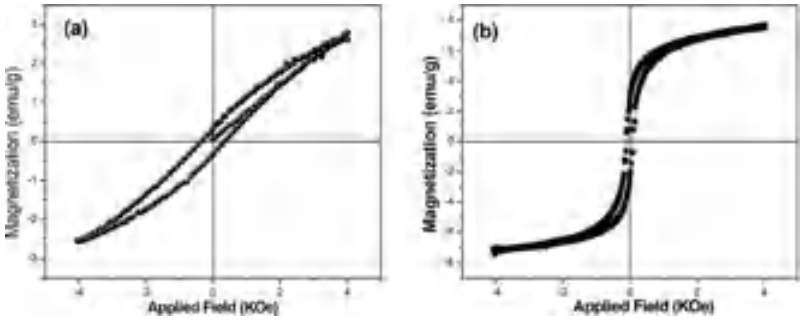

Fig. 3. Hysteresis loops of (a) BKFO and (b) Ru doped BKFO multiferroic at 5 K.

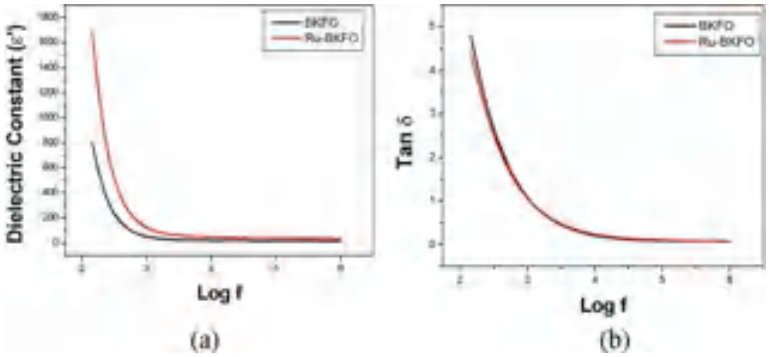

Fig. 4. Dielectric constant and loss of (a) PVDF-BKFO and (b) Ru doped PVDF-BKFO multiferroic film.

where ρ is the resistivity of the film and f is frequency of the applied field. It was observed that both ε' and Tan δ show similar trend with increasing frequency, and slight enhancement in dielectric constant was observed in doped composition, which can be speculated due to the presence of multiple cations at A-site in BFO [15]. On the other hand, presence of oxygen vacancies and displacement of charge carriers between ferrous and ferric ions may also responsible for the observed increase in dielectric constant at lower frequencies for Ru doped BKFO.

4. Conclusions

Ruthenium doped BKFO multiferroic successfully synthesized through chemical coprecipitation method. X-ray diffraction confirmed orthorhombic phase and lattice constant decreased with the substitution of Ru due to smaller ionic radii of Ru compared to Bi. Enhancement in ferromagnetic nature was due to the presence of Ru in the sample. A distinct difference in dielectric constant at lower frequencies and lower dielectric losses suggest the synthesized multiferroics are suitable for energy harvesting applications. These samples are under further investigation, which includes ferroelectric and photovoltaic measurements.

CRediT authorship contribution statement

B. Rajesh Babu: Conceptualization, Methodology, Writing - original draft, Investigation. **Koduri Ramam:** Conceptualization, Supervision, Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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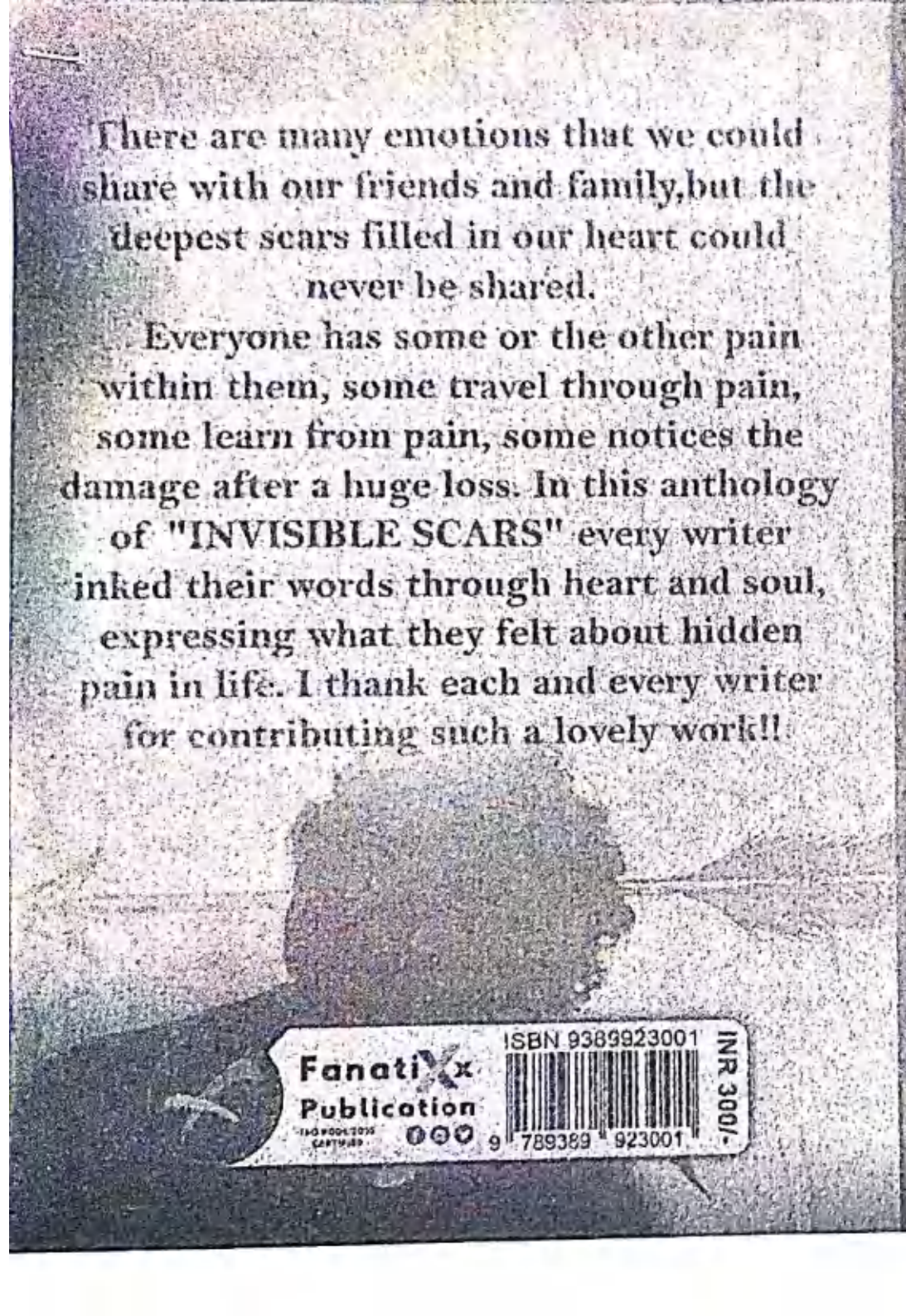

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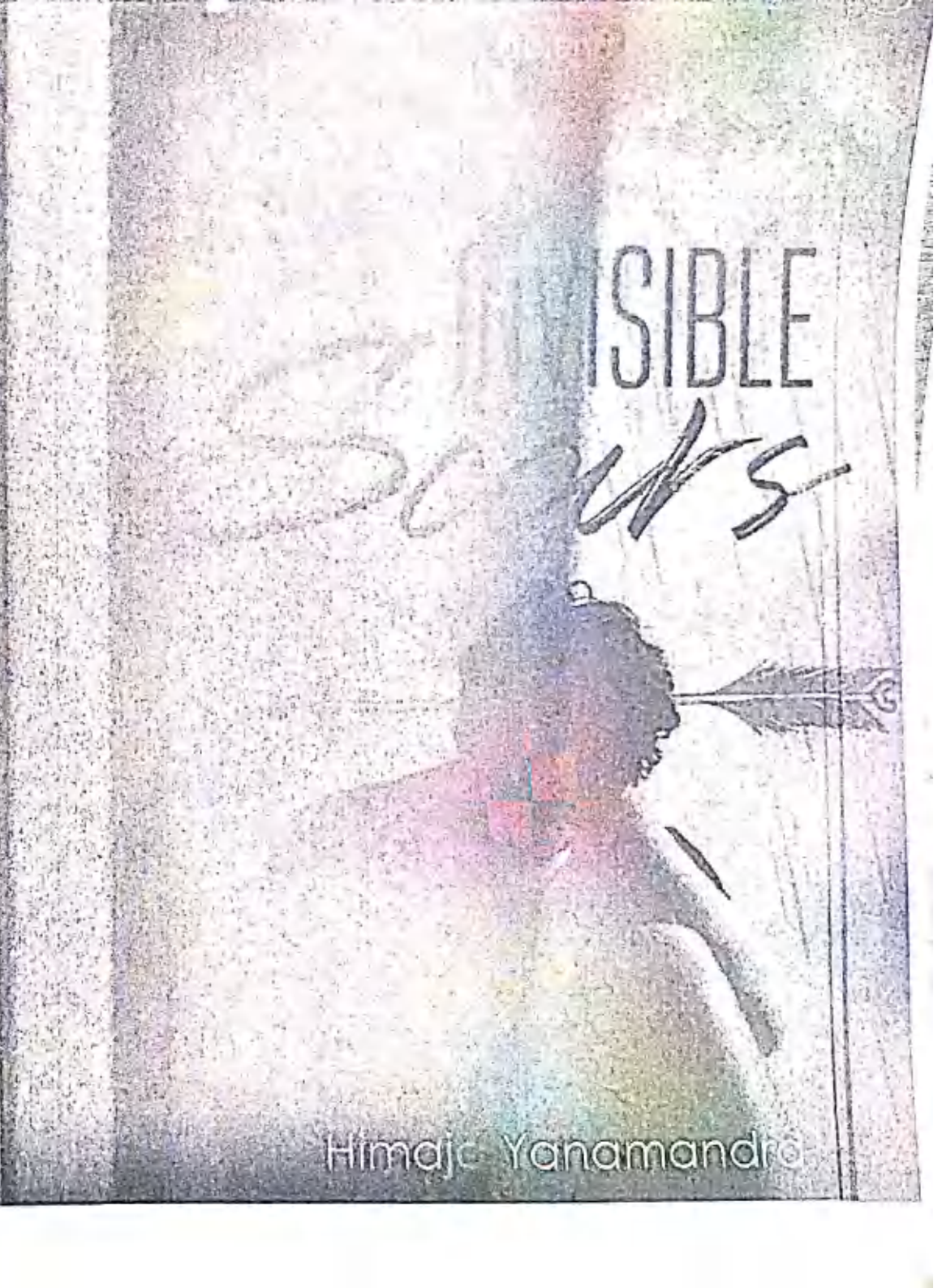

Himaja Yanamandra

B V RAMANI

I'm B V *Ramani, from Visakhapatnam. Working as an Assistant Professor. I'm interested in writing poetry and short stories. I love being creative.*

Mohana Raaga

Raaga slowly got up from the bed. Like a carpenter's opened her body part by part and stood by the bec time. Every day is as strange as it seems to be for he similar and beautiful day with many awful things' sh But an unexpected and long awaited is going to hap she is not aware. The phone rang. She ran towards answered the call with excitement as she was inforr brother about a week day's trip to their native whic land for her. She was so delighted to visit the place a time.

She stood in front of the mirror and smiled at her childhood days surrounded her as honey bees to a reflected upon the days which she remembered v house, the orchards, the trees and most impo teachings of her father and the silly fights with Raaga was the youngest in the family, she was pamp She was admired for her chubbiness, curly hair an intriguing eyes. The child in her was jumping in jo thought of the visit. She told herself to be balanced on earth could make it possible other than the thoughts went on.....

She walked into the kitchen to prepare breakfast. S dilemma to decide the items and sarees to be carri for the trip. While preparing the breakfast, she was obsessed with the thought of her childhood. Once smiled to herself when she recollected her brother' prank. He used to catch the butterflies and keep small box, finally release them right in front of he beauty and the joy of the memory relived in her. S

senses when she heard a thunder suddenly. Everything
n the weather turned pleasant like her mood.

served breakfast and hurried to the bedroom. Once again,
checked the luggage like a small child who lingered around
toys. She sat by the suitcase again and she recalled the
et memories of the house in which she spent the most
utiful part of her life. The kaleidoscopic view of the house
od in front of her eyes.

house was like Vrindavan, surrounded by orchards, trees,
ves and a multitude of plants. From the compound gate, the
to the house was filled with rose plants, lilies and
ainville. When one enters from the gate, they are
comed by beautiful and colourful garden on both sides of
path. The house's front balcony was grilled with wood and
roof is of asbestos. The curtain creeper hung beautifully
the roof. At the door way on both the sides, the lilies and
mines greet the people filling the air with sweet fragrance.

, what are you doing?" a smooth voice awakened her to
ity. "What a dream like life she lived? What a dream like
y!" She retorted.

Raaga!" Somebody was calling from the gate.

ome, I will come a little later. No. Come soon. We are all
to the temple. Raaga too wanted to go. But she was with
ther. She must complete the assignments.

could not concentrate on the work anymore.

OD! Please help me. All are going. I will miss the fun. I
miss my friends in the temple yard. I miss the bhajans. I
can play." Little Raaga's mind was wavering.

Her father was observing her from the room. "Raaga, complete the work and go." Her father shouted from the room. "Now I can't move. Hereafter, I should not postpone the work." Raaga regretted. Her thoughts were like waves of the sea. Oscillating. Again, her ears echoed with the song.....

"Atla Taddoy! AAratloy ! Muddapappoy! Moodatloy! Cheta Kinda Pillallara Lechirandoy!" the song re-echoed. "Yes. Atla Taddi." All the unmarried girls worship Goddess Parvathi for a good husband. She was completely engrossed in that.

"Raaga, are you ready?" a familiar voice called her from the stairs at sunset. She shook her head, ran hastily towards the stairs and found her brother with a smiling face. That's all. Her eyes got blurred. She collapsed to the ground as she did not eat anything since morning. The next minute, she was on the hospital bed surrounded by her kith and kin and greeted by her grandchildren

"Grand Maa! Grand Maa!" She looked at her brother with a lifeless gaze. Her excitement was shattered..... But she relived the Mohana Raaga of life.

I came out of my imagination and stopped writing. I asked my husband to read my story.

A lucid facilitator to explore high school level geometry based programming puzzles (Geometry based puzzles Book 1) किंडल संस्करण

इनके द्वारा N.B. Venkateswarlu (Author) फ़ॉर्मैट : किंडल संस्करण

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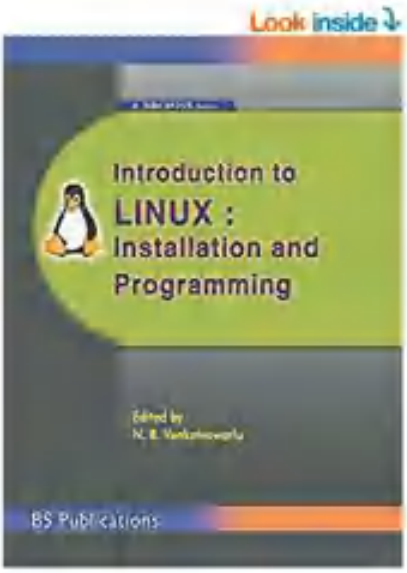
In this book, I have primarily given emphasis on solving elementary coordinate geometry concepts based programming puzzles problems only. I know geometry is the most intuitive area compared to other mathematical themes such as algebra, number theory, calculus at least for the point of view of a high school student. Thus, in order to inculcate problem solving abilities among first level programming students, this book is conceived. Majority of the examples are experimented with my students at GVPCEW, Visakhapatnam and are available at hackerrank for solving https://www.hackerrank.com/vizag-wizkid2018. I welcome the readers of this book to solve the examples available at this site.



Introduction to Linux : Installation and Programming

किंडल संस्करण

इनके द्वारा N. B. Venkateswarlu (Author) फ़ॉर्मेट : किंडल संस्करण

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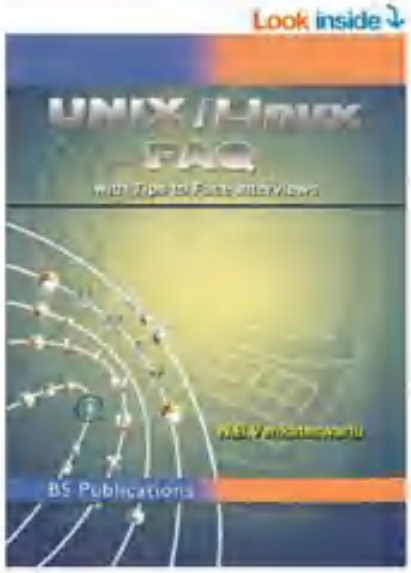
Since early 1970, Unix operating system has gone through many metamorphosis. As of now many variants of Unix systems are available and some of them are commercial whereas the others are freely available. As a result, many people are becoming Unix/Linux enthusiasts especially in India. Hundreds of books have been written in the past, which explores various facets of Unix. This book attempts to expose the reader to Linux Installations and Programming, and it is assumed that the reader has had some prior exposure to an operating system such as Windows, as well as C programming. The contents of the book have been presented by a team of ten faculty members to 100 teachers of engineering colleges in Tamil Nadu in a short course conducted in NRCFOSS in June 2005, and the book itself is largely an edited version of the same. It is meant to serve the purpose of an introductory level text book on this topic, for a typical one semester course in an undergraduate program of CSE/IT.

