Enhancing the Performance of Efficient Energy Using Cognitive Radio for Wireless Networks

D. Seema Dev Aksatha, R. Pugazendi, and D. Arul Pon Daniel

1 Introduction

The increased energy utilization is considered to be the key challenges of deploying the wireless networks. High data rate is utilized for wireless applications like multimedia service and interactive services which leads to excessive power usage. Energy expenditure can be minimized or utilized efficiently as much as possible. Different technologies and architectures have been utilized to meet out the challenges caused due to excessive power usage. Several initiative research steps have initiated for reducing power consumption of wireless networks.

Environmental concerns and economic point of view are the key criteria of efficient energy to intend wireless networks. Power utilization of a network increases with the density of access points in order to save the operational costs of the network operator. The increasing capacity of batteries for wireless terminals does not satisfy the user's expectations. The lifetime of the energy can be increased with energy saving schemes and devices should be introduced. In wireless communication, the ratio between total data speed and power used at the transmitter were the efficient energy [1]. Maximum utilization of energy does not mean that energy is employed effectively and efficiently, but we have to note that the budget limitations should not exceed the maximum.

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Prediction of water quality parameters by IoT and machine learning

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Abstract— **Increases in domestical applications and other applications drive the need for better clean Water Management in India. What makes up the "chemical, physical, and biological" quality of freshwater There are three stages in the conventional method of monitoring water quality: sample, analysis, and inquiry. The scientists do these by hand. This method needs to be foolproof and predict a water supply's quality. They're Using the development of wireless sensor technologies, has also been some investigation into the possibility of monitoring water quality with wireless sensors put in water and communicating with farmers through brief messages regarding water. There has also been a study into the possibility of employing machine learning algorithms to analyze water quality. In light of recent advances in Machine Communication, which allow for devices to communicate with one another and smart ly analyze the data they collect. We have developed an "smart water quality monitoring system by using wireless sensonrs" for residential areas that rely on water storage tanks. A pH sensor and a total dissolved solids meter are used in this system to provide accurate readings of the water's pH and dissolved solids levels. K-Means clustering, a machine learning technique, has been used to forecast water quality using a training data set consisting of various water samples. This system is now in its prototype stage, used with low-cost embedded devices like the Arduino Uno and Raspberry Pi3.**

Keywords— IoT, Monitoring system, K-Means, Arduino Uno

I. INTRODUCTION

Increases in agricultural, industrial, and other needs drive the need for better Fresh Water Management in India[2]. Fresh water's quality may be described by its "chemical, physical, and biological" properties. Water quality monitoring is essential to identify water pollution, hazardous chemicals, and contamination[4]. The conventional approach, still widely used today, comprises collecting samples of water, having the water tested in a laboratory, and then providing recommendations for water treatment. There are now three stages to the process of monitoring water pollution- Sampling water, collecting test specimens, and analysing the results are all essential steps in any investigation[1,3].

These three procedures are not only less effective but also more costly, complex, time-consuming, and dependent on professional guidance. As a result, instead of depending on human labour, modern technology allows for automated water quality monitoring and necessary response[5,6].

II. PROPOSED METHODOLOGY:

Humans are responsible for taking samples, testing them, and analyzing the results in the current Water Quality monitoring system. Several technologies are used to develop the monitoring system in the current scenario. Wireless sensors are accessed more for monitoring purposes. Recent research used wireless sensors to monitor water quality.

Only a tiny amount of research has been done on using machine learning to analyze water quality based on gathered water parameters for analysis rather than false notifications, in addition to monitoring water quality.

