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Santosh Kumar Das · Sourav Samanta · Nilanjan Dey · Bharat S. Patel · Aboul Ella Hassanien *Editors*

Architectural Wireless Networks Solutions and Security Issues

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Preface

In the last few decades, the application of wireless network increased rapidly along with its several variations based on diverse applications of the users and customers. Its main reason is flexibility and efficiency of the wireless network which is not available in the wired network. So, it brings a large number of jobs, applications, and opportunities for the students as well as customers. Although, the wireless network is an efficient and robustness platform for communication and data transmission, it has also some challenges and security issues in terms of several applications. Some of them are mentioned as limited hardware resources, unreliable communication, the dynamic topology of some wireless networks, vulnerability, unsecure environment, etc. Hence, it causes several types of attacks, data loss, replication, eavesdropping, overflow, etc., with respect to the architecture design of the wireless network. These issues cannot be controlled and managed directly, but it can model and reduce as an architectural solution. Therefore, to enhance the architecture model of the wireless network and enhance the security mechanism, some innovative as well as novel ideas are needed that reflected in this book.

Objective of the Book

This book contains some architectural solutions of wireless network and its variations. It deals with modeling, analysis, design, and enhancement of different architectural parts of the wireless network. The main aim of this book is to enhance the applications of the wireless network by reducing and controlling its architectural issues. This book is edited for wireless network's users, academicians, and researchers.

Organization of the Book

The book contains 17 chapters that are organized in four parts as follows. Before starting the parts, Chap. "Wireless Networks: Applications, Challenges and Security Issues" describes the overview of wireless network and its variation along with its several applications, challenges, and security issues. **Part One** contains four chapters that outline the modeling of some security issues with their solutions for enhancing the security part of the wireless network. **Part Two** contains four chapters that highlight some optimization models of the wireless network for enhancing the network lifetime. **Part Three** contains four chapters that outline the modeling of the aggregation system to control redundant information. **Part Four** contains four chapters that highlight some troubleshooting techniques that help to control and manage different issues of the network.

Part One: Modelling of Security Enhancements (Chaps. "An Authentication Model with High Security for Cloud Database"–"Linear Secret Sharing-Based Key Transfer Protocol for Group Communication in Wireless Sensor Communication")

This part outlines some security issues along with their solutions in the wireless network and its variations as wireless sensor network and cloud-based network. Short descriptions of these chapters are as follows.

Chapter "An Authentication Model with High Security for Cloud Database"

This chapter outlines an authenticate model that handles security and privacy problems of the cloud-based database. It helps to reduce malicious issues of the network and provides traceable services to the users. Finally, it helps to find an appropriate solution for the security issues at both administrator and customer levels in various directions.

Chapter "Design of Robust Smartcard-Based User Anonymous Authentication Protocol with AVISPA Simulation"

In this chapter, the author designed an extended user anonymous authenticated session key agreement protocol using a smartcard. The scalability of this scheme is measured in both formal and informal ways. Informal security analysis ensures that the proposed scheme resists to various kinds of fraudulent attacks. The proposed scheme does not only hold up security attacks, but also achieves some security features.

Chapter "Data Security in Cloud Computing Using Abe-Based Access Control"

This chapter discusses the dynamic access control model with the fusion of risk aware and hierarchical attribute set-based encryption. The combination of both methods provides a scalable and flexible services due to sub-domain hierarchy. It is also proved to be dynamic by permitting the user to access the data by risk evaluation using risk engine.

Chapter "Linear Secret Sharing-Based Key Transfer Protocol for Group Communication in Wireless Sensor Communication"

In this chapter, an intelligent protocol is proposed with the fusion of linear secret sharing and elliptic curve techniques. The combination of both techniques helps to overcome the drawback of traditional protocols. The proposed security protocol helps to reduce the overhead of the network and enhance the several security mechanisms against different conflicting attacks.

Part Two: Optimization Model for Network Lifetime (Chaps. "Fuzzy Rule-Based System for Route Selection in WSN Using Quadratic Programming–"Fuzzy Q-Learning-Based Controller for Cost- and Energy-Efficient Load Balancing in Cloud Data Center")

This part outlines some optimization models for enhancing the network lifetime of the wireless network or some variation of the wireless network by reducing uncertainty information and managing conflicting parameters of the networks. Short descriptions of these chapters are as follows.

Chapter "Fuzzy Rule-Based System for Route Selection in WSN Using Quadratic Programming"

In this chapter, a combination of intelligent technique as well as mathematical modeling is used where fuzzy logic as an intelligent technique and quadratic programming as mathematical modeling are used for solving the proposed goal. The combination of both provides a robustness technique that uses two basic parameters energy and distance for selecting the optimal route of the network.

Chapter "Wireless Sensor Network Routing Protocols Using Machine Learning"

This chapter consists of some machine learning algorithms to optimize the route of the wireless sensor network. This optimization helps the sensor nodes to learn the experience data to make appropriate routing decisions and respond to the changing environment using some learning techniques such as distributed regression, self-organizing map, and reinforcement learning.

Chapter "Distributed Traversal Based Fault Diagnosis for Wireless Sensor Network"

In this chapter, the author proposed a traversal-based diagnosis algorithm that seeks to diagnose both permanent as well as an intermittent fault in a sensor network. The proposed algorithm employs a special node called an anchor node to traverse the field. So, it is decided by a proposed traversal algorithm taking into consideration the length and breadth of the sensor field and the transmission range of the nodes. The

anchor node stops at defined positions in the deployment field where it executes the fault diagnosis algorithm taking into consideration the normal sensor nodes which are in its range.

Chapter "Fuzzy Q-Learning-Based Controller for Cost and Energy Efficient Load Balancing in Cloud Data Center"

In this chapter, the author proposed a fuzzy Q-learning-based self-learning controller to optimize the load for a specific data center. The proposed method also helps to reduce uncertainty and solve the congestion issue efficiently through fuzzy linguistic behavior and membership function. In this proposal, the fuzzy output parameter is considered as reward value which is used to learn and update the state for each data center.

Part Three: Modelling of Aggregation Systems (Chaps. "Localization Techniques Using Machine Learning Algorithms"–"Analysis of Network Parameters for Network Lifetime in WSN: A Fuzzy Quadratic Programming Approach")

This part outlines some aggregation techniques that help to model several issues of the network and reduce redundancy of the wireless network efficiently. Short descriptions of these chapters are as follows.

Chapter "Localization Techniques Using Machine Learning Algorithms"

In this chapter, the author illustrates how the localization issue in wireless sensor networks can be solved using the three categorized machine learning algorithms such as supervised learning, unsupervised learning, and reinforcement learning algorithms. It also highlights that which machine learning algorithms conjointly evokes several sensible solutions for localization of nodes that maximize resource utilization and prolong the lifetime of the network.