Features

- Explains elementary Linux/Unix commands in a lucid manner and emphasizes shell and awk programming which are vital for system administration.
- Describes step by step how Linux is to be installed, how partitions including swap partition can be made and how to configure network, proxy server and web server.
- Network installation along with SLIP, PPP connections are explained.
- How web servers, email servers, print servers can be made running on a machine is explained in detail.
- A separate chapter is included for those who are new to networks, to enable them to install the networks.



Unix / Linux FAQ: with Tips to Face Interviews किंडल संस्करण

इनके द्वारा Prof. N.B. Venkateswarlu (Author) फ़ॉर्मैट : किंडल संस्करण

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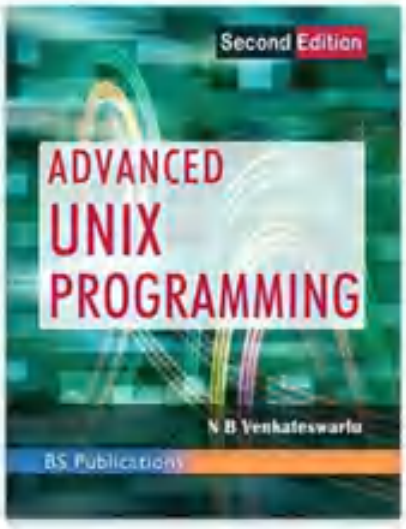
In the recent years, many eye-catching books became available with titles tagged with FAQ (Frequently Asked Questions) such as C FAQ, C++ FAQ, Java FAQ etc. In the same pattern, this book is also designed as UNIX / LINUX FAQ .The author has vast experience in Unix and Linux and that prompted him to bring a book for the benefit of students to perfect their knowledge in these areas. The questions and answers are taken from various USENET groups in the Internet. Most of the questions are tested under Linux platforms, such as Red Hat, Fedora core or Slack ware distributions.

The book is divided into four modules – 1. Questions and Answers, 2. Multiple Choices Questions (MCQs), 3. Fill in the blanks and 4. True or false statements. The questions, in each module, range from simple to complex.



Advanced UNIX Programming हार्डकवर – इम्पोर्ट, 1 अगस्त 2016

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Linux Programming Tools Unveiled किंडल संस्करण

इनके द्वारा N. B. Venkateswarlu (Author) फ़ॉर्मेट : किंडल संस्करण

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In the recent years, Linux, a public domain, freely available Unix variant has attracted the people very much. Today's complex production environments demands superior application performance. Linux is having extraordinary advantages such as : complete source code access, availability of exceptional optimization, testing tools. This book is to explore this facet of Linux.

Features

- Explained Linux success stories with emphasis on facilities and tools available in Linux for SW development
- Explains gcc (GNU) toolchain in detail, combining C and C++, C and Java, and C and Fortran in a lucid manner
- How command line arguments can be handled by C/C++ programs with getopt, argp library are dealt
- Discusses about environment variables and their management

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Steganography Using Reversible Dynamic Texture Creation

Dr. Ajit Kumar Rout, Dr. D K Bebarta
1(CMR Institute of Technology, Rajam, Andhra Pradesh, India
2(CVR College of Engineering for Women, Visakhapatnam
Corresponding Author: Dr. Ajit Kumar Rout

Abstract: *In Communication system there is less security while transmitting the information. To avoid this we have to use technique called Steganography. The art of hiding information in order to prevent detection of hidden messages is called Steganography. A novel approach for steganography is proposed using a reversible texture creation. In contrast to existing steganography algorithm, our algorithm conceals the source texture image and embeds secret messages through the process of texture creation. Here the embedded message may be hybrid version i.e. text or image. The process of texture creation converts a smaller texture image into a new texture image with similar local appearance and an arbitrary size. To conceal secret messages in steganography, we use texture creation process. This allows us to extractthesecret messageand the sourcetexture from a stego synthetic texture. The source image is divided into number of blocks and we have to compose new large image by randomly pastes all blocks of source texture image into some blocks of new image. Those locations are stored in index table. The remaining blocks are filled with secret message that may be text or image. For extracting message, we have to generate index table and we get back the source texture, and we have to perform texture creation, and extracting and authenticating the secret messages which is hidden in the stego synthetic texture.*

Keywords: *Steganography, synthetic, texture, authenticating, extracting.*

Date of Submission: 20-01-2019 Date of acceptance: 05-03-2019

I. Introduction

In the last decade many advances have been made in the area of digital media, and much concern has arisen regarding steganography for digital media. Steganography is a singular method of information hiding techniques. It embeds messages into a host medium in order to conceal secret messages so as not to arouse suspicion by an eavesdropper. A typical steganographyapplication includes covert communications between two parties whose existence is unknown to a possible attacker and whose success depends on detecting the existence of this communication [1]. In general, the host medium used in steganography includes meaningful digital media such as digital image, text, audio, video, 3D model, etc. A large number of image steganography algorithms havebeen investigated with the increasing popularity and use of digital images.

Most image steganography algorithms adopt an existing image as a cover medium. The expense of embedding secret messages into this cover image is the image distortion encountered in the stego image. This leads to two drawbacks. First, since the size of the cover image is fixed, the more secret messages which are embedded allow for more image

Distortion [2]. Consequently, a compromise must be reached between the embedding capacityand theimage quality which results in the limited capacityprovided in any specific cover image. Recall that image steganalysis is an approach used to detect secret messages hidden in the stego image [3]. A stego image contains some distortion, and regardless of how minute it is, this will interfere with the natural features of the cover image. This leads to the second drawback because it is still possible that an image steganalytic algorithm can defeat the image steganography and thus reveal that a hidden message is being conveyed in a stego image.

In this paper, we propose a novel approach for steganography is proposed using a reversible texture creation. A texture creation process resamples a small texture image which synthesizes a new texture image with similar local appearance and an arbitrarysize. We weave the texture creation process into steganography concealing secret messages as well as the source texture. In particular, in contrast to using an existing cover image to hide messages, our algorithm conceals the source texture image and embeds secret messages through the process of texture creation. This allows us to extract the secret messages and the source texture from a stego synthetic texture. To the best of our knowledge, steganography taking advantage of the reversibility has ever been presented within the literature of texture creation.

Our approach offers three advantages. First, since the texture creation can synthesize an arbitrary size of texture images, the embedding capacity which our scheme offers is proportional

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Effect of Pleural Membrane on the Propagation of Rayleigh Waves in Inflated Porous Lungs–A Study

M. HEMANTHA LAKSHMI [1], GOPINATHAN SUDHEER [2], (Member, IEEE), AND Y. VASUDEVA RAO[3]

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ABSTRACT In an attempt to include the effects of natural porosity of lung parenchyma into the mathematical study of lung diagnostics, a model describing the propagation of low frequency Rayleigh waves in relation to the porous architecture of the lung parenchyma is presented. The wave motion is analyzed by assuming that the lung parenchyma behaves as an isotropic elastic half-space containing a distribution of narrow pores with the visceral pleura as a taut elastic membrane in smooth contact with the half space. The thinness of the pleural membrane in comparison with the large surface area of contact enables it to be modeled as a material surface in contact with the parenchyma. Utilizing the perturbation technique, an approximate formula for the Rayleigh wave velocity in the parenchyma with allowance for surface tension, mass density, and porosity is derived. In addition, the effect of the tension in the pleural membrane and the porosity in the parenchyma on the propagation of the low-frequency Rayleigh waves is brought out through the dispersion spectrum. It is hoped that the results of this paper would enable a better understanding of the porosity and surface-tension effects on lung parenchyma.

INDEX TERMS Pleural membrane, porous lung, low-frequency, material with voids, Rayleigh waves.

I. INTRODUCTION

The mechanical properties of biological tissues are known to provide information about their pathological condition and have been clinically used for diagnostic purposes in numerous organs [1]. Of all the internal organs, the lung has the strongest connection between physiologic function and mechanical behavior [2]. It is well realized that lung elastic recoil plays a crucial role in breathing and hence, lung mechanics, particularly elasticity during physiology, has received large attention in the literature [2], [3]. Techniques are being developed to contrast and quantify changes in the macroscopic properties of the lung that are indicative of disease and may be linked to behavioral and structural changes at the macroscopic level [4].

A most common name for techniques developed to noninvasively assess the mechanical properties of biological soft tissues with application to medical diagnosis is elastography [5]. A general approach in elastography is to perturb the state of the tissue under the study using a quasi-static, harmonic or transient mechanical source and then infer the biomechanical properties from the measured mechanical response using a model [6]. Current elastographic techniques enable elasticity estimation by determining the phase speed of shear/surface waves propagating in the tissue [7]. Shear/Surface wave dispersion derived from the elastography technique can be used to estimate the elastic/viscoelastic parameters with an assumed model of the tissue. In the model, the problem of wave propagation on the surface of the tissue is generally approximated as wave propagation in a semi-infinite elastic/viscoelastic medium under harmonic excitation.

The Rayleigh surface waves [8] have proven to be applicable in many areas such as ultrasonics, seismology, material science and medical diagnostics to name a few. A better understanding of the surface wave behavior on and in soft

The associate editor coordinating the review of this manuscript and approving it for publication was Tao Liu.

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Blockchain Based Smart Contract for Sealed--Bid Auction

B L V V Kumar, K Raja Kumar

Abstract: In this growing world, Internet has changed so much to an extent that it turned into a powerful tool in every aspects of our lives. E-auction is one of those things which helps the bidders to take part in an auction online over the air. In a sealed bid third parties need to pay an extra cost to help the buyers and sellers carry out their exchange without any hassle. But there can be a breach of trust by the third parties. Owners of the auction or the company that is auctioning can have direct entry to it when the auction is run on a decentralized platform. When the users auction off something on the chain, the smart contract takes control of the auctioned asset and thereafter it manages the bids associated. In this paper, we execute a smart contract for a verifiable sealed-bid auction on the Ethereum blockchain. The type of auction used is sealed-bid in which the bidders submit their bids privately and each bidder can participate only once. As per the biddings received, the highest bidder wins and pays the highest corresponding highest submitted bid. Additionally, before the auction ends the bidder can withdraw the bid after submitting it. In such a case the bidder will have another chance to place the bid. This smart contract implementation abides by the true essence of a sealed-bid, to be precise, no information about the biddings is leaked to the bidders except for the highest bid

Index Terms: Blockchain, Ethereum, Metamask, Remix IDE, Smart Contract, Sealed-bid Auction.

I. INTRODUCTION

The principle of Blockchain [1] underlies at the integration of network techniques into the bidding system to reduce the cost of transaction. E-auction system comprises of bidders, third parties and the auctioneers. All the centralized third parties help in providing platform for the bidders and the auctioneers for advertising their products, checking the current highest bidding price etc. Companies like E-bay and Yahoo make revenues out of this kind of bidding system. However E auction has mainly two problems. Firstly, centralized third parties charge a whole lot of money which can increase the transaction cost. Moreover, the privacy of the personal data and transaction history which are supposed to be stored in the database might be at stake. Secondly, in a sealed envelope the bidders have no clue whether the lead bidder is trust worthy. This paper discusses about the application of block chain technique into the E-auction to solve the issues. This technique follows peer to peer access structure which implies each point in the structure can individually communicate, authenticate and transfer data to any other point which is a site in this case without any need for an actual centralized intermediary thereby reducing the transaction cost. On the other hand, a smart contract takes care of a trusted lead bidder. Some rules are not supposed to be intruded before the deadline. This paper is organized as follows: Section 2 illustrates the traditional bidding system and the blockchain. Section 3 shows how do we incorporate the blockchain technique into the bidding system. In order to justify the proposed method, we conduct the experiments in Section 4 and we draw our conclusions in Section 5.

Revised Manuscript Received on August 05, 2019.

Mr B L V Vinay Kumar, Asst Prof Dept Of CSE, Dept College of Engineering for Women Visakhapatnam

Dr K RAJA KUMAR, Asst Prof Dept Of CSE, SCSL, Andhra University Visakhapatnam

II. E-AUCTION

A. Traditional Bidding System

E-auction [2] [3] follows the same approach as the traditional manual auction, but as the name suggests it takes place online. So, the assets or goods that to be auctioned are sold through online competitive bidding. The e-auction starts and ends within a given time interval which is managed by the controlling person. Once the e-auction begins, participants must submit their bids within the closing time via the internet. After the e-auction ends, a report is generated and the winners with highest bid are declared. The successful bidders then deposit their bid amount, after which the auctioned item is can be collected from the seller.

E-auction can be divided into two types, namely public bid and sealed bid [3]. Public bid is that in which bidders could increase the price to bid the products. Thus, the bidding price grows continuously till no bidders are interested to pay a greater price. A bidder is declared as a winner if he bids the highest price for such a product. During public bid, bidders can bid many times. Thus, public bid is also called as a multi-bidding auction. Sealed bid is that bidders encrypts the bill and only end the bill once at a time. If there is time, the auctioneer compares the bills. The bidder who bids for the highest price is the winner of the sealed bid. Since bidders only can bid once, it is also called single-bidding auction. In the seal bid, all bidders' costs are sealed until the bid opening date is compared to the costs of all bidders.

There is a common problem in electronic seal ticket auctions i.e.; we cannot make sure if the prices of the other bidders are leaked before the deadline or not.

B. Blockchain

It is a technology [10][11] which accesses, verifies and transmits network data through distributed nodes. It utilizes a peer-to-peer network to gain a decentralized data operation and preservation platform.

The block chain is mainly based on the following technologies as the operating base:

[illegible] | [illegible] | [illegible]
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RESEARCH ARTICLE

WILEY

Robust segmentation of optic disc and optic cup using statistical Kurtosis test

Birendra Biswal[1] | Vyshnavi Eadara[1] | Dwiti K. Behera[2] | Gupteswar Sahu[1]

[1]Gayatri Vidya Parishad College of Engineering (Autonomous), Visakhapatnam, India

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Abstract

Glaucoma is a chronic and irreversible eye disease that leads to the loss of vision. Evaluation of the Cup to Disc Ratio (CDR) plays a prominent role in the early detection of glaucoma. This paper presents a novel algorithm to compute the CDR for the fundus images. In order to calculate the CDR, the vertical diameter of Optic Disc (OD) and the vertical diameter of the Optic Cup (OC) are calculated from the segmented OD and segmented OC, respectively. This study presents OD and OC segmentation algorithms based on a new statistics-based kurtosis test. A unique OC boundary segmentation method is presented, which is the combination of partial cup extraction and the cup boundary under the Central Retinal Blood vessels (CRBV). A novel preprocessing technique is introduced to extract the CRBV from the automated Region of Interest (ROI). The experimental results confirm that the proposed algorithm outperforms the state-of-art OD and OC segmentation on the three publicly available datasets: ORIGA, DIARETDB0, and DIARETDB1. The proposed OD and OC segmentation achieve accuracies of up to 0.99 and 0.97, respectively. In addition, the proposed model achieves excellent CDR evaluation with an average error percentage reduced to up to 9.6496 for the considered datasets.

KEYWORDS

central retinal blood vessels (CRBV), cup to disc ratio (CDR), kurtosis, optic cup (OC), optic disc (OD)

1 | INTRODUCTION

The optic nerve is a part of the central nervous system and carries visual information from the eye to the brain. Glaucoma is a chronic eye disease that damages the optic nerves. Due to the death of ganglion cells in the optic nerves, the degeneration of the optic nerve head takes place, resulting in permanent loss of vision. As it is an eventual and irrevocable blindness,[1] it is necessary to detect and treat this disease at the earlier stage.[2-5] Glaucoma is also named "silent thief of sight"[6] because it leads to eventual blindness without any symptoms of occurring glaucoma.[7] Worldwide, glaucoma stands as the second leading blindness causing disease[8] after cataracts. By 2020, it is estimated that around 80 million people will suffer from glaucoma.[2,9] The input fundus images are shown in Figure 1.