However, an utterly automated water quality monitoring system using Sensors currently needs to be implemented, which presents a significant hurdle. Furthermore, the system has no inherent intelligence that would let it analyses

Data Harmonizing in Cloud with Enhanced Reliability in Distributed Computing

Syed Fiaz A.S, Asha.N, P.Ashok, A.S.Syed Navaz

Abstract: In Information harmonizing in a finest way is dropping matching data of information. In the present method seriously used in the cloud, it outcome by declining space as well as group bandwidth used for upload, It is enough that simply single data of documentation are stored in the cloud still if many owners of a record. As an outcome, harmonizing structure improves storage, use even as dropping dependability. Furthermore, the disputes about privacy for responsive information as well arise when it is outsourced by user to the cloud. In a recent distributed Harmonizing system with higher consistency is applied here, in which the huge information storage is disseminated transversely numerous cloud servers and the information is stored only once in the server to avoid density. If the Client system wants to store the similar document the Information harmonizing method is worn to reduce the storage room. The Safety necessities of information time alone and tag dependability are as well achieved by introducing a deterministic underground distributing method within disseminated by keeping the systems. As an outcome, we execute new methods and exhibit to the attained overhead is restricted in realistic environments.

Index Terms: Privacy, CSP, Consistency, Secret sharing, harmonizing

I. INTRODUCTION

In this current scenario, commercial the cloud storage services, have applied harmonizing headed for keeping the network bandwidth and the storage charge by the user-side harmonizing. Here it presents two types of Harmonizing for the conditions of the range: (a) Document-level Harmonizing, by which creates consistency among unusual records and filter these consistencies to decrease competence anxiety and (b) blocks-level Harmonizing, which creates and filters consistency between information blocks. The document is able to separate onto lesser constant-size or changeable blocks. By means of fixed-size blocks simplify in a computation of blocks margins, where by changeable -size blocks. Though

harmonizing method is able to store the space for the cloud storage service providers, these decreases on dependability in a structure. Information consistency is really an extremely serious subject to the harmonizing managing system from here it is only single data in favor of every document store in the server collective through all the managers. If it is a collective document/mass was missing, an unreasonably huge quantity of information becomes hard to find since it is unavailability of all the documents to split this document/portion. In this the worth of a portion was calculated in provisions of the quantity in the document information may be lost of trailing on its own portion, after that the sum of user in order missing once a portion of the saved organization is despoiled grow in the figure of the unity of the portion. Therefore, to assure elevated information consistency for harmonizing scheme in a serious problem. With this unstable development of digital information, harmonizing method is broadly occupied to support information and reduces group and storage space clearness in detecting as well as eliminating idleness between information. Since alternative of storing many data of documents among similar text, Harmonizing drop surplus information for maintenance only single objective data and referring extra unneeded information to that data. Harmonizing which has expected a lot concentration as of together the academy in addition to manufacturing as it be able to very much improve storage consumption and save storage space, mainly designed in support of the applications by towering Harmonizing percentage by means of archival storage methods. An amount in which harmonizing systems has predictable on a variety of harmonizing strategies such as user side or server-side harmonizing, document-level or blocks-level Harmonizing. Particularly, through the arrival of cloud storage, information, harmonizing methods turn into more striking and serious to the association of the rising amount of information on cloud storage services encourages, enterprise and managing to farm out information stored in intermediary cloud distributors, as a proof by a lot of truth case studies. The majority of the earlier Harmonizing systems had just calculated on a one-server background. Though, as a lot of Harmonizing methods and cloud storage systems to be designed by clients and applications designed in advanced consistency, mainly in archival storage methods for information is serious and it's supposed to be sold more than extended moment of periods. It needs the Harmonizing storage systems supply consistency similar in added high-availability methods. In This system pours illustration finds two major actions initial is upload progression next is download progression. In this progression client has information blocks, it creates a hash key designed to exacting information block.

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126. DELAY OF NETWORK ISSUES AND CHALLENGES

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The demand for improved and more rapid communication is growing because of the widespread use and advancement of wireless communication in today's world. People's need to send data as quickly as possible creates an automatic problem with spectrum shortage. The network is heavily utilised during this period, resulting in increased network traffic and resource strain. The utilisation of the network is delayed as a result. The node became busy for the reasons mentioned above, which led to traffic. To spread the workload and ensure that each node is balanced in this scenario, the load balancing technique is used. However, the use of wireless communication has grown in recent years, and load balancing is no longer sufficient to prevent traffic and impede network performance.