Chapter "Vehicular Delay Tolerant Network-Based Communication Using Machine Learning Classifiers"

In this chapter, the authors highlight vehicular delay-tolerant network-based communication using machine learning classifiers. First the authors analyzed which machine learning classifier is the best solution for our problem. In this work, the authors used machine learning classifiers for filtering efficient vehicular nodes, so that packets can be delivered from source to destination.

Chapter "Applications of Big Data and Internet of Things in Power System"

This chapter highlights the use of big data and IoT for the power systems. IoT can be used in various areas of power system such as metering, transformer monitoring, prediction of demand, and planning for future consumption. The main objective of this chapter is to make a clear understanding of the use of big data and IoT in the power system and how it will improve customer service and social welfare.

Chapter "Analysis of Network Parameters for Network Lifetime in WSN: A Fuzzy Quadratic Programming Approach"

In this paper, a fuzzy quadratic programming is used to optimize network parameters efficiently. It is the fusion of fuzzy logic and quadratic programming. Fuzzy logic is a multi-values logic which is used to reduce uncertainty and estimate imprecise parameters efficiently. Quadratic programming is a nonlinear programming based on second order of mathematical polynomial for reducing the main objective. The combination of both helps to analyze conflicting network parameters and decide the optimal objective value along with constraints.

Part Four: Analyzing of Troubleshooting Techniques (Chaps. "IDS Detection Based on Optimization Based on WI-CS and GNN Algorithm in SCADA Network"–"Investigation of Memory, Nonlinearity and Chaos in Worldwide Monthly Mobile Data Traffic in Smartphones")

This part outlines different troubles in the wireless network in terms of intrusion, attack, and chaos and also provide their modeling methods. Short descriptions of these chapters are as follows.

Chapter "IDS Detection Based on Optimization Based on WI-CS and GNN Algorithm in SCADA Network"

In this chapter, it is identify and categorize the anomalies in a SCADA system through data optimization. At the initial stage, the collected real-time SCADA dataset is given as input. Then by using the aforementioned proposed machine learning algorithms, these data are clustered and optimized. Later to find the type of intrusion will remain as a further challenge, and for that, the authors proposed HNA-AA algorithm.

Chapter "Performance Analysis of MANET Under Grayhole Attack Using AODV Protocol"

In this chapter, the author analyzed the performance of the mobile ad-hoc network under grayhole attack as per AODV routing protocol using NS-2 simulation environment. Several attacks make the network pretty much risky to rely upon when scaling up on a large scale. Under the mobile ad-hoc network, all the transmissions between the mobile nodes occur wirelessly.

Chapter "Technique to Reduce PAPR Problem in Next-Generation Wireless Communication System"

In this chapter, a technique is design for reducing PAPR in next-generation wireless communication system. The main effect of strong PAPR is instability in the analog-to-digital converter and digital-to-analog converter, decreased its performance and raised costs. A PAPR reduction technique such as clipping and filtering greatly improves the efficiency compared to the initial GFDM signal PAPR.

Chapter "Investigation of Memory, Nonlinearity and Chaos in Worldwide Monthly Mobile Data Traffic in Smartphones"

In this chapter, the proposed chapter employs certain statistical signal processing techniques to realize the memory, self-similarity, self-organized criticality, nonlinearity, and chaos in the present time series of worldwide monthly mobile data traffic per smartphone. This study possibly indicates a persistent, self-similar, deterministic, nonlinear, and non-chaotic profile with no "soc" for the present time series.

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Wireless Networks: Applications, Challenges, and Security Issues

Santosh Kumar Das, Vishal Maheswari, and Aditya Sharma

Abstract Nowadays, wireless technology is an essential part of communication. Most of the organizations benefitted by adopting wireless technology solutions may lead to higher productivity. Today, globally, several customers are using this technology for resolving various business issues and create advantages over competitors. This technology helps to achieve high customer satisfaction with lesser complexity. It also assists various types of exciting applications such as sensor networks, Bluetooth, mobile communication systems, and Internet of Things (IoT). Wireless technology makes the use of radio waves to transfer data without cables or wiring. In this proposed paper, several applications of wireless networks and its variations are illustrated along with their challenges and security issues. It provides a guideline about upcoming inventions in the area of wireless technology.

Keywords Wireless ad-hoc network · Wireless sensor network · Security issues · Challenges · Internet of Things · Attacks

1 Introduction

In the last few decades, the applications of wireless networks and their variations have increased rapidly due to the widespread use in the developing wireless techniques [1–3]. Wireless in its simple form can be expressed as the automation process in which transfer of data and information takes place without using any wired media. One might be thinking how can data be transferred without using wires and if so, then

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what is the medium? Air is the only medium for the transfer of data through wireless mode which in return uses electromagnetic waves for the transmission of signal from the transmitter to the receiver [4]. One might be able to understand that for short-ranged communications, one can use the wireless technology very smoothly but what about the long-range communication? Therein comes the concept of receiving and transmitting data through the waves, i.e., radio waves, which in it provide some energy for the transmission to occur over longer distances. Herein, it is cleared out the use of wireless technology which is applicable and widely used for both short as well as long-distance communication. Figure 1 shows types of wireless network. Wireless network are categorized as three major types which are: Wireless ad-hoc network (WANET) [5, 6], wireless sensor network (WSN) [7, 8], and other wireless network. WANET is a collection of dynamic nodes that are deployed at a particular location for any operation. It has several variations or types such as mobile ad-hoc network (MANET) [9], vehicular ad-hoc network (VANET) [10, 11], and hybrid ad-hoc network (HANET) [12]. MANET is a collection of mobile nodes that are simply movable based on the requirement of the users or customers. VANET is a collection of different vehicles that are connected dynamically to provide the services to the driver as well as the passenger for an automated system. HANET is a combination of static as well as dynamic nodes. The combination of both helps the user in both static and dynamic purpose of the services. WSN is a collection of wireless sensor nodes. The purpose of these sensor nodes is to sense environmental information and send it to the base station (BS). BS analyzes this information for future processing and forwards it to the sink node. WSN is also used in HANET with the fusion of VANET and smart ad-hoc network to make use the services of Internet of Things (IoT) [13]. In HANET, several physical objects are connected with digital technology to make an efficient and appropriate communication services in HANET.

IoT is nothing more than a collection of wide range of software, systems, and users via the Internet technology; having a built-in ability of transferring data over a network without having a human interaction [14, 15]. Talking about first generation of IoT, SCADA [16] is an acronym for "supervisory control and data acquisition". SCADA provides a bundle full of different types of software-based application program to perform a particular task which can be accessed from remote location. It includes both hardware as well as software components. The use of hardware

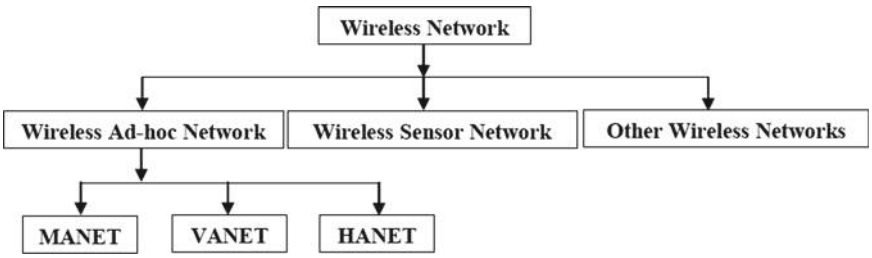


Fig. 1 Types of wireless network

component is to gather the data and then feed it into the computer, wherein the next step is carried out by respective software according to the situation. A SCADA system is used to gather information, like from where the smoke is coming from a building, then it transfers the information gathered back to the central site, warning the home station that the smoke has occurred, carrying out the necessary analysis and further controlling the scenario, gathering some more information for determining whether the smoke is caused by fire, and displaying the gathered information in a proper logical and organized manner. Other areas where SCADA system can be used include municipal water supply, in a small building and many more. The next section is illustrated with developmental strategy of IoT and other variations of the wireless network.