Segmentation of OD (optic nerve head) boundary and OC boundary are the most important aspects of the evaluation of CDR. The Vertical Cup Diameter (VCD) is comparatively greater in case of a glaucoma eye rather than the normal eye, as shown in Figure 1B and Figure 1C. The OC region increases gradually, resulting in the progression of glaucoma.[7] There are mainly three methods for the detection of glaucoma.[10]

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Collaboration of Blockchain and Machine Learning in Healthcare Industry

B I. V V Kumar, K Raja Kumar

Abstract: *The purpose of this paper is to explore the applications of blockchain in the healthcare industry. Healthcare sector can become an application domain of blockchain as it can be used to securely store health records and maintain an immutable version of truth. Blockchain technology is originally built on Hyperledger, which is a decentralized platform to enable secure, unambiguous and swift transactions and usage of medical records for various purposes. The paper proposes to use blockchain technology to provide a common and secured platform through which medical data can be accessed by doctors, medical practitioners, pharma and insurance companies. In order to provide secured access to such sensitive data, blockchain ensures that any organization or person can only access data with consent of the patient. The Hyperledger Fabric architecture guarantees that the data is safe and private by permitting the patients to grant multi-level access to their data. Apart from blockchain technology, machine learning can be used in the healthcare sector to understand and analyze patterns and gain insights from data. As blockchain can be used to provide secured and authenticated data, machine learning can be used to analyze the provided data and establish new boundaries by applying various machine learning techniques on such real-time medical data.*

Keyword: *healthcare industry, Hyperledger, decentralized platform, doctors, medical practitioners, pharma and insurance companies.*

I. INTRODUCTION.

The main reason blockchain technology is preferred in order to achieve quality data maintenance is due to its distributed public ledgers which secure encrypted immutable data.This technology of distributed ledgers is preferred for broad variety of use cases ranging from data storage, financial transactions to real estate and asset management. . Though blockchain technology has been under research from many years, it has become an interest to huge number of people after its applications of cryptocurrencies such as Bitcoin. Many market players have presented various applications of blockchain to the industry. One such application of blockchain is Electronic Health Records (EHR), which is explored through this paper.

Patients visit many healthcare organizations depending on their circumstances in life, thus leaving traces and bits of their medical data scattered among various organizations. In such a scenario, it is difficult if not impossible for the patient to retrieve their past medical history. The patient's medical data is scattered among various hospitals and medical organizations making it difficult for the organizations to maintain proper updated information and leaving the patient in an ambiguous state. This lack of coordinated data management leaves the data shattered. To overcome these barriers, a digital platform like EHR where the patients and medicine practitioners can access the data efficiently.

The Electronic Health Records System is a digital platform of a patient's medical history. It is maintained by the healthcare providers. These records include information on diagnosis, medical history, lab tests and other medical data. Major uses of enforcing the usage of EHR is maintenance of updates medical information, reduced errors, quick access to patients records and increased involvement of patients in their healthcare.

II. BLOCKCHAIN IN HEALTHCARE

Although EHR has many benefits, it stores data from various workflows, hence the security of data is not guaranteed. This hinders the trust environment in medical fraternity. The nature of sensitivity associated with the data along with the challenged of interoperability and health information exchanged has built opportunities for advancement of blockchain in this domain of industry. The successful deployment of the application of blockchain in healthcare allows secured transition of data in an efficient and coherent manner. The advantage of using blockchain technology is that every organization does not require to maintain a distinct database to store the records of their patients. The decentralized behavior of blockchain allows any authenticated participant to access the data. Blockchain's architecture provides patients with complete control over the access and data exchange in EHR.

III. MACHINE LEARNING IN HEALTHCARE

Machine Learning can be used to provide the doctors with insights on the secured and quality data provided using blockchain technology. With increasing number of applications of machine learning in various domains, healthcare allows is to glimpse at the future where data analytics and innovation together help people in large numbers by making smart decisions and analysis. The main application of machine learning is identification and providing treatment to a disease. Many algorithms and techniques in ML are implemented to analyze the symptoms, test results and condition of the patient to identify the disease.

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Mr B I. V Vinay Kumar, Asst Prof, Dept Of CSE, GVP College of Engineering for Women Vishkapatnam
Dr K Raja Kumar, Asst Prof, Dept Of CSE&IT, Andhra University Vishkapatnam

idempotents.

ICRHMS-039: A STUDY ON THE EFFECTIVE ELASTIC PROPERTIES OF POROUS SOLIDS

Madhira S.L.R. Mallika[1], *Gopinathan Sudheer*[2]
[1]Anil Neerukonda Institute Of Engineering and Technology, Vizag
[2]GVP College of Engineering For Women, Kommadi, Vizag.
g.sudheer@gvpcew.ac.in, radhamallika@yahoo.co.in

Abstract: Porous solids are all around us. They can be natural such as wood, rocks, bone etc., as well as man-made such as porous ceramics, cement paste, foam etc. Porosity is an important structural feature in these solids that often affects significantly properties such as elastic moduli, acoustic wave velocities, ductile strength, fluid permeability to name a few. Modelling accurately the mechanical properties of porous materials in terms of the porosity and microstructure has broad significance for a wide range of fields ranging from Material Science to Earth Science. The estimation of the effective elastic moduli of the materials characterized by the microscopic heterogeneity in pore shapes and sizes has captured the interest of researchers for several decades. The effect of porosity on the elastic constants of solids has been studied largely in the literature using numerical models and micro-mechanics models. Both these models employ classical elasticity equations as a starting point to arrive at expressions for the material parameters in these solids. The micro-mechanics models broadly include micro-dilation theory, Bioti theory, Mori-Tanaka model etc., while the numerical models include statistical and data- driven models. In the present work, methods for determination of the elastic moduli of porous solids based on numerical and micro-mechanics models have been proposed. A critical revaluation of the prediction of the elastic moduli of these solids is considered on the basis of these two approaches.

Keywords: Porous solid, numerical, statistical, micro-mechani.


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The creator is so thoughtful
His creation is too bountiful
It is with lot of discretion
Though every creature has its own identification
All the creatures are unique
Man is Specific! Too Specific!
Man's intellect is so great
It is GOD'S Treat
His art is graceful
Man's mind is awful
His thoughts are scientific
His actions are magnanimous
They are too vicious to deduce
All the creatures perform well
But a man can pitch them all
No other creature finds ugliness in creation
Man can find it for his own destruction
Man! Beware! Beware! Beware!

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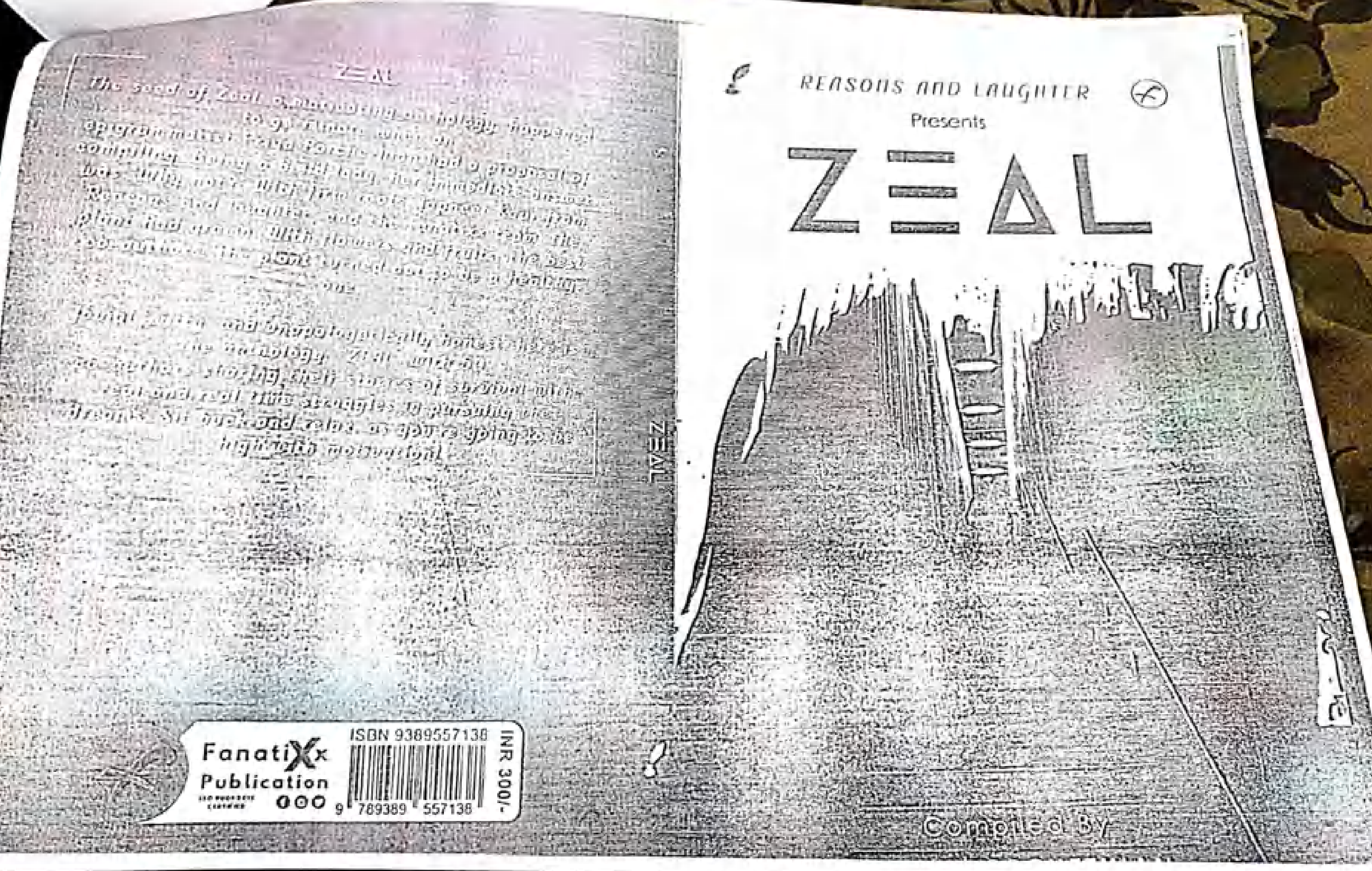
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to see the unseen, to hear the unheard,

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to imagine the unimaginable, to reach the unreachable,

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Presents

INTO THE WOODS OF RAMÉ

BY

BORUNDIYA KEERTHI

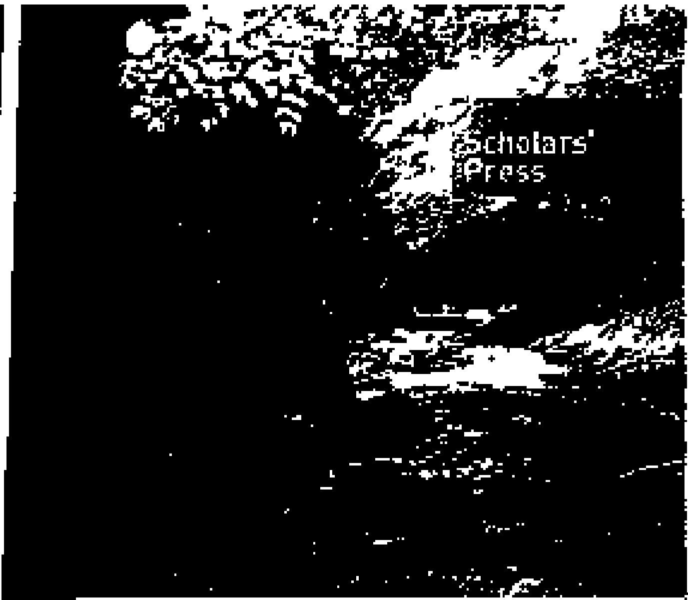
My mood turned morose and swooned
Within myself
I tried to roll back to the reality
As I still staggered around the intoxicated days of purity

My crippled semblance gazed at me with the taunts of the thought ' you are no more young and your "Halcyon" "days" were vanished.

Nature's Plea

I stood before you with everything to offer.
You too are ready to gain them to prosper .
You start your day with myriad preferences .
But I don't! I can't! As my aim is to grant.
When I'm too active to give you life.
You block me for your gain of grief .
When I'm ready to give you the shower .
You growl at me ever and ever .
I have my own laws .
You doubt them without any clause,
Everything revolves round me.
But you make me turn round and round and round.
You made me a puppet ,
I'm powerless to react,
I can't retrieve it you might think,
But I can turn everything within a blink .
You are a millionth part of mine,
You overpowered the every inch of mine ,
Isn't it paradoxical? Isn't it paradoxical to laugh at? ,

Critical Study of Gita Mehta's



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TOC

FEMININE VOICES IN INDIAN ENGLISH FICTION

Edited by:

Venkata Ramani Challa

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Contents

INTRODUCTION

Fiction, being the most powerful form of literary expression today has acquired a prestigious position in the Anglo-Indian literature. It is commonly agreed that the novel is the readiest and most acceptable way of embodying experiences and ideas in the context of our time. In the realm of fiction, Indian writing in English has heralded a new era and has earned many laurels both at home and abroad. The period of post-eighties is the most fruitful and flourishing years in the history of Indian fiction in English. R.S. Pathak aptly observes:

> "In the growth and development of the Indian novel in English the 1980's occupy the most significant position. ... It is during the eighties that Indian English novelists and novels earned unheard of honors and distinctions in the Western academic world." (14)

It witnessed a tumultuous activity of publication by the writers of second generation dealing with socio-political and gender issues. In the post-modern period, Indian English novel has acquired the features of universal appeal by experimenting in technique and language, nostalgia, displacement, sense of loss and quest for identity. It has passed from the psychological and realistic stages to the experimental.

The advent of English education and the reforms suggested by the social reformers brought about a considerable change in the attitude of the people and gave more opportunity to women to participate in social and public

...

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A SOUL'S URGE TO SHOWCASE THE UNIQUENESS OF WOMEN IN GITA MEHTA'S *A RIVER SUTRA*

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Gita Mehta is the author of the novels *Raj* and *A River Sutra* and non-fiction books like *Karma Cola* and *Snakes and Ladders*. But, besides that she has even written numerous articles for various Indian, American and European magazines and made documentaries for European and American Television. Her works have been translated into thirteen languages and published by twenty-seven countries. She defines her India through insightful, intelligent and often witty eyes with a smattering of personalized anecdotes that define it not so much as a set of essays, but a collection of lives. Her lively stories illustrate her analysis of what India is as seen through her eyes, while she makes the reader enjoy her exploration. While she uses her personality to define a set of ideas, places, smells and traditions that make up modern India, she never fashions herself as an expert or authority, but recognizes her power as a storyteller without trying to draw the reader to her side.

According to scholars, women in ancient India enjoyed equal status with men in all aspects of life. Works by ancient Indian grammarians such as Patanjali and Katyayana Smrithi

Mu. Naushad *Editor*

A New Generation Material Graphene: Applications in Water Technology

Springer

Contents

Chapter 4
Green and Ecofriendly Materials for the Remediation of Inorganic and Organic Pollutants in Water

Tetiana Tatarchuk, Mohamed Bououdina, Basma Al-Najar and Rajesh Babu Bitra

Abstract The widespread of organic and inorganic pollutants in wastewater from various industries, are responsible for serious environmental problems meanwhile represent a danger for human being. Therefore, the search of cost-effective methods of wastewater treatment containing in particular heavy metals and dyes, become of great importance. Noteworthy, adsorption has proven to be most effective technology for purification of wastewater from organic and inorganic pollutants. In this review, different types of green and ecofriendly materials (biosorbents, graphene-based composites, metal oxides, etc.) for dyes and heavy metals adsorption will be discussed. The biosorbents such as agricultural waste materials (waste seeds, orange peel, exhausted coffee ground powder, wood apple shell, sweet potato peels, wheat straws, etc.), activated carbon prepared from different types of agricultural waste (coconut husk, forest and wood-processing residues, papaya seeds, magnetic biochar etc.), graphene-based adsorbents and their derivatives, obtained by eco-friendly green synthesis, have been discussed and their adsorption activity has been described in details.

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Comparing Apache Spark and Map Reduce with Performance Analysis using K-Means

Satish Gopalani Rohan Arora

ABSTRACT
Big Data has long been the topic of fascination for Computer Science enthusiasts around the world, and has gained even more prominence in the recent times with the continuous explosion of data resulting from the likes of social media and the quest for tech giants to gain access to deeper analysis of their data. This paper discusses two of the comparison of - Hadoop Map Reduce and the recently introduced Apache Spark – both of which provide a processing model for analyzing big data. Although both of these options are based on the concept of Big Data, their performance varies significantly based on the use case under implementation. This is what makes these two options worthy of analysis with respect to their variability and variety in the dynamic field of Big Data. In this paper we compare these two frameworks along with providing the performance analysis using a standard machine learning algorithm for clustering (K-Means).