127. IMPLEMENTATION OF DATA INTEGRITY EVALUATION PROCESS IN CLOUD COMPUTING

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DML stands for Distributed Machine Learning. One of the most important AI technologies is DML (distributed machine learning). Nonetheless, in the current distributed machine learning arrangement, data integrity isn't taken into account. However, if network attackers alter or delete the data, the data will be falsified. As a result, it's vital to maintain data integrity in the DM. It proposes a distributed machine-learned ness initiates data integrity checking approach to verify that the training data is correct. To begin, it recommends using a Provable Data Possession (PDP) selection checking approach to guarantee data integrity. As a consequence, the DML-DIV strategy will be able to withstand manipulation and fraud attacks. Second, as part of the TPA verification procedure, researchers generate a unique integer known as the blinded variable and utilize the discrete logarithm problem (DLP) to build proof and ensure data security. It uses two-step authentication and identitybased cryptographic key generation technology to activate the data possessor's public/private pair of keys. As a result, our DML-DIV method may be able to address the important escrow issue while also

Determination of vital nodes in social Networks: A Review

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ABSTRACT - A social network is a collection of social links and relations between individuals, organizations, and groups. One of the primary areas in the realm of continuing study is social network analysis. The rise of diverse social networks has considerably enhanced our daily lives while also posing a difficult problem in identifying the vital nodes within them. In these domains, avariety of methods have been devised and implemented, but some have included centralities, as well as their flaws and limits, in their research. As a result, various centralities have been developed overtime. The significance of nodes inside a social network is measured using the centrality index. This study provides a review of the research on identifying vital nodes in social networks. The purpose of this review is to describe past and current research on centralities for determining vital nodes in social networks. Finally, we present our future research plans based on measures of centrality.

Dynamic Utilization of Spectrum using Genetic Algorithm in Cognitive Radio Network

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ABSTRACT - The desire for better and quicker communication is rising along with the rapid evolution of wireless communication. People want to transfer data as quickly and as much as possible, which will inevitably lead to a spectrum shortage issue. Network resources are overwhelmed during this period due to high network utilization, which causes traffic on the network to increase. Therefore, network usage will take longer. In order to successfully sense and share the spectrum, we must concentrate on automatically monitoring the network in its immediate environment. The development of spectrum sensing technology in Cognitive Radio Networks (CRN) has made it possible to address the growing spectrum demand. People without licenses can easily use the spectrum when licensed (owner) users are not utilizing it. In this case, locate the optimum fit node nearby using the evolutionary algorithm fitness function, offer it to the secondary user (SU) from this optimized node, calculate the shortest distance, and then choose the node for the transaction. In order to achieve maximum network performance and evenly rationed resource consumption, the robustness or fitness function is used.

Synthesis, Spectral Characterization and Biological Evaluation of Schiff Base Derived From 3-Methoxy Salicylaldehyde with Aniline and Its Transition Metals.

A. Sebastin Thangadurai, Dr. M. Paul Johnpeter, Dr. R. Manikandan, Dr. A. Paul Raj

Abstract- As the pathogens soon develop immunity to the existing antibiotics, the demand for novel and more effective anti-microbial agents is a continuous phenomenon. The research paper deals with synthesis and characterization of novel Schiff base ligand and its corresponding metal complexes and their biological applications. In this paper, synthesis of 2-methoxy-6-phenyl iminomethylphenol (MSA) from 3-methoxysalicylaldehyde with aniline is done which has not been previously reported. Starting from this ligand, different complexes were synthesized. Co(II), Cu(II) and Zn(II) are the metal ions used for the complexation. They have been synthesised and characterized with the assistance of analytical as well as physico-chemical systems. All the synthesized compounds were placed under the biological appraisal.