The roadmap of the paper as follows. Unit 2 describes some applications of wireless network and its variations. Unit 3 illustrates some constraints of ad-hoc and sensor network. Unit 4 describes some security and major design issues. And Unit 5 concludes the paper.

2 Applications of Wireless Network and Its Variations

IoT is one of the novel variations of the wireless network. First of all, an ecosystem of IoT is developed. This ecosystem is different from the typical ecosystem containing some planets and stars. This ecosystem contains in it a huge number of hardware and software devices that are connected to a Web-enabled network source which encapsulates a number of embedded processors, sensors, hardware, and software based on the task they are going to be helping with. The gathered data is shared by the IoT devices by bridging of the data to the gateway of IoT or sending the data to the cloud based systems where it can be easily analyzed and the output can be made to be accessed and performed as required. All the objects which are having an in-built sensor are connected to an IoT based platform, which gathers the data from various hardware devices and share the unmatched information with the software to meet the required data analytics.

The ecosystem of IoT platform can itself decide which information is to be taken into consideration and which can be safely ignored without any loss or manipulation of data. The information collected is based on a preprogrammed software which include some patterns and recommendations used to find out some possible problems or issues before they take place. For an example, a person is the owner of a supermarket store, and he/she must be aware of the products which are most popular. Sensors can be placed in the supermarket to detect the most popular areas, and where customers wait around or stay for a longer span of time [17–19]. The faster selling products can be identified by checking the daily sales data, in case the most selling product must not go out with not on stock board; automatically align sales data with supply, so that popular items don't go out of stock.

The information gathered by the smart connected devices can guide one in making smart decisions on the products to have a higher stock, which would be completely

based on the people's shopping bucket list and would help in saving the man-power required to take up the stock and check out over people's activity. It is obvious that the data gathered by the devices will bring more efficiency and accuracy as compared to the traditional means; and likewise, more efficiency leads to doing work in a smarter and more controlled manner and resulting in work. By the help of smart objects and systems, one can automate certain tasks, particularly when those tasks are bulky, repetitive, mundane, time-taking, or dangerous. Let us have a look over some examples to make the scenario clearer and more accurate. In one's daily monotonous life routine, everyone has to work for having a meal and having a pending or delayed work can make one lose one's job. In this competitive era where technology is faster than human, many times one faces a scenario where a person woke up on time, but it's raining outside or his/her car engine is not working, someone has flattened his/her car tier, he/she had to get off in traffic and many others. In all such cases, there is a fixed prepared reason to be used by human for his/her delay. Here comes the role of IoT where the delay can be easily postponed and one need not have to blame one's luck over it. Let us summarize some of the benefits of IoT taking the above scenario into consideration.

(a) Save time and money
(b) Ease of service
(c) Enhance working experience
(d) Increase productivity
(e) Low investment high returns
(f) Taking smart business decisions
(g) Easy to monitor the business.

IoT helps companies and individuals to take smart decisions, adopt smart technologies, and allow them to work more productively and efficiently. The major concern of developer is how they are going to secure the use of such an enormous amount of data, where all the devices are connected to Internet. For the use of IoT based devices, the only thing which needs to be taken into consideration is the security and privacy issues. The IoT based devices needs to be always connected to a network, the hacker has to simply gain an access to any single device and manipulate all the data, and for a solution to it, you can provide security patch on a regular time interval. But how many manufacturers are there who will update it to the latest firewall? Apart from, WANET, MANET, VANET, HANET, and WSN, several wireless networks are used based on customer requirements such as cellular network, mesh network, delay tolerant network, and software defined network. The stated variations of the wireless network have become a major and important part of our life and real-life applications. The combination of all variations gives a lot of efficient and reliable benefits to the users and customer in terms of mobility and remote areas. It is low cost, low time consuming, more efficient, and intelligent compared to wired network. It is also simple for use and license free and also deployable. Wireless network is a location-depended service that is a replacement of wired network and helps to the users and customers in emergency situation, business, offices, traveling salesman, etc. with combinations of some devices such as Wi-Fi, GPS, and cordless

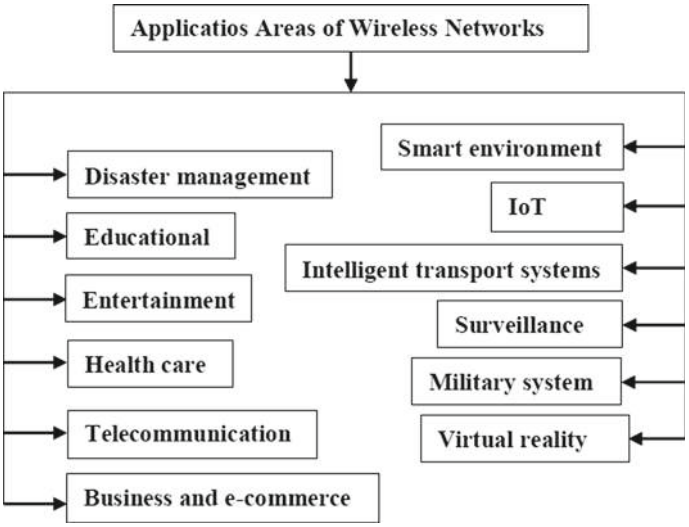


Fig. 2 Applications areas of wireless network

telephones. There are several applications of wireless networks and its variations which is shown in Fig. 2. Some of them are artificial intelligence, enforcement and control systems, environmental monitoring, intelligent transport systems, IoT, military applications, person locator services, smart environment, telecommunications system, traffic avoidance, virtual reality visual surveillance sensor networks, etc.

3 Constraints of Ad-Hoc and Sensor Networks

The fusion of WANET and WSN is known as ad-hoc sensor network. Although, both have some similar features, they also both have some differences like a number of nodes in WSN are more as compared to WANET. The nodes in WSN, known as sensor nodes, are more prone to failure and energy drain. Although there are several applications and usage in terms of wireless network-based infrastructure and infrastructure-less, static, and dynamic topologies, combination of both have some limitations that differ from classic network such as limited energy supply, limited computing power, limited bandwidth of the wireless links connecting data, routing challenges, data aggregation, coverage and scalability, and data reporting methods and protocols. Summarized limitations are described as follows.