General Terms
Big Data, Machine Learning, K Means.

Keywords
Big data, Hadoop, HDFS, Map Reduce, Spark, Mahout, MLib, Machine learning, K-Means.

1. INTRODUCTION
Apache Hadoop [1] is an open source framework that provides solutions for handling big data along with extensive processing and analysis. It was created by Doug Cutting in 2005 when he was working for Yahoo at the time for the Nutch search engine project. Hadoop has two major components named HDFS (Hadoop Distributed File System) [2] and the Map Reduce [3] framework. Hadoop Distributed File System is said to be inspired by Google's The Google File System (GFS) [4] and provides a scalable, efficient, and replica based storage of data at various nodes that form a part of a cluster.

HDFS is based on a master slave architecture where 'namenode' is the master and 'datanodes' are the slave nodes where the actual data resides (quite possibly replicated data). The replication factor by default is of three, but can be configured as per the need of the user and the usage type. The second vital component, which is Map Reduce is the processing model for Apache Hadoop which allows successful processing of the replicated data in parallel based on the former programming language techniques of map and reduce. Map is the phase which is implemented to distributed portions of a dataset to various 'mappers' that work in parallel to provide the achievability for the essence of big data computation. The outputs from these mappers are exposed to sorting and shuffling which takes the flow to the next phase, called the 'Reduce' phase where data is aggregated to find out the result to our initial problem statement [5].

Although recently, the world of Big Data has seen a dynamic shift from this computing model with the introduction and stable release of Apache Spark [6], which provides a user friendly programming interface to decrease coding efforts and provide better performance in a majority of the cases with problems related to big data. Spark not just provides an alternative to Map Reduce, but also has options for SQL like querying with Shark and a machine learning library called MLib. The performance and working of spark is considerably different from that of map reduce, but is also dependent on the constraints of parallelism, the types of problems in context, and the resources available.

Apache Spark [7] started as a research project at UC Berkeley in the AMPLab, was started with a goal to design a programming model that supports a much wider class of applications than MapReduce, while maintaining its automatic fault tolerance.

Spark offers an abstraction called Resilient distributed Datasets (RDDs) [8] to support these applications efficiently. RDDs can be stored in memory between queries without requiring replication. Instead, they rebuild lost data on failure using lineage: each RDD remembers how it was built from other datasets (by transformations like map, join or groupBy) to rebuild itself. RDDs allow Spark to outperform existing models by up to 100x in multi-pass analytics. RDDs can support a wide variety of iterative algorithms, as well as interactive data mining and a highly efficient SQL engine Shark [9].

2. DIFFERENCE BETWEEN MAPREDUCE AND SPARK

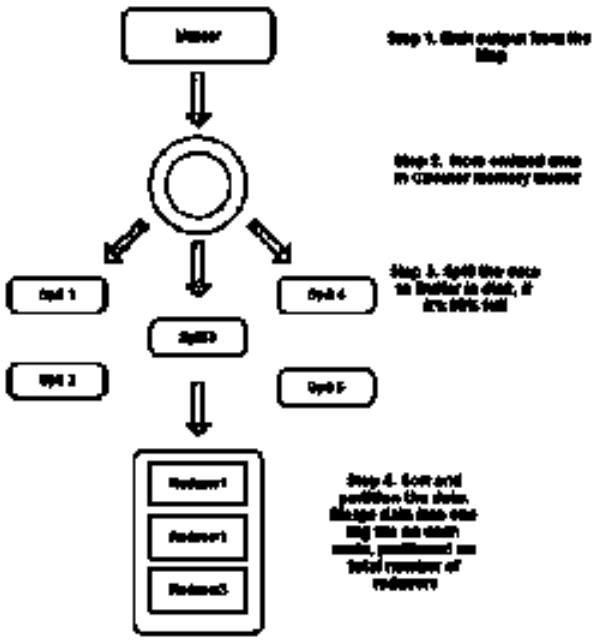

Fig 3: Map phase in Map Reduce

A First Level Book to expedite Statistics through R: An Inquisitive approach किंडल संस्करण

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Preface
This book, "A First Level Book to expedite Statistics through R: An Inquisitive approach" is drafted as a first level book to those people who are excited to enter into Data Sciences arena.

First chapters are designed to have more orientation towards building skill set in R programming language. These chapters are flooded with many trickier exercises to skim R language skill set. Also, these chapters are equipped with many examples from Mathematics so as to en-rich coding abilities in R. For instance, chapter on Vectors is designed to have examples from numerical integration, differentiation, vector product, scalar product, polynomial multiplication, operations on sets, descriptive statistics, Gini index computation, polynomial's roots computation. Also, chapter on matrices is designed to elucidate various matrix operations such as addition, subtraction, inverse, pseudo-inverse, multiplication, division, trace, determinant, Eigen values, Eigen vectors, Kronecker product, quadratic form, simultaneous equation solution, covariance matrix calculation from the raw data, mirror transformations, rotation matrix, sparse matrix, etc., using R is illustrated. This book can be the best fit to use in first level linear algebra courses or in related laboratories because of the chapters on vectors and matrices.

Python for novices किंडल संस्करण

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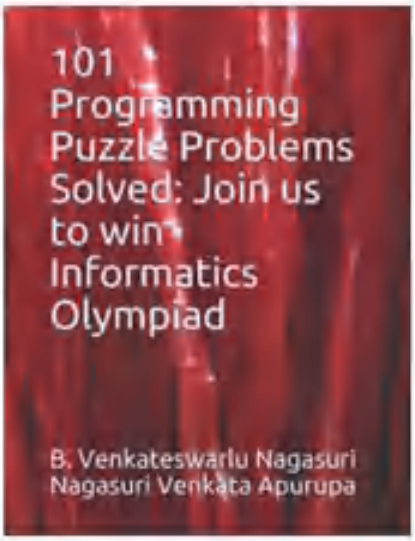
Nagasuri Bala Venkateswarlu + फॉलो

In the first chapter, we have explained how to begin Python programming along with data types and conversions. It also included the links from which Python and modules can be downloaded to install. In addition, links to some useful videos and tutorials on Python installation are included.

In the second chapter, we have introduced simple Python programming. Also, we have introduced to Python operators along with simple, practical real life problems. Problems such as projectile height calculation, air conditioning tonnage requirement, quadratic equation solving, etc., are discussed along with the ready to run code.

Fourth chapter elucidates if construct of Python language. Few tens of mathematical and real life problems (chess related problems) are solved so as to improve the coding skills of the reader.

In the fifth chapter, we have inculcated iterative thinking to the reader by explaining while loops, for loops, etc. Also, we have illustrated many real life problems area under curve, solving an equation using Newton Raphson method, games using random numbers, etc.



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This book is my fifth book in my programming puzzles series of books which can be used by prosperous aspirants of Informatics Olympiad (IOI) and International Collegiate Programming Contest (ICPC) who are at the early stage of their goal. Also, this book can be used by middle level High School programming contestants. More than fifty percent of the examples are the ones which appeared in some High School level competitions such as Microsoft Internship examination, Microsoft Interviews, Google Interviews, IOI, COCI (CROATIAN OPEN COMPETITION IN INFORMATICS), Stanford Pro Co, etc., in addition to http://hackerrank.com, http://codegold.stackearth.com, http://projecteuler.com. Remaining solved examples and exercises are of my own designs. Most important objective of this book is to provide repository of plethora of examples (and solutions) to both first level students and teachers who are

Free longitudinal vibrations of functionally graded tapered axial bars by pseudospectral method

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Abstract. In this work, the problem of free longitudinal vibration of rods with variable cross-sectional area and material properties is investigated using the pseudospectral method. With the gradation of material properties like modulus of elasticity and mass density in the axial direction, the results corresponding to a functionally graded axial bar are obtained using the proposed pseudospectral formulation. The pseudospectral formulation used is relatively easy to implement and powerful in analyzing vibration problems. With the help of several numerical examples, the non-dimensional natural frequencies of rods obtained using the pseudospectral method are compared with those obtained by the analytical solution, generalized finite element method, the discrete singular convolution method and differential transformation method. The numerical results obtained show that the proposed technique allows boundary conditions to be incorporated easily and yields results with good accuracy and faster convergence rates than other methods.

Keywords: vibrations, inhomogeneous rod, graded axial bar, numerical, pseudospectral.

1. Introduction

Functionally graded (FG) material structures find extensive use in modern engineering as their material properties can be tailored to meet the requirements of different applications [1]. The FG axial bars are a class of inhomogeneous rods/bars with material properties varying continuously in desired spatial directions. The inhomogeneous rods are known to provide a suitable distribution of strength and weight for engineering structures [2]. A study of the vibration characteristics of these rods is a subject of considerable scientific interest that has wide applications in aerospace, civil and mechanical engineering [3-5].

The governing differential equations of motion for longitudinal vibration of non-uniform rods have variable coefficients introduced by variable cross-sectional area. In addition, for functionally graded tapered axial bars, the varying material properties add up to the previous variable coefficients in the governing equation increasing the complexity in vibration analysis of these bars/rods. In general, methods of vibration analysis are classified as analytical and numerical methods while some are semi-analytical that use a combination of both the approaches. It is generally agreed that obtaining analytical/closed-form solutions of this vibration problem is possible only for some specific geometric and material functions and are often cumbersome. Application of numerical methods becomes essential to obtain the solution of the problem for general cases. There are many different methods for the numerical solution of differential equations which include Finite Element Method (FEM), Differential Quadrature Method (DQM), Differential Transformation Method (DTM), Discrete Singular Convolution (DSC) method and Spectral/Pseudo Spectral methods. Several studies have been dedicated to the problem of exact/analytic solutions for longitudinal vibrations of non-uniform rods [6-13] while some researchers [3, 14-17] have developed numerical methods.

Eisenberger [6] obtained the exact longitudinal vibration of a rod with polynomial variation in

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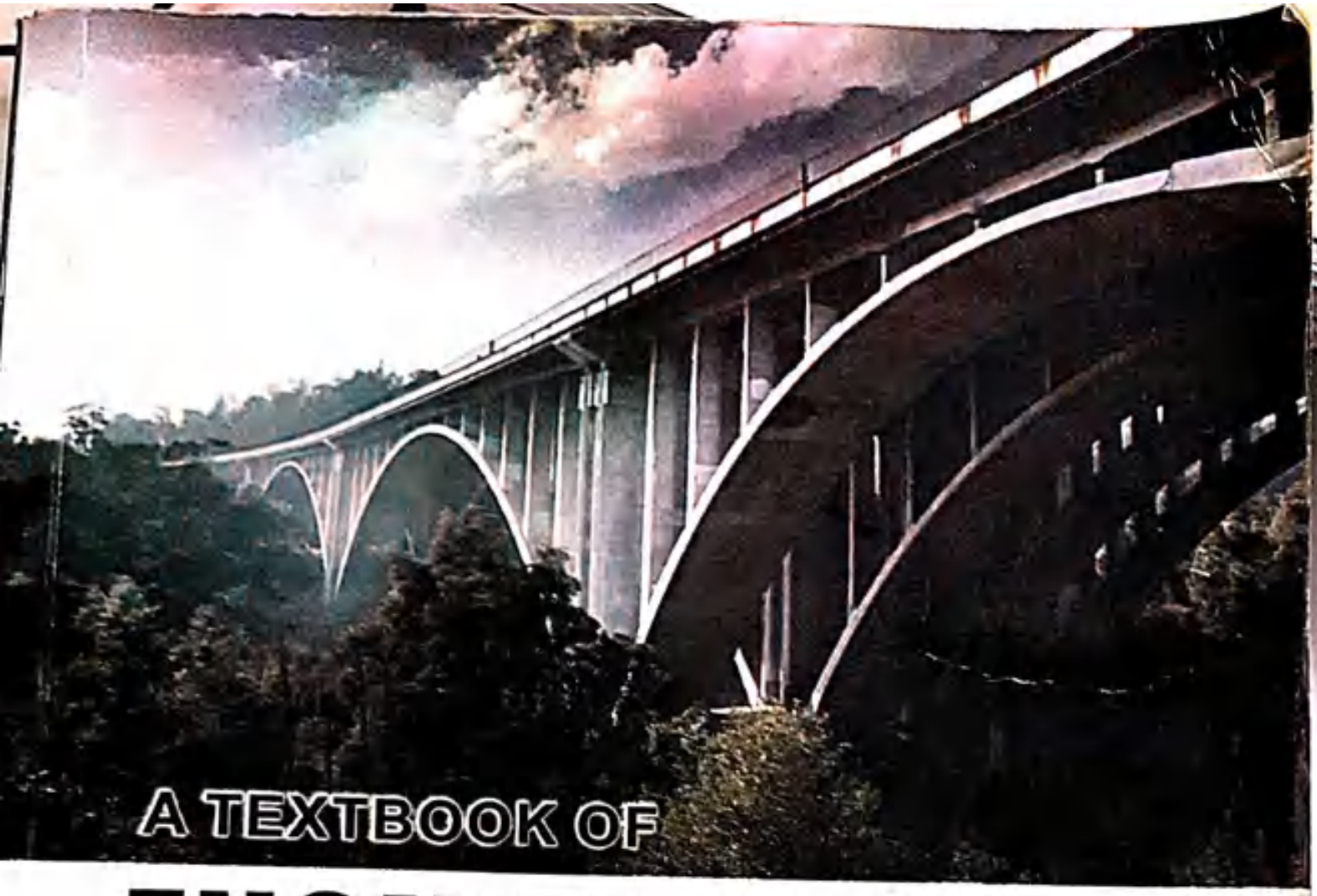

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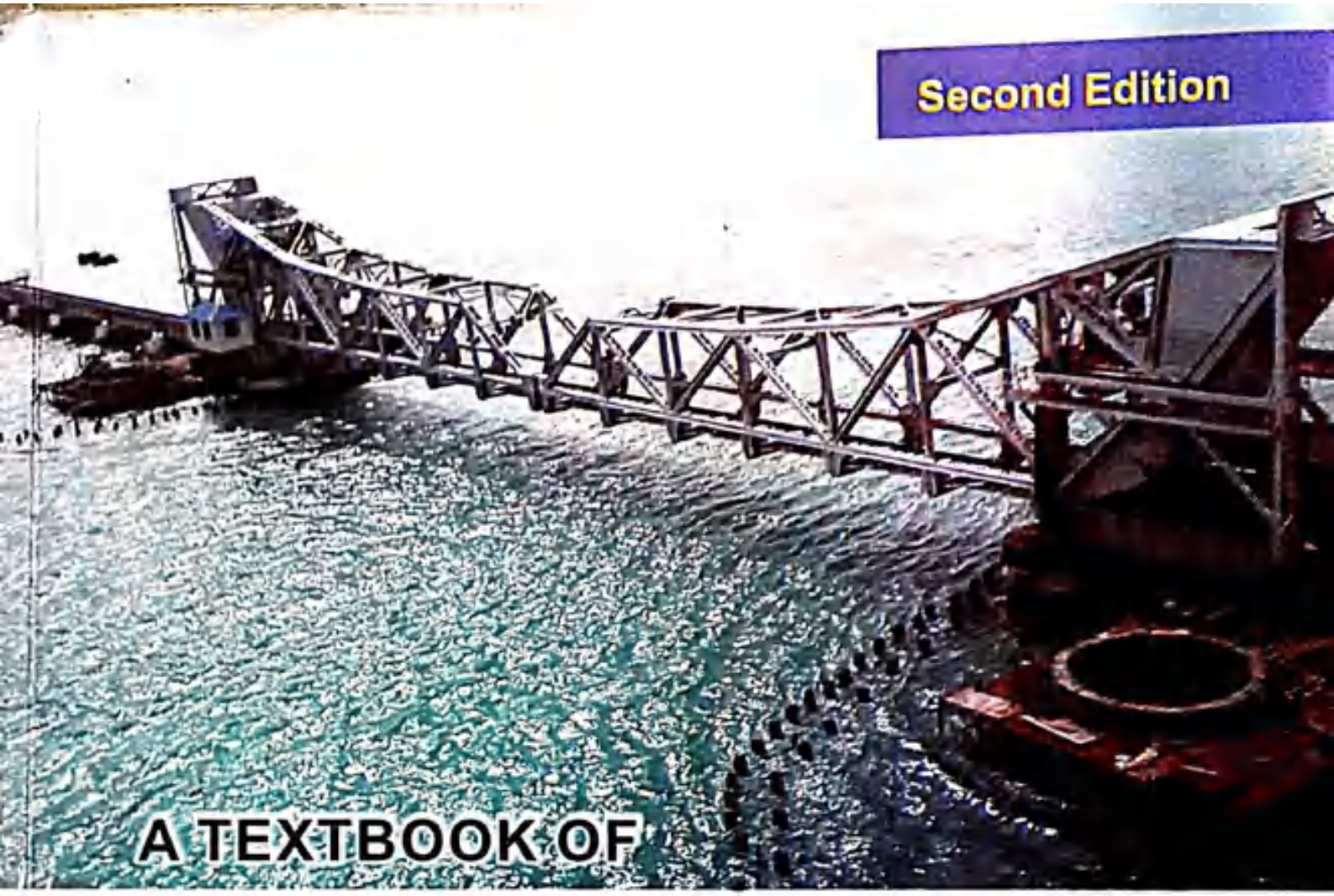

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An IoT based Smart Object Picker using Android App

N.Sharmili, G.Ramakrishna, N.Swapna

***Abstract*—With the rapid advancements in sensors and embedded systems, Automated technology is aiding to our life and making it easier in all aspects. Internet of Things (IoT) is one of the latest emerging technology in automation field that offers a communication paradigm for the devices in all areas of life such as military, healthcare...etc. via the internet. In the competitive world, everyone's life is being so hectic that no one has time for anything. To make the busy life smoother, an IOT based reminding tool is proposed which helps him/her to manage their time in worth full manner for picking object s like remote, mobiles, keys .etc. In this paper an IOT based smart object picker for the elderly people and persons with disabilities is being proposed. In this proposed model, it consists of two parts. One is object picker device and the other is object sensor board. From object picker, to sense or pick the desired object, the control signals or input data commands are sent by the user to the object sensor board through internet or mobile based android app. An arduino board is taken as sensor board which is connected to the objects like keys or remote is responded for object picker with led light or buzzer sound. The developed system can also be used to monitor the home appliances from anywhere and anytime using internet compatible devices**

***Index Terms*—Internet of Things, Home Automation, Smart Object Picker, Disabled, internet, Microcontroller.**

I. INTRODUCTION

INTERNET OF THINGS is an accentuated automation technology that began just a few years ago. It is gradually improving our quality of life with reality. IOT was introduced by Kevin Ashton from Procter & Gamble in 1989. IOT is a communication process between internet and physical objects such as home appliances, health care equipment, etc. with embedded sensors so that the objects can take signals and do their tasks while you are busy with other activities.