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1 INTRODUCTION

In recent years, the research in coordination chemistry plays a vital role in the progress and surge of inorganic chemistry. Any compound containing a metal atom or ion with one or more ligands is called as co-ordination compounds. Schiff base ligands have been in chemistry directory for over 150 years. Schiff bases are generally viewed as excellent ligands.

————————————————

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Their prompt and enduring popularity undeniably stem from the ease of their synthesis, baffling versatility and wide ranging complexing ability once formed. Hugo Schiff, a German chemist developed a new class of organic compounds in 1864. They are synthesized by condensing a carbonyl compound with an amine, generally in refluxing alcohol. The active and well-designed Schiff base ligands are considered as privileged ligands. The common structural feature of these compounds is the azomethine group with a general formula RHC=N-R', where R and R' are alkyl, aryl, cyclo alkyl or heterocyclic groups which may be variously replaced [1-12].

The imine formation is one of the most significant reactions in organic and medicinal chemistry. In addition, imines have been discovered to have an extensive range of biological activities such as lipoxygenase inhibition, anti-inflammatory, anti-cancer, anti-bacterial and anti-fungal behavior [3,11,12]. In recent times, hydroxy substituted Schiff bases have received considerable attention due to good anti-cancer activity [5,9]. Schiff base metal complexes have immense applications as catalysts in innumerable biological systems, polymers, dyes and pharmaceutical fields. They encompass miscellaneous therapeutically potent applications in the field of medicinal chemistry [12]. Many procedures have been introduced for the synthesis of imines in the literature since the pioneering work of Hugo Schiff. Considering the copious applications of Schiff bases in various fields of chemistry, there has been tremendous interest in evolving efficient methods for their preparation. Based on the above facts, the prime aim of the present work is to synthesize Schiff base transition metal complexes derived from MSA and various transition metal chlorides and to characterize the synthesized metal complexes using various analytical, spectral studies and to explore the biological activities like anti-microbial using invitro method.

2 EXPERIMENTAL PROCEDURE

2.1 Materials and methods

All the reagents and chemicals were purchased from Sigma Aldrich and used for our work without further purification. AR grade solvents were utilized for synthesis and recrystallization. The elemental analysis (C,H,N) was performed using elemental analyzer namely Elemental Model Ratio EL(111), CECRI-Karaikudi. Melting points of newly synthesized compounds were noted by Electro Thermal 9100 apparatus using open capillaries and are uncorrected. IR spectra of ligand and its metal complexes were recorded as KBr pellets on a Perkin Elmer RX^{-1} spectrophotometer in the conventional range of 4000-400 cm^{-1}. UV-Visible spectra were recorded using Perkin Elmer Lambda 35 spectrophotometer in the range of 200-800 nm. Magnetic susceptibility measurements on powder samples were carried out by the Goy method. Mass spectra were determined by JEOL D-

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SYNTHESIS, CHARACTERIZATION AND ANTIBACTERIAL STUDIES OF Co(II), Ni(II) AND Cu(II) COMPLEXES CONTAINING TRIPHENYLPHOSPHINE AND SCHIFF BASE LIGAND BASED ON SALICYLALDEHYDE

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ABSTRACT

Schiff base ligand (HL) derived from the condensation of salicylaldehyde with 4-amino benzoic acid and its metal(II) complexes containing triphenylphosphine of the type $[MCl(PPh_3)(L)]$ (M = Ni, Co or Cu; L = bidentate Schiff base ligand) were synthesized. The synthesized compounds were characterized by techniques of analytical and spectroscopic (FT-IR, electronic, ESI-Mass, 1H, 13C NMR, and 31P NMR). The antibacterial activities of the ligand and metal complexes were studied against Gram-positive bacteria and Gram-negative bacteria using the agar well diffusion method.