(a) **Limited hardware resources**: Due to several issues of WSN such as limited storage, computational system, limited energy, long distance from receiver, it is limited by the hardware resources.

(b) **Unreliable communication**: Due to limited bandwidth, dramatically dependency, temporary, and variable channel, the communication is always unreliable.
(c) **Dynamic topology**: In terrestrial sensor network, nodes are deployed densely, and in underwater sensor network due to flow of water, sensor nodes are mobile.
(d) **Vulnerability and insecure environment**: There are several applications of sensor nodes such as monitoring, sensing, target tracking, and detecting hostile object and region. So, nodes become susceptible to attacks and threats.

The several networks and their variations have been described in the above-mentioned section. In each variation, security is one of the most crucial parts in every sector of real-life application. There are several limitations and constraints described in the above section, in which limited energy is the crucial part. Due to the above constraints, several threats are detected in the network as shown in Fig. 3. Basic types of these threats are as follows [20, 21].

(a) **Passive attacks**: This attack is done by the malicious nodes without interrupting the main operation by receiving information about network and data transmission, e.g., message distortion, unnecessary message reply, leakage or trap secret information, interfering, and eavesdropping.
(b) **Active attacks**: This attack is done by some external or internal nodes. It can destroy or delete the important data and information, and sometimes it tries to modify, inject, or drop data packet.

(i) **Compromise attacks**: In this attack, attacker may compromise the node for modifying or reading the secret data or information.
(ii) **Routing attack**: This attack consists of unreliable data transferred to the destination node. It is also known as rushing attack. Examples are packet dropping, packet replication, routing table poisoning, and overflow.
(iii) **DoS attack**: It this attack, attacker tries to prevent the resources from accessing the data. It is more difficult to detect and handle. Sometimes, it handles with encryption method of the cryptography.

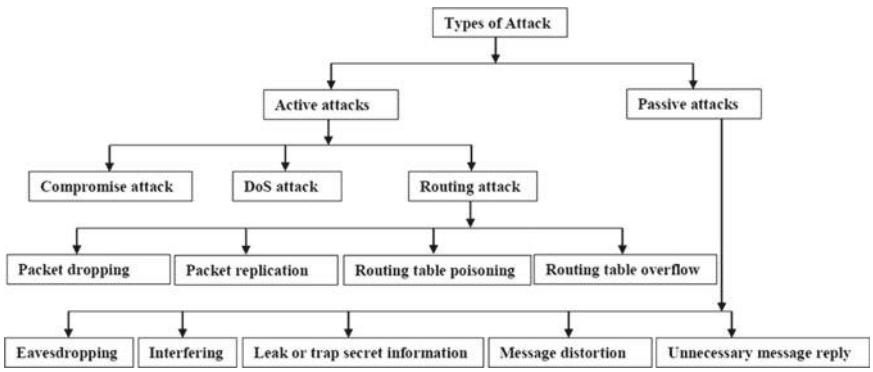


Fig. 3 Attacks and its type

4 Security and Major Design Issues

Ad-hoc and sensor network and its variations have different capabilities in terms of topology and network parameters. In the above sections, several limitations and constraints discussed that motivate for designing an efficient model that care about the following paradigms.

(a) **Modeling of security enhancements:** The nodes of ad-hoc and sensor networks are dynamic and autonomous. They act as routers and help in sending and transmitting the data packets. It greatly relies on the environment of the modern technology. It also has several limitations like limited energy supply, limited computing power, limited bandwidth of the wireless links connecting data, routing challenges, data aggregation, coverage and scalability, data reporting methods and protocols, unreliable communication, vulnerability, and unsecure environment. These stated limitations cause two types of attacks: passive and active attacks. Examples of passive attacks are message distortion, unnecessary message reply, leakage or trap secret information, interfering, and eavesdropping. Examples of active attacks are modify, inject or drop data packet, modify or read secret data information, packet dropping, packet replication, routing table poisoning and overflow, etc. So, network needs an intelligent and efficient security modeling with the help of any artificial intelligence, soft computing, and machine learning techniques. Sometimes cryptographic technique is also mixed with any of the stated techniques to make the network more secure in terms of privacy in both systems like network-based data as well as cloud-based data.

(b) **Optimization Model for Network Lifetime Enhancements**: The nature of the ad-hoc and sensor network is dynamic and autonomous. Each node behaves as router and acts as an intelligent agent that plays the role of data transferring agent between source and destination nodes. Due to this intelligence characteristic, several types of interferences occur. So, there is need of some optimization techniques to model the network and enhance the lifetime of the wireless network. Network lifetime is the time duration between when the network is started and when half of the nodes are exhausted. The optimization technique is used to find an optimal as well as feasible solutions. The optimal solution is the best solution among all of the solution, and feasible solution is the solution nearby optimal solution. In ad-hoc and sensor network, optimal solution indicates the solution when all network metrics are outperformed in terms of traditional worst metrics. It helps to increase and decrease the network metrics based on network lifetime such as packet delivery ration, throughput, goodput, and residual energy are increases and end-to-end delay, packet loss, jitter, overhead, are decrease. The combination of both changes helps in overall network performance.

(c) **Modeling of Aggregation Systems**: Ad-hoc and sensor network is a collection of large number of small nodes. The purpose of the wireless sensor nodes is to sense the main requirement phenomena from the environment and send it to the

required places. The purpose of the network is that it should be useful in several applications such as military, security maintenance, disaster management, and habitat monitoring. In each application, a node plays an important role, and each ad-hoc node or sensor node consists of limited energy capacity or battery which is not sufficient during any operation. Both the networks have high density due to several variations of sensor nodes or ad-hoc nodes. Same data packets are sensed by multiple nodes and raising the redundancy or duplicate data packets. Data aggregation is used to control this issue efficiently and in an intelligent way. This data aggregation technique is rapidly used in ad-hoc and sensor network and their several variations. It helps to enhance the network lifetime as well as network metrics efficiently.

(d) **Analysis of Troubleshooting Techniques**: The above-mentioned sections and paragraphs contain several applications and uses of ad-hoc and sensor network. In each application, there are several types of randomness and uncertainties. It raises multiple interferences between one node and another node, source node to destination node or among multiple neighbor nodes. These interferences and uncertainties are the main cause of imprecise information and network troubles. These results in of several network security issues and cause different attacks that are mentioned in the above section. Hence, there is a need of some intelligent technique using artificial intelligence, soft computing, machine learning, or any other intelligent technique. Sometimes a single technique is efficient for handling any trouble. Sometimes there is need of some fusion between multiple techniques. The combination of multiple techniques provides more robustness for handling uncertainty of the network and estimate imprecise information efficiently.

The stated inherent paradigms required some necessary precautions shown in Fig. 4 which help to overcome some major design issues such as coverage that indicates communications between two or multiple nodes in term of data acquisition.