The emergent technological innovations in wireless technology are RFID, ZIGBEE, Bluetooth, GSM and Wi-Fi (802.11) [1-3]. Each technology has their own unique features and applications. Considering the advantages of Wi-Fi and IOT an advanced automation system was developed to control the appliances in the house.

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The challenge in IoT products is that they are not having a display, keyboard and user interface. These headless devices need a method to obtain the network name and password from the user for getting WiFi connectivity. An android phone is used as an extended user interface for the IoT device, allowing the user to provide the network information using the display and the keypad of the the phone. An android application is designed as an user interface in phone for sending commands to IoT device through WiFi.

Recently, various researchers have designed IoT based Home Automation System to assist the people with physically disabilities and aged and providing facility to control electrical appliances [11-16]. In present situations day to day life of each and every person is being so hectic that no one has time for anything. So, this situation requires a reminding tool which help him/her to manage their worth full manner to pick object s like remote, mobiles, keys for doing their basics tasks of daily life. It also help aged people and people with memory loss problem. The practical goal of this paper has been to desing and develop a prototype IOT based smart object picker for the aged people and person's with disability. In this proposed model arduino board is used to turn on or off the led or buzzer attached to the desired searching object. The control signals or input data commands are sent to user through internet or the android app in the android based mobile to the Arduino to control all the home appliances or sense objects. Using this system user can sense sound or visible light coming from the attached buzzer/led of the searching object and also able to monitor home appliance from anywhere and anytime using internet compatible devices.

The rest of the paper is organized as follows. Section II presents the the required design modules for implementation of smart object picker. Section III describes the detailed implementation of smart object picker. The results are discussed in Section IV. Finally, conclusions are given in Section V.

II. DESIGN MODULES OF SMART OBJECT PICKER

Fig.1 shows Proposed System using Android Application[3]. In this System we are using Arduino Uno, Wi-Fi module, Relays, LCD display, Buzzer and bulb.

A. WORKING:

In this proposed system shown in Fig. 1 the main objective is to detect various objects like keys and remotes for AC or TV etc..using an Android application that is installed in our

Comparative Analysis of Image Processing Algorithms for Visual Prosthesis

N.Sharmili, N.Swapna and G.Ramakrishna

***Abstract*—Visual prosthesis is one of the emerging technology in biomedical implants which helps to restore useful vision for visually impaired people suffering from retinal degenerative diseases. The visual prosthesis consists of two parts. One is external and the other is internal (surgically implanted). The external part includes a camera, image processor and a transmitter. The image processor captures the video using a camera, encodes the captured information to data forms that can be recognized by implanted stimulator and transmits the coded data through transmitter. The internal implanted part includes a receiver and electrode array. The receiver converts the received bit stream into electrical signals and stimulates the survival parts of the retina using electrical signals applied through the electrode array. The survival parts then sends a signal to the brain where it is interpreted as image/video. The researchers suggested that an array of 600-1000 electrodes are required to do some basic forms of vision such as reading large letters, recognizing faces..etc. The image processor is the crucial part of visual prosthesis where it captures high resolution image data from camera, and resizes it into 1024 resolution image. To extract 1024 pixel vital information, the related image processing algorithms include RGB to Gray conversion, Gamma encoding, Edge Detection and down sampling are reported in this paper. The comparative analysis of image processing algorithms provided here will drive an image processing strategy with less computational complexity of achieving better performance that is suitable to implement on MIPS based microcontroller.**

***Index Terms*—BWIP, Image Processing, Edge Detection, Epiretinal prosthesis, RIRS, Vision prosthesis.**

I. Introduction

VISUAL prosthesis is currently being developed world wide ameliorate more than 40 million blind individuals in the world whose plight would be due to incurable retinal degenerative diseases. The retinal neuro degenerative diseases such as Age-related Macular Degeneration (AMD) and Retinitis Pigmentosa (RP) are the predominant causes of human blindness due to progressive degeneration of photoreceptors in the retina but internal layers of the eye are still healthy. Visual prosthesis is an electronic device designed to bypass the damaged parts of the retina by electrically stimulating the surviving healthy parts of the retina i.e. ganglion cells using electrical pulses applied through an electrode array. Ganglion cells generate a nerve impulse and transmits to the optic nerve, which carries it to the brain where the electrical signals are interpreted as a visual image [1-3].

Visual prosthesis consists of an external part and an internal implant, which are connected by a transcutaneous inductive link. The external image processing unit processes the camera-captured image and transmits the processed information serially to internal implant through wireless link. The internal implant takes the serial image information, transforms it into electrical pulses and delivers them to the electrode array. The electrodes stimulate the healthy neurons in eye, and visual sensations are perceived.

Epiretinal Prosthesis (EP) mentioned in this paper is one of the dominant approach in visual prosthesis where majority of researchers or working. The commercially available Epi-Retinal Implant (ARGUSII at $115,000) was unable to restore useful vision to patients due to its 60 electrodes resolution. Present day retinal prosthesis projects are mainly aimed to develop an implant with several hundreds of electrodes (even up to 1024 due to limited space to implant on the surface of retina), so that the blind can read letters, navigate a room and recognize faces [4][5][7]. Research in this paper is focused on image-processing in external part in addition to implant design for better visual perception [3]-[11].

The captured image from camera is having large number of pixels (640*480 image having 307200 number of pixels). These pixels have to be reduced to 1024 number of pixels i.e. the number of electrodes implanted in internal part of EP. Best image processing strategy is needed to extract useful information from 32x32 resolution images for improving visual perception and ability to conduct visual tasks daily. This paper presents a best image processing strategy by analyzing and implementing different image processing algorithms such as gray conversion, smoothing and edge detection and down sampling are studied and implemented for object recognition and feature extraction... etc. However the internal implant design with real electrodes for electrical stimulation is beyond the scope of this paper and it can be developed by standard approach as described in research articles[7].

The paper is organized as follows. Section II summarizes the system architecture of the EP. Section III describes the Image processing strategy for EP using different image processing techniques. Section IV represents the comparative analysis and results of EP. Finally, Section V concludes the paper.

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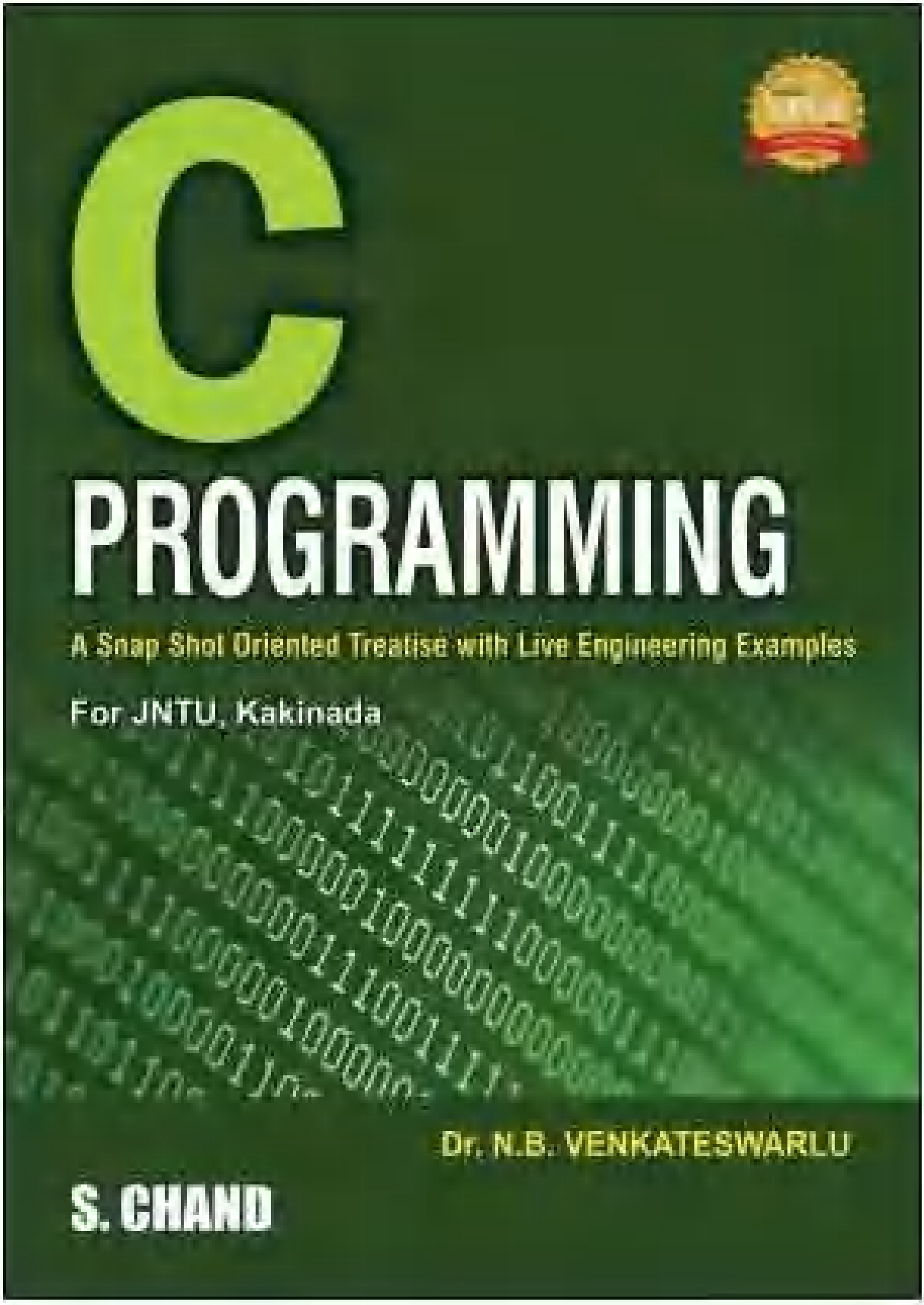
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note on formulas for the Rayleigh wave speed in elastic solids

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ABSTRACT

In the present paper, new analytical, numerical and approximate methods have been presented for the determination of Rayleigh wave speed in isotropic and anisotropic media. The Lagrange's method is used to provide exact expression for the roots of the secular equation for Rayleigh waves in isotropic media. Then, a simple non-iterative type quadrature method is used to numerically determine the Rayleigh wave speed in isotropic and anisotropic media. Further, an approximate method is presented to determine the velocity of Rayleigh waves. The discrete least square approximation on Chebyshev – Gauss – Lobatto nodes is suggested to transform secular equations to quadratic equations, thereby, providing improved approximations to the Rayleigh wave speed. The analysis is complemented with numerical examples.

Introduction

Elastic surface waves in isotropic solids, discovered by Lord Rayleigh [1], has been studied extensively in recent years, due to wide range of applications in seismology, acoustics, geophysics, communications and material science to name a few [2]. The chnological applications of Rayleigh waves in electronic devices h as filters, resonators, delay lines etc. [3] has had far-ching effects on many modern gadgets. The propagation condi- for the existence of Rayleigh waves in an elastic half-space ults in the secular equation for Rayleigh waves (Rayleigh equa-) and its solution gives the Rayleigh wave speed [4]. Since the en's function for many elastodynamic problems for a half-space uires the solution of the Rayleigh equation, formulas for the leigh wave speed in various elastic media is of great theoretical practical interest [5]. The Rayleigh wave equation is a cubic ation in the squared wave speed and its significance has acted researchers to find exact, approximate analytical expres- for the Rayleigh wave speed.

Rahman and Barber [6] first provided an exact expression for roots of the Rayleigh equation in isotropic solids using the the- of cubic equations (Cardano's method). Since that time, a num- of authors have sought to develop alternative expressions for Rayleigh wave speed [7]. Nkemzi [4] provided an alternative exact expression for the Rayleigh wave speed using the theory of Cauchy Integrals, but Malischewsky [8] observed some misprints in [4] and obtained a formula for the wave speed using the advantages of computer algebra and Cardano's formula. Vinh and Ogden [9] obtained a formula solely based on the theory of cubic equations and have explained the Malischewsky formula [8]. Malischewsky Auning [10] obtained a formula for the Rayleigh wave velocity without the signum function but with an irrational term in the denominator and has shown its equivalence with the formula in [8]. Royer [11], used the root locus to provide a simple means for investigating the behaviour of the roots of the secular equation. Nkemzi [12], used a factorization technique based on the Reimann problem to derive a simple formula for the speed of Rayleigh waves. More recently, Liu and Fan [13] utilized a form of Cardano's formula (referred to in [13] as Shejun's formula) to obtained a new formula for the wave speed.

Considering anisotropic elastic solids, we note that Stoneley [14] studied the propagation of surface waves in an elastic medium with orthorhombic symmetry. The Rayleigh waves propagating in principal directions on free surfaces that are principal planes were studied. Royer and Dieulesaint [15] established that the secular equation for surface waves in orthorhombic crystals derived by Sveklo [16] could account for 16 different crystal configurations. Destrade [17] derived an explicit secular equation for surface acoustic waves in monoclinic elastic crystals using the method of first integrals. The speed of subsonic surface waves was then computed for 12 specific monoclinic crystals. Later Destrade [18]

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Evaluation of Optimised Apriori Algorithm on HDFS using MapReduce in Hadoop Distributed Mode

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Abstract — **With a revolutionary change in data analytics it requires techniques that can equally extend with the trending data processing methods. To keep in pace with this elated progress in information evaluation, calibration and storage patterns, development and implementation of large scale algorithms for data processing is gaining importance. In datamining, association rule mining and classification is a wellutilised methodology for identifying overwhelming relations from data in large scale analytics. Apriori algorithm is one such crucial algorithm to mine the frequent item sets which form the basis for finding association rules among the data. Analyzing frequent item sets is a crucial step to find rules and association between them. This stands as a primary foundation for crucial decision making. With the advent of Hadoop Map-Reduce, parallel processing and efficient memory utilisation has come into order. This paper aims to identify the potential of Apriori Algorithm which is implemented as one-phase and k-phase Apriori algorithms in MapReduce framework and further an Optimised Apriori Algorithms(OAA) has been implemented which has a full-fledged MapReduce benefits and it has been identified that Optimised Apriori Algorithm has yielded better efficiency and reduced time complexity.**

Index Terms: Apriori Algorithm Optimised Apriori Algorithm, MapReduce.