Keywords: Salicylaldehyde, Schiff Base, Metal Complexes, Spectroscopic Investigation, Antibacterial Activity

RASĀYAN *J. Chem.*, Vol. 14, No.4, 2021

INTRODUCTION

Metal complexes of the Schiff bases have attracted great interest because of their extensive applications, including antimicrobial,[1] anticancer,[2] antitumor,[3] antioxidant,[4] anti-inflammatory,[5] antiviral[6] and herbicidal[7] activities, in addition to catalytic[8], thermal[9] and electrochemical[10] properties. Recently, Schiff bases metal complexes derived from salicylaldehyde derivatives have received generous attention.[11-13] These compounds make use of phenolic O and imine N donor atoms which lead to typically stable bidentate coordinated complexes.[14,15] Schiff base metal complexes containing neutral and anionic molecules as addition ligands are of recent attention in view of their solid-state structures and mainly, the complex structure consisting of triphenylphosphine derivatives are of particular magnitude due to their probable beneficial catalyst and biological activities.[16-18] The present paper deals with the synthesis and characterization of Schiff base, 4-((2-hydroxybenzylidene)amino)benzoic acid ligand (HL) and their Co(II), Ni(II) and Cu(II) complexes containing triphenylphosphine ligand. These synthesized complexes were characterized by various physicochemical techniques. The antibacterial activities of the ligand and metal(II) complexes were examined.

EXPERIMENTAL

Materials and Physical Measurements

The solvents and chemicals used were chemically pure and AR grade. The solvents were purified and dried according to standard procedures.[19] The precursors $[MCl_2(PPh_3)_2]$ (M = Co, Ni and Cu) were prepared by the literature procedure.[20] Elemental analyses of C, H and N were measured using a Vario EL III elemental analyzer. FT-IR spectra of the compounds were recorded on a Nicolet Avatar model spectrometer from 4000 to 400 cm^{-1} using KBr pellets. Electronic spectra were carried out on Shimadzu UV-1650 PC spectrophotometer in 800-200 nm range using methanol as the solvent. ^{1}H NMR and ^{13}C NMR spectra were obtained in Jeol GSX - 400 instruments using TMS as the internal standard. ^{31}P NMR

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Synthesis, Spectral Characterization and Biological Evaluation of Metal Complexes of 2-Thioxoquinoline Aminophenol

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Synthesis, characterization, *in vitro* antimicrobial and anticancer activity of metal(II) complexes of Schiff base-derived from 3-formyl-2-mercaptoquinoline and thiosemicarbazide

Ganesan Gokulnath ⓘ, Rajendran Manikandan, Panneerselvam Anitha & Chinnusamy Umarani ✉ ⓘ

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Abstract

2-Mercaptoquinoline thiosemicarbzone metal(II) complexes of the type [M(L)$_2$], (M = Co, Ni, Cu & Zn) were synthesized from the reaction of 2-((mercaptoquinolin-3-yl)methylene)hydrazinecarbothioamide Schiff base ligand (HL) with metal(II) chlorides. The synthesised compounds were characterized by elemental analysis, FT-IR, 1H NMR

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Large Power Factors in Wide Band Gap Semiconducting RFeO$_3$ Materials for High-Temperature Thermoelectric Applications

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ARTICLE

Influence of Sr^{2+} ion substitution on structural, morphological, optical, thermal, and magnetic behavior of MgFe$_2$O$_4$ cubic spinel

S Baskar, S Yuvaraj, Subudhi Partha Sarathi, M Sundararajan ✉ Dash Chandra Sekhar

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Utilizing L-arginine as a fuel, Mg$_{1-x}$Sr$_x$Fe$_2$O$_4$ ($0 \leq x \leq 0.5$) spinel nanoparticles were prepared by the microwave combustion process. Impact of Sr^{2+} ion substitution on structural, morphology, optical, thermal, and magnetic characteristics is investigated by following techniques such as X-ray diffraction (XRD), HR-SEM, energy dispersive X-ray analysis (EDX), diffused reflectance spectroscopy-Ultra Violet (DRS-UV), TG-DTA, and VSM. XRD ensures the formation of the cubic spinel structure, and the average

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