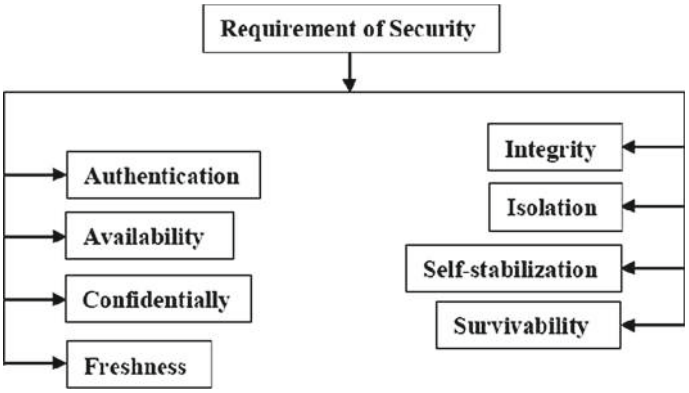


Fig. 4 Requirement of security

परिवा

सृजन की उड़ान

फरवरी 2023 मूल्य : ₹ 50

धर्म के नाम पर मानवता नष्ट की जा रही है

महुआ माजी से राजेंद्र राजन की बातचीत

सूर्यावर्त

विनायक ने मुंह फुलाए हुए घर में प्रवेश किया। कमरे के अध-भिड़े दरवाजे को उसने अपनी साइकल के अगले पहिए से जोर से धकेला तो दरवाजा चरमरा कर खुला। उसने झुक कर हाथ बढ़ाया और आदतन घर की इकलौती ट्यूब लाइट जला दी। उसके पीछे-पीछे कमरे में शोभा घुस आई। बेटा जब तक कमरे की दीवार पर साइकल भिड़ाता, उसकी मां तब तक पीढ़े पर बैठ कर स्टोव में पंप मारने लगी। 'जा! पहले पानी ले आ।' विनायक ने मां की बात अनसुनी कर दी। उसने संदूक के ऊपर, हाथ में ली हुई किताब हौले से उछाल दी और खटिया पर लेट गया। अब वह तिल भर नहीं हिलने का! शोभा को बहुत गुस्सा आया लेकिन तभी उसे दुबारा गनी की बात याद आ गई...उसका गुस्सा काफूर हो गया।

पल्लवी प्रसाद

युवा कथाकार।

विभिन्न पत्र-पत्रिकाओं में कहानियां और आलेख प्रकाशित। 'काठ का उल्लू' तथा 'लाल' शीर्षक से दो उपन्यास प्रकाशित।

...

कानून एवं प्रशासनिक अधिकारी
गुरु गोविंद सिंह एजुकेशनल सोसाइटी
तकनीकी परिसर [illegible]

मनी-प्लांट के पौधों पर मणियां नहीं उगा करतीं। उगती तो कलियां भी नहीं। न कभी कोई फीकी-रंग तितली ही मंडराती है। यह बेल शोभा को अपनी पोलियो-ग्रस्त ममेरी बहन 'मणि' की याद दिलाती है, जो बचपन में ही मर गई थी। लेकिन उसका राख सा काला बदन, धरती पर घिसटते धूसरित टेढ़े हाथ-पैर उसे यदा-कदा याद आ जाते हैं। न जाने क्यों! वह तो बहुत बाद में हुआ कि न जाने कब और किससे उसे यह बात पता चली कि इस वनस्पति का संबंध मणियों से नहीं, 'मनी' से है माने रुपयों से। तब से उसके मन के मीटर पर हसरत की धड़कन और तेज हो गई है और जीवन का कसैलापन उसके हृदल-तल में मानो 2-3 मि.मी. और गहरे पेस गया है।

उसके घर...दरअसल, वह बहुत छोटा-सा कमरा है। लेकिन काम से लौटते वक्त किसी के टोकने पर वह यही बताया करती है-'मैं घर जा रही!' तो उसके इस घर के ठीक सामने, थोड़ी दूरी पर जो मकान है उसके अहाते में एक 'जबर' मनी प्लांट की बेल, अहाते और फाटक का चक्कर लगाती हुई मकान की छत पर ऊंची उठती चली जाती है। जबर माने जबर! वह बेल देखने वाले हर आदमी की आंखों की किरकिरी है। 'बाप रे! इसके रुपए' हर कोई सोचता होगा।

वह बेल सदा उसके दृष्टि-पथ पर बनी रहती है। इस प्रकार, बेल उसे निरस्त करती रहती है। शोभा चाहती है कि वह सदा सूर्य के उन्मुख होकर [illegible] जिए परंतु उसका यह कमरा पश्चिम-मुखी है। वह काम से रोजाना [illegible] लौटती है और यहीं, इस दरवाजे पर बैठकर अपने हाड़-गोड़ सुस्ताया करती है। दिन भर की मजदूरी और मीठे से ज्यादा खट्टे अनुभव...। [illegible] वाला काम से लौटने का सुकून मनाता है। यही समय है शोभा का [illegible] जब वह दो घड़ी बैठ पाती है। उसके बैठने की यही दिशा मुकर्रर हुई है [illegible] के घर में। और उसकी आंखों के वास्ते यही एक दृश्य है-हरित [illegible] पड़ती हुई जबर मनी-बेल के नेपथ्य में डूबता हुआ सूरज।

आज शोभा के पेट का पानी स्थिर नहीं। वह औंट रहा है। उसके [illegible] [illegible] टूटते-पिसते सुपारी के नन्हें टुकड़ों की मिठास [illegible] [illegible]' उसके मुंह और मगज दोनों [illegible]

खंड-1 उपन्यास (दूसरी किस्त)

सूर्यावर्त

श्याम खिसियाना सा हंस कर रह गया। श्याम भाड़े की 'काली-पीली' चलाता है। काली-पीली यानी टैक्सी। हालांकि, उसके मालिक की गाड़ी जिस पर वह ड्राइवर बहाल है, यह न काली है न पीली, वह सफेद रंग की पुरानी टाटा इंडिका कार है। शाम के झुटपुटे में सड़क किनारे, ड्राइवरों के झुंड के बीच श्याम को गप्पें मारते खड़े देख, विनायक उससे बातें करने वहां रुक गया था। श्याम से उसकी यारी जो है। श्याम ही है, जो उसे अपनी काली-पीली पर 'हाथ साफ' करने देता है। हां, यह श्याम की मेहरबानी है, जो विनायक गाड़ी चलाना सीख गया है। हालांकि उसके पास लाइसेंस नहीं है। लेकिन आर.टी.ओ. दफ्तर में, वह शुल्क जमा कर, जब चाहे इसके वास्ते अर्जी दे सकता है।

पल्लवी प्रसाद

युवा कथाकार।

विभिन्न पत्र-पत्रिकाओं में कहानियां और आलेख प्रकाशित। 'काठ का उल्लू' तथा 'लाल' शीर्षक से दो उपन्यास प्रकाशित।