INTRODUCTION

Recent technical trends in storage, processing and networking technologies lead to rapid growth of huge volumes of data in both scientific as well as commercial domains. Organizations are more inclined to make better use of this data and the data processing techniques to efficient decision making. Since the data is voluminous it requires appropriate and potential computing environments and framework to increase the precision that directly influence the decision making in real time scenario. Hadoop Framework is one such large-scale distributed batch processing infrastructure for parallel processing of voluminous data which is otherwise called as BIG DATA that flows over huge cluster of commodity computers. Hadoop is an open source project of Apache that implemented Google's File System as Hadoop Distributed File System (HDFS) and Google's processing framework as Hadoop MapReduce programming model. All the algorithms in this paper were implemented on Hadoop using MapReduce paradigm. MapReduce is a parallel programming model designed for parallel processing of large volumes of data by breaking the job into independent tasks across a large number of machines. MapReduce programming is inherited form the list processing languages e.g. LISP, that consists of two functions *Mapper* and *Reducer* which runs on all machines in a Hadoop cluster. The input output of these functions will be in form of <*key, value*> pairs. The Mapper reads the input <k_1, v_1>, from HDFS and produces a list of intermediate values <k_2, v_2>. An additional *Combiner* function which is optional is applied to reduce communication complexity in transferring intermediate outputs from mappers to reducers. Generally the output pairs of mapper are sorted locally and grouped on same key and applied as input to the combiner to make local sum.

With its efficient and rapid processing capabilities Hadoop has become a predominant tool for Data mining and knowledge discovery to extract useful, hidden and unknown patterns and knowledge from large database. There are many areas in datamining that generally considered for decision making. Association Rule mining is one such concept where Apriori is the basic and most popular algorithm for association rule mining proposed by R. Agrawal and R. Srikanth for finding frequent itemsets based on candidate generation. Candidates are itemsets containing all frequent itemsets. The name of the algorithm Apriori is based on the Apriori property which states that all nonempty subsets of a frequent itemset must also be frequent. The core step of the algorithm is generation of candidate k-itemsets C_k from frequent $(k-1)$-itemsets L_{k-1}.[1][2][3]There has been a wide variations in the implementation of Apriori Algorithms. In this paper we have implemented an Optimised Apriori Algorithm (OAA) and evaluated its performance against the One-Phase Apriori and K-Phase Apriori algorithm where the results have evidently proven that the performance of OAA is much better when compared to the other two algorithms.[4][5][6]

Related Work

Apriori Algorithm: One-phase and K-Phase

As the outline of the paper discussed earlier, since the Apriori lacks in efficiency while dealing with the voluminous data sets and even most of the optimized techniques of Apriori using MapReduce has elated its

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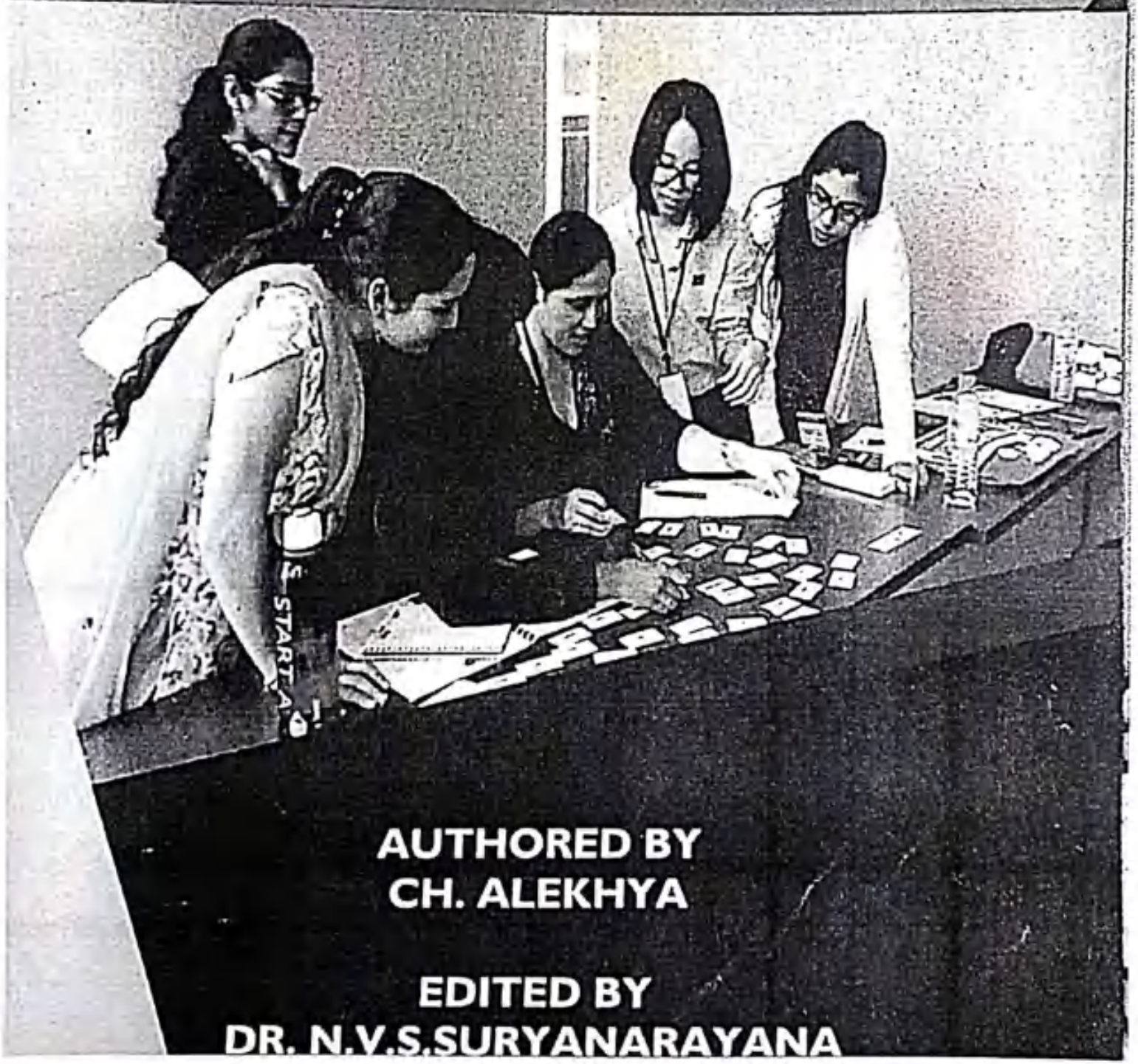

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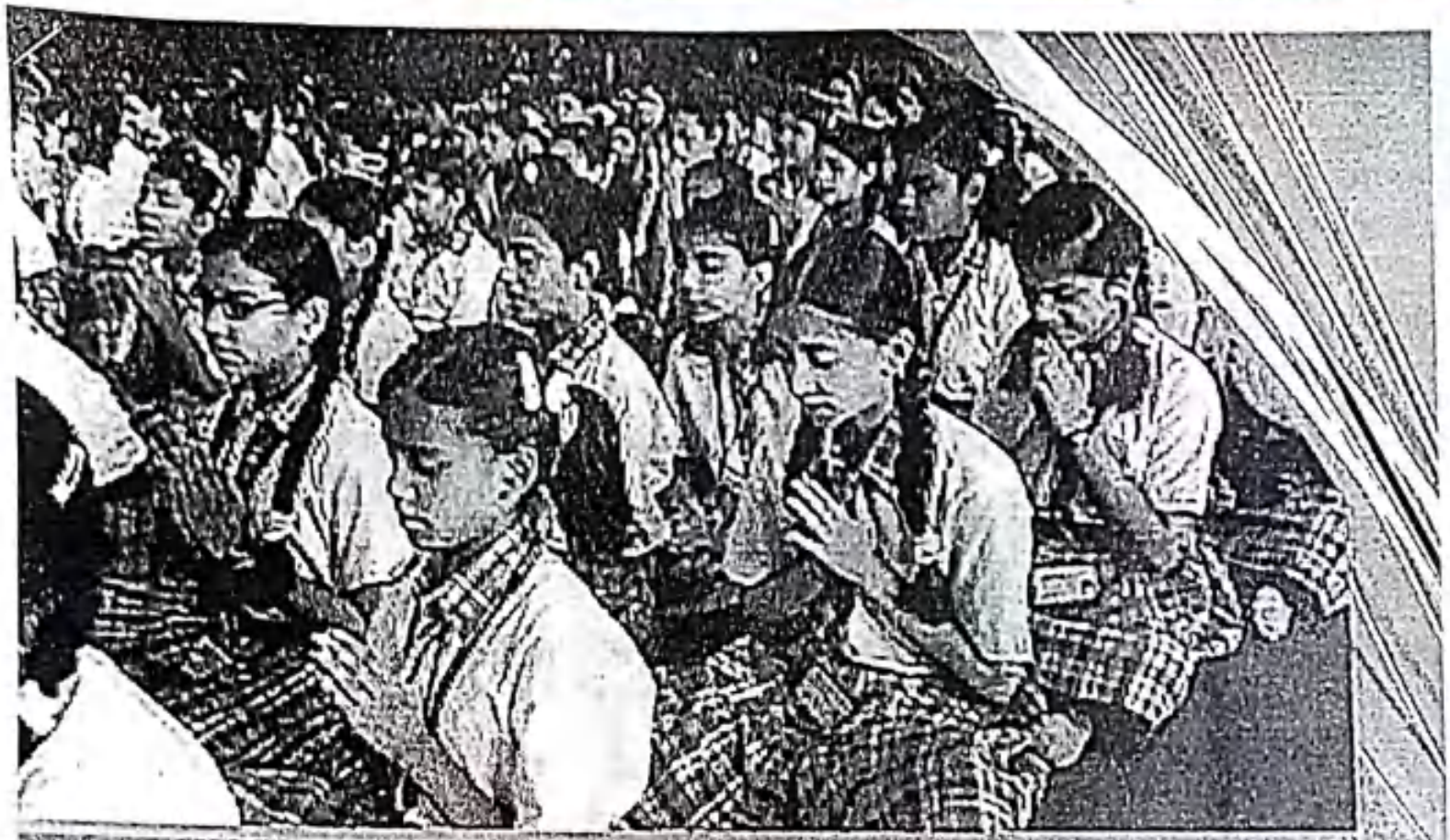

EDUCATION AND HUMAN VALUES

Dr. N.V.S. Suryanarayana
Dr. T. Sharon Raju

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4

Value Inculcation Through ELT

*Ch. Alekhya**

Education means a lot in everyone's life as education is life itself. It changes our mind and personality and helps us to attain positive attitude. Better education is very necessary for all to go ahead in the life. Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits .Education is a multiple process which aims at all round development of the individual. It means physical development, intellectual development, emotional development, cultural development, spiritual development, vocational development, aesthetic development, moral development, language development, social development, religious development, recreational development. Education is the most powerful weapon to change the world.

Education is preparation for life. It develops confidence and helps in building good personality. Education means progress in every society. It produces well-cultured and wise men. It is often said that the children of today are the citizens of tomorrow. It is not easy to measure the loss which the human race has suffered on account of want of education by men and women who had exceptional talent but could not make full use of it. An educated man should have infinite curiosity, the passion to know and understand things in a scientific way, with complete objectivity.

Education is the staying power of all developing countries. An educated person is an asset for any country and education is the greatest resource. Sustainable development of economy and society is closely

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STRUCTURAL, MAGNETIC PROPERTIES OF CU SUBSTITUTED CO-MG NANO FERRITE SYNTHESIZED BY WET-CHEMICAL COMBUSTION METHOD

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ABSTRACT

The influence of Cu substitution on structural and magnetic properties of Co-Mg mixed nano ferrite synthesized by using a wet-chemical combustion method is presented. Significant modifications in crystallite size and density are observed. Cation distribution estimated form X-ray intensity calculations show that Cu influence the preferential site occupancy of Mg ions. It is found that Cu and Mg simultaneously occupy tetrahedral (A) and octahedral (B) sites with different ratios. Particle size calculated using TEM for undoped Co-Mg ferrite is about 80 nm. Saturation magnetization increases initially and reaches a maximum value (x=0.3) and then decreases. The observed variation is explained on the basis of redistribution of cations (Cu^{2+} and Mg^{2+}) among the tetrahedral (A) and octahedral (B) sites.

Keywords: Co-Mg ferrite; XRD; TEM; Cu substitution; Combustion method;

1. INTRODUCTION

The general formula for spinel ferrite is described as AB_2O_4, where A, B correspond to tetrahedral site and octahedral site, respectively. The substitution of different cations with different ratios in to A and B sites improve the electromagnetic properties of the spinel ferrite. Among the spinel ferrites, magnesium ferrite ($MgFe_2O_4$) is one of the most versatile ferrite system and used in high frequency applications, due to its high electrical resistivity and low eddy currents [1]. These properties are strongly depending on distribution of cations among tetrahedral (A) and octahedral (B) sites. The substitution of Cobalt in Mg ferrite enhances the magnetic properties and decreases the dielectric losses [2-5].

Though enormous work has been reported on the magnetic and electric properties of cobalt and magnesium ferrites, work related to Cu doped Co-Mg mixed ferrite prepared by wet-chemical combustion method is still lacking. Therefore, in the present paper, we have attempted to investigate the influence of Cu on structural, magnetic properties of nano $Co_{0.5}Mg_{0.5-x}Cu_xFe_2O_4$ (x = 0.0, 0.2, 0.4, 0.6, 0.8, 1.0) ferrites.

2. EXPERIMENTAL

2.1. Sol-gel auto combustion method

A series of Co-Mg-Cu ferrite nanoparticles were prepared through wet-chemical combustion method using citric acid as combustion agent. Stoichiometric amounts of copper nitrate ($Cu(NO_3)_2.3H_2O$), Magnesium nitrate ($Mg(NO_3)_2.6H_2O$), cobalt nitrate ($Co(NO_3)_2.3H_2O$) and ferric nitrate ($Fe(NO_3)3.9H_2O$) were dissolved in minimum amount of de-ionized water. The citric acid solution was mixed with metal nitrates solution (molar ratio of citric acid to metal nitrates was taken as 1:3). Then the mixed solution was heated to transform into very viscous brown gel and automatically ignited, burnt with glowing

flints. These powders sintered at 1050^{o}C for 4 hrs in air atmosphere. The X-ray diffraction measurements were carried out by X-ray diffractometer (PAN Analytical Xpert Pro). Particle was estimated using Transmission Electron Microscope (CM 200 :: at an operating voltage of 20kV). The magnetic measurements were made on Lakeshore VSM 7410 vibrating sample magnetometer.

3. RESULTS AND DISCUSSION

3.1 Lattice constant and cation distribution

The X-ray diffraction pattern of $Co_{0.5}Mg_{0.5-x}Cu_{0.5}Fe_2O_4$ (x=0.0 to 0.4 in steps of 0.1) nanoparticles sintered at 1050^{o}C for 4 hours is shown in Figure 1. All the peaks are indexed with reference to the standard pattern (JCPDS card Nos. 79-1744 and 73-2410 for the end ferrites $CoFe_2O_4$ and $MgFe_2O_4$, respectively) and found to be (220), (311), (400), (442), (511) and (440).