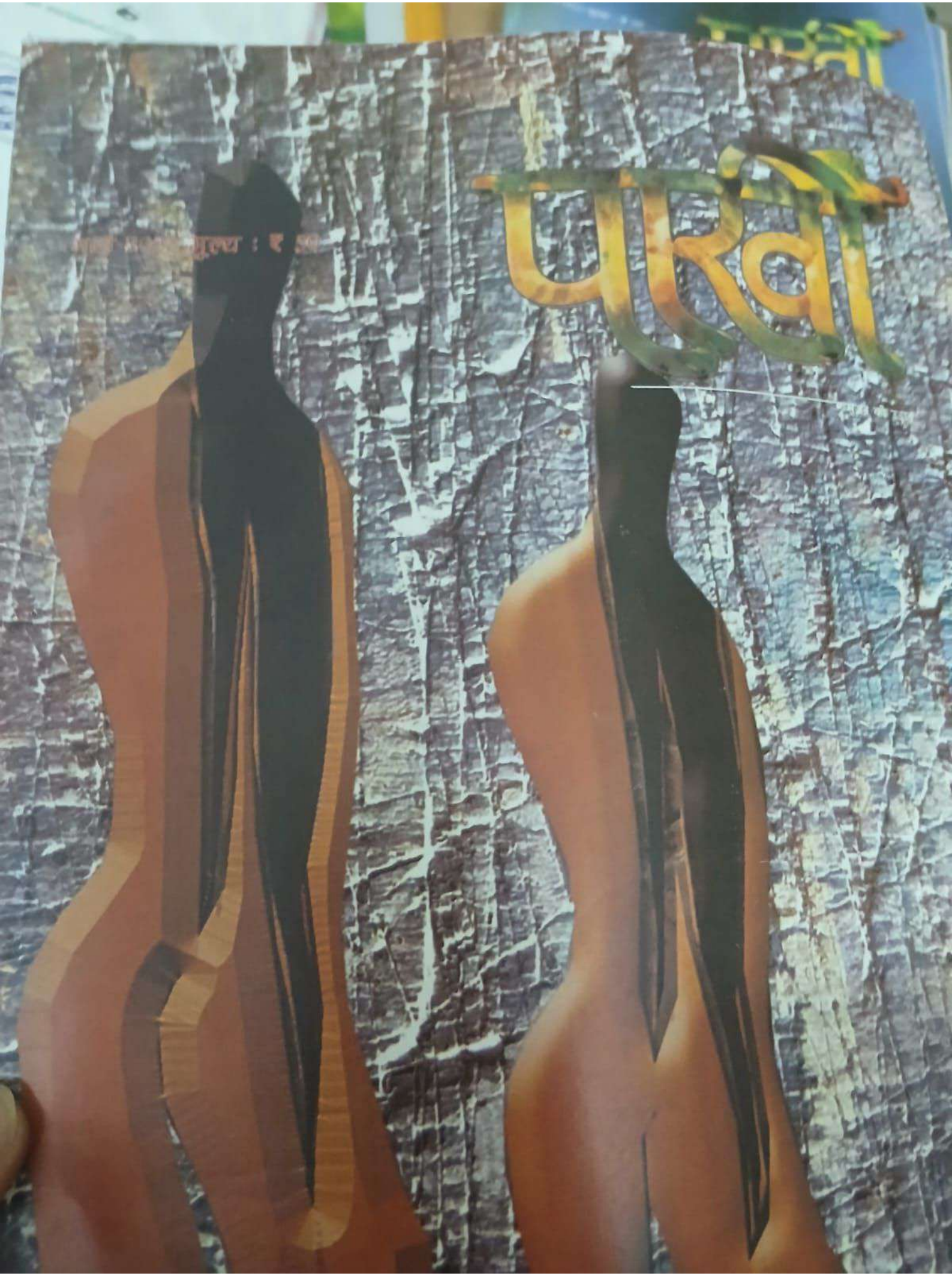
...

कानून एवं प्रशासनिक अधिकारी
गुरु गोविंद सिंह एजुकेशनल सोसाइटी
तकनीकी परिसर, कंदरा, चास, बोकारो
झारखंड-827013
मो. : 8221048752

धुली हुई थाली को पलट कर कमर के अंदर रखने और पानी पीने के बाद शोभा पुनः पत्थर के पाट पर आकर बैठ गई। यही एक पल उसका हमदम है, उसका राजदान। इस पाट पर दिन में दस मर्तबे पानी चढ़ता है और यह सूखकर ग्यारहवीं बार भीगने के लिए प्रस्तुत हो जाता है। यह उदास है और शोभा अकेली। अकेला होना कोई बाधा नहीं। उसके मन की एकमात्र बाधा, सड़क पार खड़े मकान पर तिरछे चढ़ी है। उस घर के कमरे में जल रही बत्ती की मैली रोशनी, वहां बगमदे में खड़े स्कूटर पर पड़ रही है, परंतु जिस दीवार पर मनी बेल चढ़ी है वहां घुप्प अंधकार है। इस वक्त अगर गड़ाकर देखने पर भी आंखें हरियाती नहीं हैं। शोभा ने अपना मुंह ऊपर किया। वह आसमान को देखने लगी, ठंडे दूध में भात सा सना चांद। यह सोचते हुए, उसके जी में जरा-सी शक्कर घुल आई। वैसे ही, जैसे काले बादलों पर बहती दूध सी चांदनी मीठी लगा करती है।

क्या वह ख्वामखाह ही मनी-बेल का टोटका मन में पाले फिरा करती है? कितनी ही दफे उसने पड़ोसी के घर से इसकी कलम चुराकर, अपने आंगन में यह बेल बोने की कोशिश की है। लेकिन हर बार, चुराया हुआ कलम सूख कर मर जाता है। एक दफे जब उसने कांच की पानी-भरी बोतल में कलम लगायी थी तब बेल न मरी न बढ़ी ही, जैसे बेल खुद 'शोभा' बन गई। तब हार कर, शोभा ने उस बेल को बोतल से निकाल कर फेंक दिया था। भगवान ही नहीं, उसके बनाए पेड़-पौधे भी अमीर-गरीब में फर्क करते हैं। वे पौधे बड़े आदिमयों के बगीचों और दालानों की धन-शोभा हैं। गरीब के चौके तुलसी भी सूख कर झर जाया करती है। लेकिन आगे से वह ऐसी बातों अपना माथा खराब नहीं करेगी। उसे बहुत सोच-समझ कर आगे बढ़ना कोई नया कदम उठाना है। चूंकि उसके पास है, तुरुप का एक्का।

हैरानी की बात यह है, कि पहले गनी गालियों के प्रयोग के बिना बात भी नहीं करता था। वह भी अपने भाई के पीछे उसे मारने दौड़ा था। उसी गनी ने आज उससे कितने सम्मानपूर्वक बातें कीं। आज उसने नाम भी नहीं लिया। कितनी नर्मी से बोला था वह-'बहिनी (भाभी)। नको करो। तुमको बेटा है। तुम सूर्य फूलों की मालकिन हो। एक चल कर देख तो लो। बाद में तुम्हारी मर्जी।' गनी उसे निमंत्रण न जाने क्यों शोभा को आज गनी भला लगा। आज से पहले