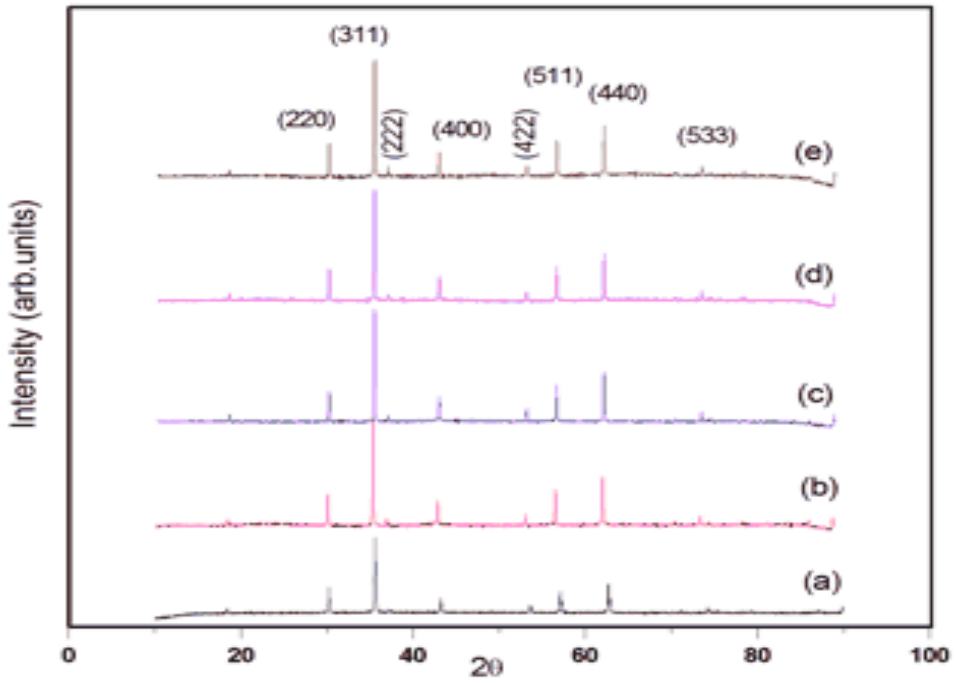

Fig .1 X-ray powder diffraction for $Co_{0.5}Mg_{0.5-x}Cu_xFe_2O_4$ samples

(a) x=0.0, (b) x=0.1, (c) x=0.2 (d) x=0.3 and (e) x=0.4

No other secondary phase could be identified by XRD for all the sintered samples. From the experimental values of 'θ', inter planar spacing'd', the values of lattice parameter "a_o" and listed in Table 1[6]. The lattice constant of pure $Co_{0.5}Mg_{0.5}Fe_2O_4$ is 8.3793Å(±0.002Å), which is in good agreement with the earlier reported values [5,7]. The observed increase in lattice constant is due to the difference in the ionic radii of Cu and Mg ions. Crystallite size of all the samples are estimated using Scherrer formula to get the crystallite size and listed in Table 1 [6]

Table 1 Cu concentration (x), Lattice constant (Å) and crystallite size (nm) and cation distribution

Cu concentration (x)	Lattice constant (Å)	Crystallite size (nm)	A-site	B-Site
0.0	8.3793	88	$Mg^{2+}_{0.1}\ Fe^{3+}_{0.9}$	$Co^{2+}_{0.5}\ Mg^{2+}_{0.4}Fe^{3+}_{1.1}$
0.1	8.3808	96	$Mg^{2+}_{0.12}Cu^{2+}_{0.04}\ Fe^{3+}_{0.84}$	$Co^{2+}_{0.5}Cu^{2+}_{0.06}\ Mg^{2}_{+0.28}Fe^{3+}_{1.16}$
0.2	8.3843	90	$Mg^{2+}_{0.17}\ Cu^{2+}_{0.06}\ Fe^{3+}_{0.77}$	$Co^{2+}_{0.5}Cu^{2+}_{0.14}\ Mg^{2}_{+0.13}Fe^{3+}_{1.23}$
0.3	8.3872	100	$Mg^{2+}_{0.115}Cu^{2+}_{0.12}\ Fe^{3+}_{0.765}$	$Co^{2+}_{0.5}Cu^{2+}_{0.18}\ Mg^{2}_{+0.085}Fe^{3+}_{1.235}$
0.4	8.3906	79	$Mg^{2+}_{0.025}Cu^{2+}_{0.2}\ Fe^{3+}_{0.775}$	$Co^{2+}_{0.5}Cu^{2+}_{0.2}\ Mg^{2}_{+0.075}Fe^{3+}_{1.225}$

Crystallite initially increases with Cu^{2+} concentration up to x=0.3, when compared with pure Co-Mg ferrite, and then decreases when x>0.3. The observed non-uniform variation in the crystallite size is due to difference in cation distribution over tetrahedral (A) and octahedral (B) sites.

The distribution of cations among A and B sites was estimated from the analysis of X-ray line intensities adopted from Buerger method [8]. The proposed cation distribution over tetrahedral (A) and octahedral (B) sites are summarized in Table 1. It is found that the experimental and calculated intensities are consistent with each other. The proposed cation distribution also supports the changes in magnetic properties and crystallite size. It is well reported that cation distribution affected by the method of preparation, sintering temperature and doping concentration.

3.2 Density

The bulk density and X-ray density with copper content of $Co_{0.5}Mg_{0.5-x}Cu_{0.5}Fe_2O_4$ ferrites are listed in Table 2. The bulk density 'd_b' of each sample was measured using Archimedes principle and X-ray density from the standard relation [9]. The X-ray density increases as the Cu (x) concentration increases, where as bulk density increases initially, reaches to a maximum at x=0.3, and then decreases. The bulk density is lower than of X-ray density due to the existence of pores, which were formed and developed during the sample preparation or the sintering process

3.3 Particle size

Figure 3 depicts the TEM micrograph of undoped Co-Mg ferrite. Most of the nano-particles are spherical in shape and are agglomerated. Agglomeration of nano-crystals may be due to the tendency of nano particles to aggregate to achieve a low free energy state by reducing the specific superficial area by lessening the interfaces with other particles. The particle size obtained from this image is about 80 nm, which is in good agreement with the crystallite size calculated from Scherrer formula.

Fig.3. TEM micrograph of $Co_{0.5}Mg_{0.5-x}Cu_xFe_2O_4$ for x=0.0

3.4 Saturation magnetization

Figure 4 shows the typical magnetic hysteresis loops Cu substituted Co-Mg-ferrite in the applied field ranging from -10 to +10 kOe. The hysteresis loop explains the soft ferromagnetic nature of the synthesized $Co_{0.5}Mg_{0.5-x}Cu_xFe_2O_4$ by sol-gel auto combustion method. Various magnetic parameters like saturation magnetization-Ms (Maximum value of magnetization), Remanance Magnetization- Mr (Magnetization at zero field), Coercivity-Hc (magnetic field required to reduce the magnetization of that material to zero after the magnetization of the sample has been driven to saturation) are estimated and tabulated in Table 2. As can be seen from the Table 3 that, the magnetization of undoped Co-Mg ferrite is (x=0.0) 14 emu/g and increases to a maximum value 45 emu/g (x=0.3), and then decreases for higher concentrations (x=0.4). Magnetization in nanoferrite is strongly influenced by the site preference of the ions. In spinel ferrites, the net magnetic moment of the A and B sub-lattices is the difference between the magnetic moments of B and A sublattices, i.e., $M=|M_B-M_A|$.

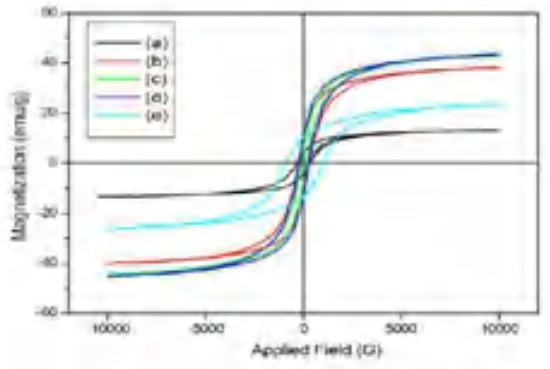

Fig.4 Room temperature hysteresis loops of $Co_{0.5}Mg_{0.5-x}Cu_xFe_2O_4$ samples

In general, Cu^{2+} ions are preferentially occupy A-sites, while Co^{2+} and Mg^{2+} ions have a strong preference to occupy the B-sites, and Fe^{3+} ions are occupy both A and B-sites [10]. The increase in magnetization is expected because Cu^{2+} ($2\mu B$) ions replace some of non-magnetic Mg^{2+} ($0\mu B$) ions on octahedral sites. With increasing the concentration of Cu, the migration of a fraction of Cu^{2+} ions towards A-site, would lead to the increase of Fe^{3+} concentration in B-sites. This causes an increase in the magnetic moment of B site, which is responsible for the observed increase in net magnetization. The redistribution of Mg^{2+} ions in to B-sites for x=0.4, resulting in the weakening of A–B exchange coupling, and thereby decreases the net magnetic moment.

Table 2 Saturation magnetization (Ms), remanent magnetization (Mr), Coercivity (Hc) of $Co_{0.5}Mg_{0.5-x}Cu_xFe_2O_4$ samples.

Concentration (x)	Ms (emu/g)	Mr (emu/g)	Hc (Oe)	d_x g/cc	d_b g/cc
0	14	4.4	325	4.91	4.12
0.1	39	12.3	285	4.99	4.29
0.2	43	12.4	264	5.07	4.43
0.3	45	7.4	166	5.16	4.63
0.4	25	11.9	959	5.24	4.21

4. CONCLUSIONS

Cu substitution for Mg in Co-Mg mixed ferrite has been shown to have strong effects on both structural and magnetic properties. The substitution of Cu redistributes the occupancy of Mg ions though they have a strong octahedral site preference. This brought significant changes in the magnetization, coercivity, permeability and magnetic anisotropy.. The observed variation of all these magnetic properties can be interpreted in terms of the cation distribution.

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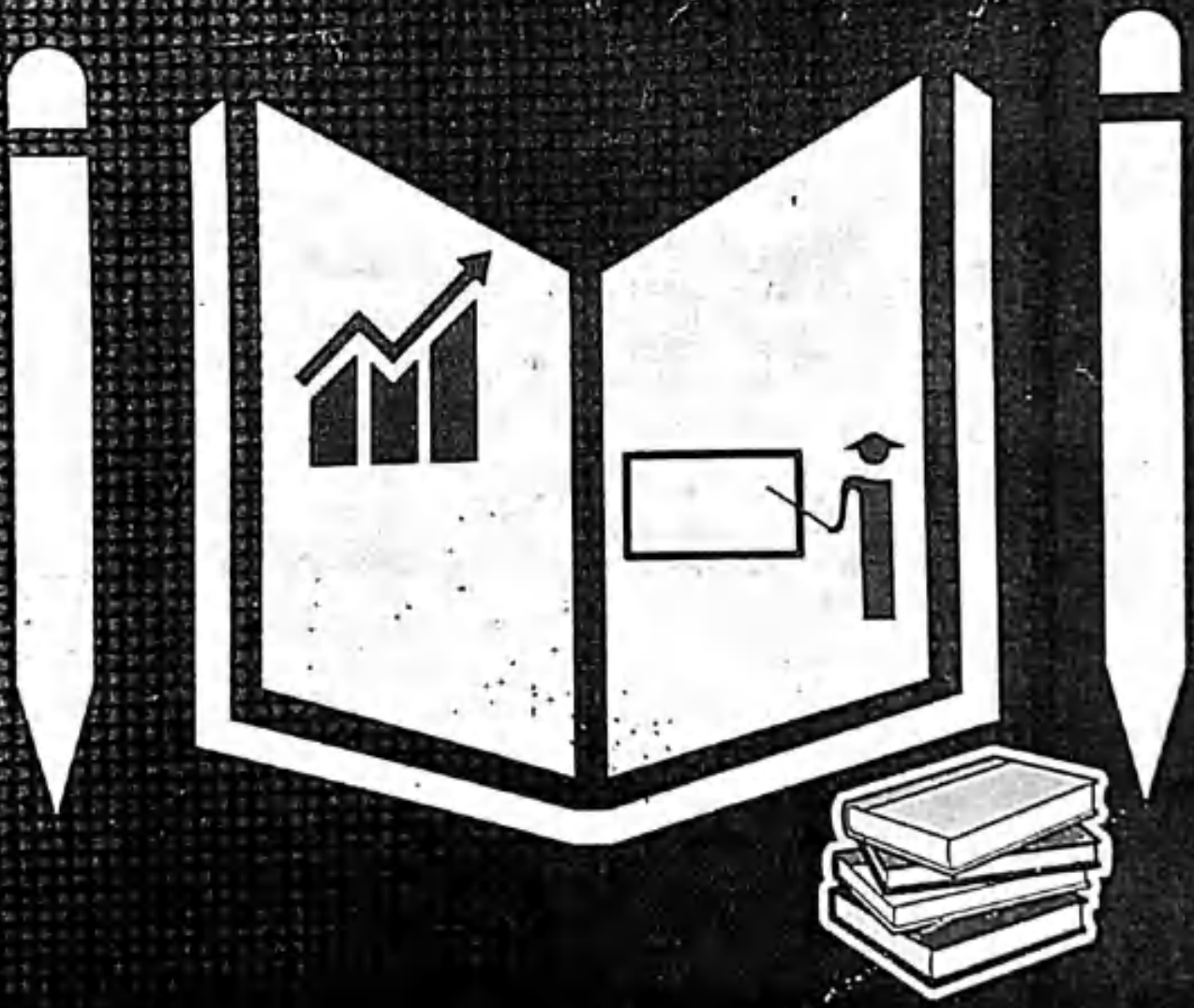

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Dr. KONDRU SUBBA RAO

A TEN STEP APPROACH OF SOFT SKILLS FOR HUMAN EXCELLENCE IN THE GLOBAL CONTEXT

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Introduction:

Human Excellence is a broader area which deals with the congregation of indigenous capabilities in an individual with adventitious factors. All human beings are not born with extraordinary capabilities but upon their focus they can excel their lives in a righteous way accommodating with the living community.

Soft skills are the Predominant skills which can turn a Person to a Personality. Acquisition of such skills is the demand of this Privatisation and Globalisation era for human Excellency. The present scenario focuses less on ordinary capacities, strives to see Excellencies in every individual. As of now Soft skills are adored but are neglected, there is no sort of proven situation which can be well seen practically about soft skills leading majority of humans towards Success but it is to be understood that these are the driven factors which present the individual as incredible.

People who are said as eminent and great are not born great but they turned as great. The underlying factors which widely distinguish great from the common people are their soft skills. In the past several great leaders such as Mahatma Gandhi, Jawaharlal Nehru, Indira Gandhi, Abraham Lincoln, Martin Luther King and Nelson Mandela; in the present leaders such as Abdul Kalam, Advani, Narendra Modi, Sonia Gandhi etc., inspired every one with their dynamic Personality.They are being remembered because they are unique with added abilities which are Softskills.

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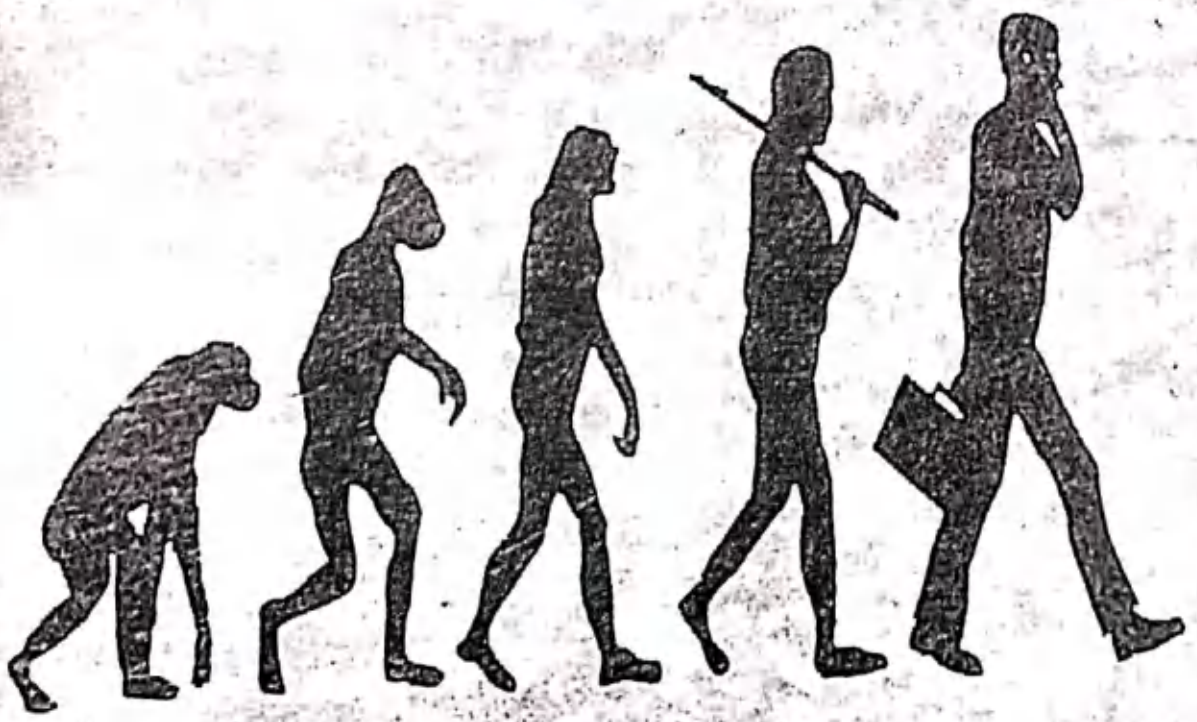

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EMOTIONAL INTELLIGENCE FOR HUMAN EXCELLENCE IN TRENDING TECHNOLOGY

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Introduction :

Technology has an undeniable scope in our lives as it is the ruler of the globe. Technology occupies significant space in everyone's personal and professional life styles. Technology is the key factor in all sorts of existing organisations. But it's very clear technology without human efficacy shows negligible effect on out bringing. This is the reason behind why organisations look forward for people with excellence to retain technology.

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Technology is a creative outcome and real measure of human intellect which in turn needs the support of human beings to work on. Human beings are well known by their Intelligence. *The word Intelligence is of Latin origin derived from "Intellegere" means to comprehend or perceive.* Intelligence is the ability of human mind to reciprocate the acquired knowledge for a desired situation. Intelligence is a person's intellectual ability which portraits one's understanding, judgement, logic, reasoning, knowledge, application and creativity. It is the potentiality to adapt change in environment, and to solve problems .

"If intelligence is the triumph of life, the spoken word is the marvellous means by which this intelligence is manifested". —Maria Montessori

Technology with human excellence is the critical factor for the sustainability of organisations all over the world. In this trending technological context every organisation is in a dire need of work force with self-efficacy and intelligence. Up to now employers wish to have

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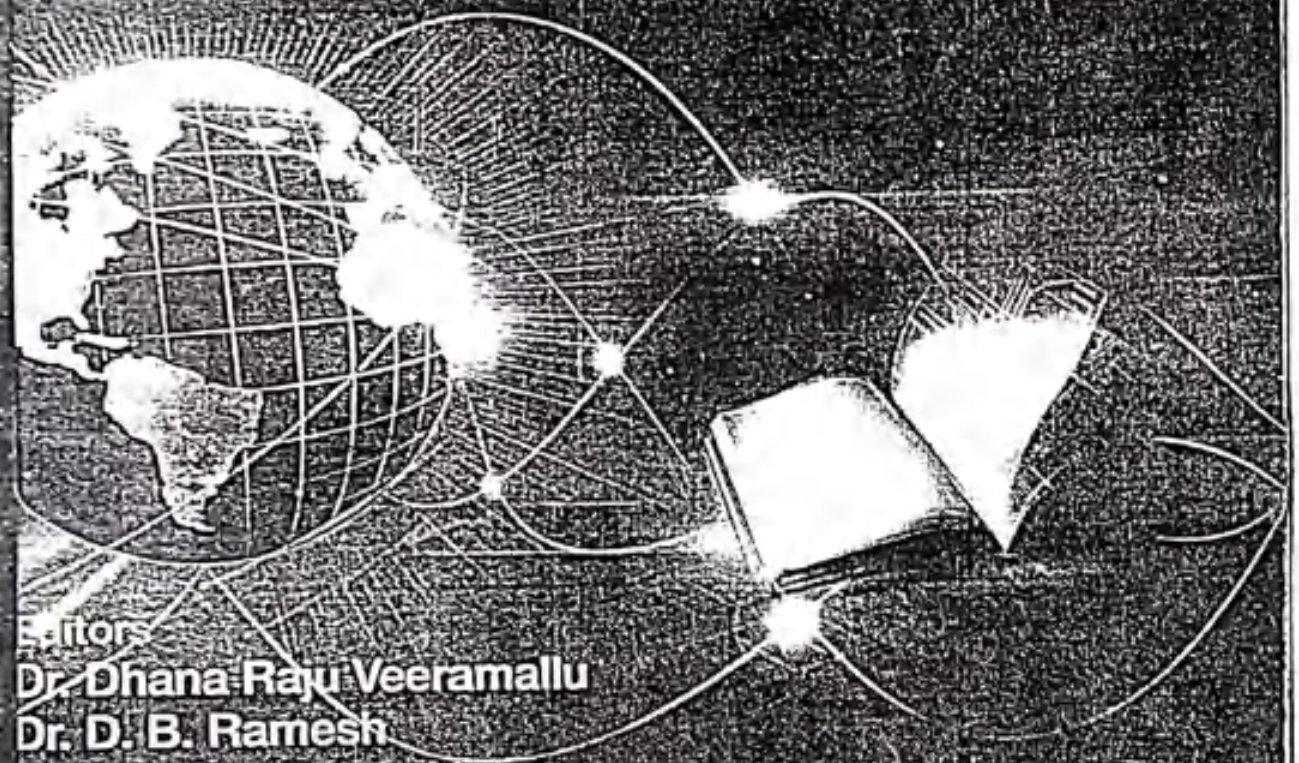

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LIBRARY SERVICES IN ENGINEERING COLLEGE LIBRARIES: A CASE STUDY

R. Anuradha

ABSTRACT

Attempts to examine the efforts made to create awareness about library resources and services in engineering college libraries. It also emphasizes the importance and management of engineering libraries in terms of library facilities, resources, services etc. This study also presents an overv of GVP college of Engineering (Autonomous) and GVP College of Engineering for Women, Visakhapatnam. Based on the findings few suggestions have been given.

Keywords: Library services, Users.

Introduction

Library is like knowledge center and is the heart of any institution. An Engineering college provides technical education and it is expectedan important role in the growth and development of the country. So the main aim of the library ofan Engineering college willbe developing relevant collection of books and other information resources in support of formal technical education. Libraries in engineering colleges assist in research process by collecting, preserving and making available of resources to its user community. In today's rapidly changing information world, information needs of users are met through a plethora of sources. The use of library resources and services is a matter of concern to faculty and students. The GVP College of Engineering (Autonomous) and GVP college of Engineering for women, Visakhapatnamare started with an objective for inculcating scientific temper among new generation of youth with a blend of human values by providing quality education with a holistic approach and facilitate value based career in the field of science ,engineering and technology. Gayatri Vidya Parishad College of Engineering (A) has started in 1996 and affiliated to JNTU K (Kakinada). The college offers 7 UG programs

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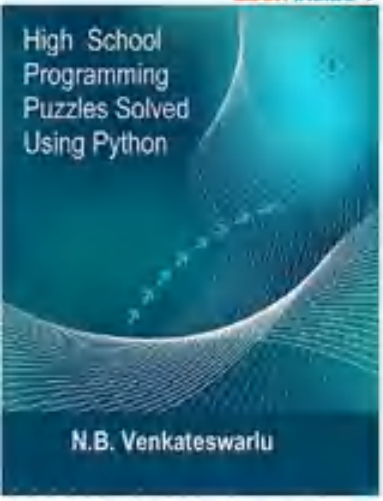

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A novel stochastic estimator using pre-processing technique for long range target tracking in heavy noise environment

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ABSTRACT

A novel stochastic algorithm using pre-processing technique is proposed in this paper to deal with the problem of underwater target tracking using passive Sonar. Pre-processing is a concept of reducing the variance of noise present in the measurements given by sensors. This key step is performed ahead of conventional estimation algorithms. Pre-processed measurements are obtained by taking weighted average of present measurements and projected previous measurements. The method is expected to bring down the variance of noise to a great deal based on the fact that the sensor errors are unbiased by nature. The most attractive feature of this algorithm is the capability to track long range targets in heavy noise environments. The algorithm is tested by running Monte Carlo simulations in Matlab R2009a environment. There, it is shown that the estimation error and the time of convergence of the pre-processing technique based algorithms like pre-processed Unscented Kalman Filter (PP-UKF) and Integrated Unscented Kalman filter (PP-IUKF) are much less compared to their non-pre-processing counterparts namely UKF and IUKF, thus indicating the importance of the proposed novel method.

1. Introduction

Tracking is the most essential signal processing task performed at the time of wars. It is the concept of estimating the position of a moving target using noise corrupted sensor measurements. This important task is performed with the help of a Radar when dealing with the targets which are on or above the ground and Sonar while dealing with underwater targets. Sonar primarily operates in two different modes namely active and passive. Active mode Sonar operation normally involves active transmission of signal and echo reception to find the position of a moving target while Passive mode operation is concerned with the reception of the noise generated by the propeller of the enemy's vehicle to get an idea of the targets location. The target tracking is possible with a single moving sensor as shown by Aidala [9] or by a set of stationary sensors using a concept of triangulation. This paper deals with tracking underwater targets using Towed array measurements given by a passive Sonar.

Modern era of the underwater tracking started by using the celebrated work of Kalman [1,11]. The problem with this filter when dealing with the active tracking is, the generation of undesired bias during the conversion of measurements from the available polar to the Cartesian form. This bias is properly computed and eliminated by Lerro and Bar-Shalom [7] to get considerable improvement in the results. Suchomski [16] have extended the work to make Kalman filter useful for tracking in three dimensional case. Lerro et al. [7] tried to apply Kalman filter in a different way by keeping the state and measurement equations in different coordinate systems. By doing so the measurement equation is turned to a non-linear one which creates problem to apply (KF) directly. The problem is tackled by converting the non-linear measurement equation to a linear one by Taylor series expansion. This way of implementing Kalman filter is called the Extended Kalman filter (EKF). The same procedure is followed for passive target tracking by Aidala et al. [5] and named the algorithm as Cartesian coordinate EKF. The stability problem developed by the ill conditioning of the covariance matrix is also solved in the same paper by the proper choice of the elements of the state vector. This algorithm is named as the modified polar coordinate EKF [5]. Song and Speyer [6] has introduced a time varying gain function in the EKF to get improved results in terms of stability. This filter is called Modified gain Bearings-only EKF (MGBEKF). A much simpler version of MGBEKF is derived by Galkowski and Islam [10]. Nardone et al. have applied two batch processing algorithms namely Pseudo Linear estimator (PLE) and Maximum Likelihood Estimator (MLE) to solve the problem of Bearings-only tracking

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Integrated Unscented Kalman filter for underwater passive target tracking with towed array measurements

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ABSTRACT

Under water moving target is usually tracked using the Traditional non-linear estimators such as Extended Kalman filter (EKF) and Unscented Kalman filter (UKF) with the help of noisy measurements given by a SONAR operating in passive mode. Here in this paper an Integration Technique based approach which works on the principle "Collective Opinion is better than individual" is proposed to improve the performance of the existing algorithms. In this novel method multiple UKFs accept measurements from towed array and the estimates of these different UKFs are integrated using least squares estimator, and hence the algorithm is named as Integrated Unscented Kalman filter (IUKF). Monte Carlo simulation in MATLAB R2009a is carried out to compare the performance of the proposed IUKF with the existing traditional nonlinear estimators EKF and UKF for two different scenarios to show the superiority of the proposed method.

1. Introduction

Tracking is a sophisticated process of estimating the state (i.e. position and velocity) of a moving target as close to the true state as possible using the available noisy measurements. This is essential in the war environment for two main reasons, One to escape ourself from being attached, and second to demolish the enemy. The noise corrupted measurements can be received from SONAR in active or passive mode. Active mode involves a process of intentional release of signal, Reception of echo and getting an idea of Range and Azimuth of the target while passive mode SONAR is restricted only to listen and hence it gives only Azimuth measurements of the target. The drawback associated with active SONAR is, the concept of releasing the signal at enemy can cause us to be detected prior to the enemy being detected. This setback is not associated with passive SONAR due to the absence of signal transmission. The advantage of using active measurements over passive measurements is that, the tracking with former can be done easily due to the availability of range measurement along with the bearing measurement which is not the case with the later. The pros and cons are associated with both the measurements. So an intensive research is going on in the field of Target Tracking using both types of measurements with an edge of passive over active tracking.

The Traditional Kalman Filter (KF) Eqs. (5.17), (5.18) and (5.19) of [1] can be used to track an underwater Moving Target with active SONAR measurements where the state and measurement equations are linear with the simple assumption that the measurement Gaussian noise mean is zero even after conversion of measurements from polar to Cartesian systems as shown in [7]. The improved performance is achieved by applying (KF) after proper calculation of actual mean and covariance of the measurement noise in Cartesian system and subtracting this mean from the measurements to make the mean of measurement noise zero. The resulted (KF) with debiasing is applied for active tracking in [7].

Tracking a target with passive measurements cannot be done by traditional (KF) due to the incapability of (KF) to deal with nonlinear measurement equation associated with passive measurements. A nonlinear version of (KF) named as extended kalman filter (EKF) does this job by approximating the non-linear measurement equation to a linear one with the help of Taylor Series Expansion. Application of (EKF) in modified polar coordinates to BOT is available in [5]. The performance of Bearings-only Tracking (BOT) using passive measurements with EKF is brought to a new-level by introducing a modified gain function in a covariance matrix of state vector which prevents the occasional divergence and estimator instability. The resulted estimator is called as Modified Gain Bearings-Only extended Kalman filter (MGBEKF) [6].

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Fused Kalman Filter for a Constant Turn Radar

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Abstract **- Estimating the target path with Radar and Sonar, when it is in a motion is a nonlinear state estimation problem. The target parameters are measured with sensors. This sensor gives us the polar coordinates values like range, range rate, and about two angles. To avoid nonlinear filters, the polar coordinate values are converted to Cartesian coordinates gives better performance in estimating the target path. This conversion of polar to Cartesian is referred as converted measurement Kalman filtering (CMKF). Here two contributions are taken for conversion of parameters. One is converted Doppler measurement Kalman filter (CDMKF) for exploiting range rate measurements and other is converted position measurement Kalman filter (CPMKF). Taking these two methods parallel tends to new state estimator called Fused Kalman filter (FKF). The resulting states of CDMKF and CPMKF are combined by static minimum mean squared error estimator results final state estimates. This work refers to conversion of dynamic nonlinear estimation problem to dynamic linear estimation followed by static nonlinear fusion. In this work, we derive the discrete temporal evolution equation of the pseudo state vector, defined by the converted Doppler (the productive of target true range and range rate) and its first derivative, for the constant turn (CT) motion. The resulted linear state equation allows using of linear Kalman filter to extract information from the pseudo state of a target moves with constant speed and constant turn rate. The method is referred to as FKF. This proposed CT model is demonstrated by assessing the performance of the CDMKF and FKF. Comparative results show the superior performance of the proposed method especially in challenging scenario with large position measurement errors.**

I. Introduction

The radar gives us the polar values like range, range rate, and angles of a particular target. These parameters are taken during its motion. Estimating with these measurements is somewhat complicated. So these parameters are converted as polar to Cartesian. During this conversion, we get some errors. Then the Cartesian components errors in the converted measurements are correlated with each other are explored in [4, 5, 9, 11, 13, and 14]. In this approach we have to consider the measurements of the target state estimation in a nonlinear fashion, which results the mixed coordinate filter [7], [8].

These measured terms results are considered to compare with the first two moment approximations which are presented here. The new converted measurement Kalman filter (CMKF) [14], is having estimation errors, which are compatible with the calculated covariance of the measured terms. The EKF is different from this method, because it is consistent only for small errors. So that the CMKF is having the correct covariance, it processes all the target measurements with a gain, which is nearly optimal and gives smaller errors compared with the EKF [3]. In the moderately accurate sensors, the EKF performs very poorly in tracking the target at long range for RMS azimuth error of 1.5degrees or more [10]. But the CMKF [12] is consistent for 10° RMS azimuth error also.

In this paper to rectify these shortcomings, a new method is proposed. In the proposed method, the use of the nonlinear recursive filtering methods is avoided during the processing of Doppler measurements [6]. In the first one, a pseudo state vector is considered, which is the existing converted Doppler measurements of the target are linear functions and then they are constructed. These pseudo state vectors consist of the converted Doppler measurements and its derivatives [7], [8]. The pseudo state equations are derived from the measurements and proven to be linear in two commonly used target motion models. The other one is done by using extended Kalman filter (EKF) presented in [3, 6, 8, 10, 12, and 13]. One model is the constant velocity (CV) and the other one is constant acceleration (CA) models. Now adding the constant turn rate (CT) method to these converted Doppler measurement Kalman filter (CDMKF), is proposed to estimate the pseudo states [7]. This is also used for filter the noise in the converted Doppler measurements kalman filter. Finally, the CDMKF is combined with that constant rate method [14, 13] to construct a new filter which gives a new state estimator called as Fused Kalman Filter (FKF).

II. Problem Description

In Cartesian coordinates target's parameters are considered by depending on the conversion measurements of the target from polar coordinates to Cartesian. It is modeled as:

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Status of Institutional Repositories in Research Institutions in South India: A Study

R. Anuradha

ABSTRACT

Institutional Repositories are becoming an indispensable component for Information and knowledge sharing in the scholar world. In India major R & D Institutions and few academic institutions are providing Institutional Repositories (IRs) services to its clientele. The study investigates current status of institutional repositories in Research institutions in south India and discusses the objectives, software usage, type of materials, access policy and preservation methods. The result of the study suggest healthy growth in terms of quality of institutional repositories in R & D institutions in south India.

Keywords: Institutional repositories, software

Introduction

An Institutional repository is digital collection of an institution's intellectual output. It is form of digital library. It provides a web-based mechanism for researchers to deposit archive and access their research publication. Chang(2003) "An IR is a new method for ring, collecting, managing, disseminating and preserving scholarly works created in al form by the constituent members of an institution". Knowledge grows through man's action with nature. New knowledge generated through human interaction should be d with others for the proper utilization of knowledge. Institutional repositories are the wledge banks of the institutions. It collects, organize and disseminate the content ated by the institution. Rajasekhar (2005) gave one of the most fundamental definition IR is a digital archive of intellectual product created by the faculty, research staff and nts of an institution and accessible to end users both within and outside of the institution few if any barriers to access". An IR may include full text journal articles, conference , book chapter, monograph, thesis, research report, dissertation, presentation, media files. India has adopted open access model much ahead of other developing ies. In India a number of scientific research institutions, universities and corporate R produce high quality research published by national and international journals and ence proceedings. Some of academic and research institutions have set up IRs.

For this study a bibliographic review was carried ont regarding status of different tional repositories working in research libraries in south India. More specific to examine jectives of IRs, content, Infrastructure and repository policies. Different preservation