परंपरा

सूर्यावर्त

उस दिन विनायक श्याम के सूखे द्वार से, सूखा मुंह लिए ही लौटा। उसे खयाल आया, पहले जब परभनी वाली हुआ करती, वह उसे अक्सर चाय पूछा करती थी। आज तो घर से बाहर कोई झांकने भी न निकला? शायद आज कोर्ट की तारीख का दिन है, इसी कारण घर के लोग टेंशन में रहे होंगे। लगभग दो साल बीत गए हैं, परभनी वाली को अपने मायके गए। वह अपने संग नन्हीं चकुली को भी ले गई। पहले श्याम को उन दोनों का मोह सताया करता और उन दिनों विनायक ने अपने दोस्त को उदास भी देखा है। परंतु अब, श्याम के तेवर अपने घरवालों जैसे ही हो गए हैं। ऐसा मालूम होता है, उसने अपना सारा पिछला-बीता अपनी पैंट के पिछवाड़े में लगी धूल की मानिंद झाड़ दिया है।

पल्लवी प्रसाद

युवा कथाकार।
विभिन्न पत्र-पत्रिकाओं में कहानियां और आलेख प्रकाशित। 'काठ का उल्लू' तथा 'लाल' शीर्षक से दो उपन्यास प्रकाशित।

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कानून एवं प्रशासनिक अधिकारी
गुरु गोविंद सिंह एजुकेशनल सोसाइटी
तकनीकी परिसर, कंदरा, चास, बोकारो
झारखंड-827013
मो. : 8221048752

इस बस्ती के घरों की 'लक्ष्मियां' अपने-अपने द्वारों पर पानी का 'छड़ा' (छींटे) मार रही हैं, तो कहीं स्कूल जाने से पहले बच्चियां चुटकी-भर रंगोली से फूल-पत्ती बना रही हैं। कई द्वारों पर शुभागमन के वास्ते स्वस्तिक या ओम् जैसे चिह्न उकेर लिए गए हैं। और मुचि साड़ियों अथवा गाऊन पहने गृहिणियां उड़ती नजरों से, जैसे हर गुजरने वाले को देखती हैं, वैसे ही वहां से विनायक का गुजरना देख रही हैं।

श्याम के घर का सूखा द्वार, वहां परभणी-वाली का न होना बयान कर रहा है। परभणी-वाली के अलावा श्याम के घर के द्वार पर छड़ा कौन डालेगा? श्याम की कोई बहन भी तो नहीं। और आज शायद उसकी मां को देर हो गई हो। बात जो भी हो। बरामदे में उसके बाप को गंजी-पाजामे में डोलते हुए देख, विनायक ने भरसक विनम्रतापूर्वक पूछा, 'श्याम घर पर है क्या?'

श्याम के बाप ने विनायक के सवाल को कोई तवज्जो न दी। डोलते-डोलते, न जाने वह आदमी कहां गायब हो गया? विनायक यूं ही खड़ा रहा। फिर उसने आवाज लगाई, 'श्याम!' विनायक को कोई उत्तर नहीं मिला। उल्टा, भीतर से सदस्यों की झड़प और गालियों की आवाजें आने लगीं। विनायक पशोपेश में पड़ गया। उसका इस तरह पशोपेश में खड़े रहने को पड़ोस की बुढ़िया टुकुर-टुकुर देख रही है। दरअसल, वह बुढ़िया दाना चुगने के लिए दड़बे से बाहर निकाले गए अपने मुर्गे-मुर्गियों की निगरानी कर रही है। विनायक को अब लगा कि श्याम घर पर नहीं है। वह जरूर गाड़ी की ट्रिप लेकर कहीं बाहरगांव गया होगा। विनायक लौट जाने के लिए मुड़ा ही था कि बरामदे पर श्याम लुंगी का छोर कमर में खोंसते हुए प्रकट हुआ।

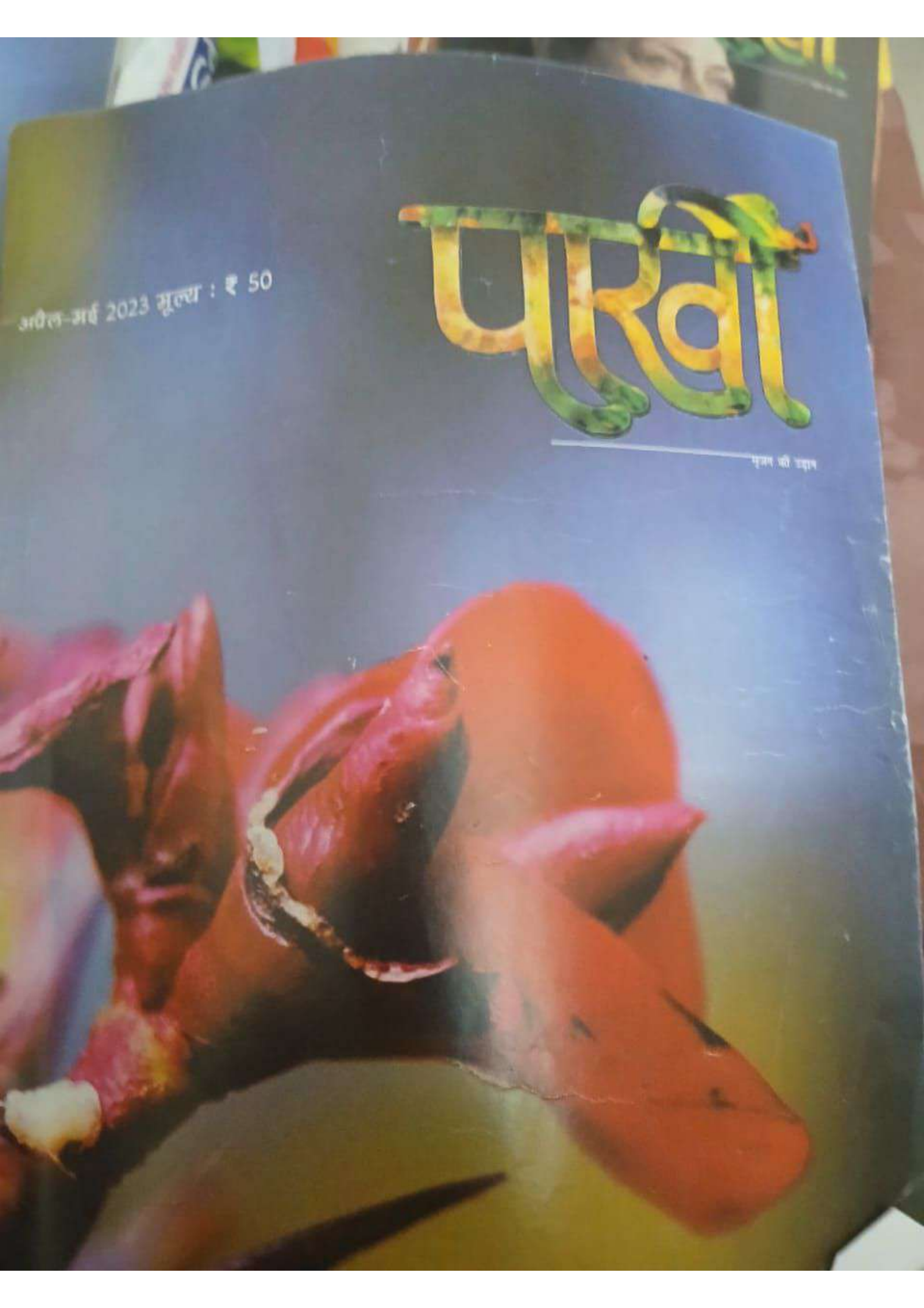
'आ रे विनु! कैसा क्या चल रहा? क्या बोलता है?'

'मेरे को लगा तू बाहरगांव चला गया है।' यह कहते हुए विनायक की आंखें अनिश्चय में उसके घर की ओर उठीं। अंदर से आ रही क्लेश की आवाजें मंद हो चली हैं।

'बैठ रे।' श्याम ने खड़ी चारपाई को चित्त किया और दोनों उस पर साथ बैठे गए श्याम के सूखे द्वार को देखकर, विनायक को एकबारगी अपने घर के द्वार की याद आई। उसकी मां नियमित छड़ा नहीं डालती है। और रंगोली तो उसने आज तक शायद कभी नहीं बनाई होगी, दीवाली-संक्रांति पर भी नहीं। विनायक को श्याम की नन्हीं बेटी की याद आई, जो यदि वहां होती तो जरूर

पखेरू

अप्रैल-मई 2023 मूल्य : ₹ 50



सूर्यावर्त

गोपाल बाहर गया हो तब भी उसके परिवार का कोई न कोई सदस्य हाजिर रहता जो शोभा से गोपाल के स्थान पर लड़ता अथवा जिससे शोभा लड़ सकती थी। शोभा को मानो अपने ससुराल वालों को सताने में लुत्फ मिला करता। और वे लोग भी उसे हर बात पर सबक सीखाकर ही दम लेते। जबकि शोभा इस तरह कहां सबक लेने वाली थी! कमबख्त कौन किसे सता रहा है और कौन किसे सबक सीखा रहा है इसमें भेद करना नामुमकिन हो गया था। फुंसी से शुरू हुई बात फैलकर अब बवासीर बन गई थी। इसी बीच उन लोगों द्वारा, शोभा पर भूत-प्रेत का साया होने की चर्चा गांव में फैला दी गई।

पल्लवी प्रसाद

युवा कथाकार।

विभिन्न पत्र-पत्रिकाओं में कहानियां और आलेख प्रकाशित। 'काठ का उल्लू' तथा 'लाल' शीर्षक से दो उपन्यास प्रकाशित।

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कानून एवं प्रशासनिक अधिकारी

गुरु गोविंद सिंह एजुकेशनल सोसाइटी

तकनीकी परिसर, कंदरा, चास, बोकारो

झारखंड-827013

मो. : 8221048752

वह तब उसके आंचल से बंधा हुआ सारा दिन 'आई-आई' करता फिरता। उसका संसार उसका बेटा था और तब बेटे का संसार वह हुआ करती। कब उसके आंचल की गांठ ढीली पड़ गई और कब बेटा उसका पहलू छोड़कर निकल गया, उसे पता भी न चला। वह अपने दिमाग पर काफी जोर डालकर सोचती है, परंतु इस 'कब और कैसे' का थाह-पता नहीं लगा पाती है। विनायक के लिए बस बारहवीं कक्षा ही तो पास करना बाकी बचा है। शोभा उसके पास न होने पर नाराज भी नहीं है। बस, जरा सा टोका है तो था उसने? न जाने उसका अपना बेटा उस पर हमेशा क्यों बिफरा रहता है।

पुरुषों से शोभा निबटती आई है। उनसे निबटना मानो उसके बाएं हाथ का खेल है। बड़े से बड़ा मनचला भी शोभा को देखते ही खिसियानी हंसी हंसते हुए पीछे हट जाया करता। शोभा की बात ही कुछ और है। उसका सुनहरा रंग कड़ी धूप में पक कर तांबा हुआ है। दोनों कानों के नीचे, उसके जबड़े चौरस और नुकीले हैं। वह अक्सर सुपारी या कुछ चबाती हुई, उनकी बीड़ी किया करती है और इस तरह मुंह में जमा होने वाले स्राव को झटके से थूक दिया करती है-वह मानो लोहे के चने चबाती है और पिसे लोहे का बुरादा थूकती है। कोई मनचला शोभा का रास्ता काटे, तो शोभा के धंसे मांस और उभरी हड्डियों वाले दोनों गाल और जबड़े चलने लगते हैं। ठीक वैसे ही, जैसे अपने शिकार को मुंह में जकड़ लेने से पहले किसी छिपकली के जबड़े हिला करते हैं। शोभा की आंखों की भूरी पुतलियां वहशीपन में डोलने लगतीं...और बड़े-बड़े कामदेवों की वासना पर पानी ढुल जाता। शोभा के जीवन में ऐसा कोई पल नहीं आया है, जब उसने किसी पुरुष से इश्क किया हो। वह पुरुष को इस काबिल समझती नहीं।

शोभा को आज भी वह दिन याद आता है। उसने क्या खींचकर मारा था। शोभा ने अपने पति गोपाल का कपार, दगड़ (पत्थर) के एक ही वार में फोड़ डाला था। कई अंजुलियां भर रक्त बहा था, बहता रहा था। न जाने चोट से चलते अथवा अपने सिर से बहते हुए खून को देखकर, गोपाल चक्कर खाकर धरती पर गिरा था। तब शोभा ने हाथ में उठाए दूसरे पत्थर को घबरा कर नीचे फेंक दिया और पास ही पड़े कपड़े धोने के धोका को अपने बचाव में उठा लिया था। बड़े भाई की ऐसी दुर्दशा देखकर, छोटा गनी जैसे ही हाथ की गर्दन लपकने को हुआ...शोभा ने चिल्लाते हुए चेतावनी दी थी-'हे-हो !

अक्टूबर 2023 मूल्य : ₹ 50

परिवेश

पल्लवी प्रसाद
कानून एवं प्रशासनिक अधिकारी
गुरु गोविंद सिंह एजुकेशनल सोसाइटी
तकनीकी परिसर, कंदरा, चास, बोकारो
झारखंड-827013
मो. : 8221048752

जो सरकार सत्ता में है और देश की व्यवस्था उसके हाथ में है तो वह अपनी मर्जी, अपनी शैली और अपनी योजना प्रणाली को लागू कर पिछले 75 वर्षों के भारतीय ताना-बाना में नई बुनावट लाना चाह रही है जहां बहुसंख्यक ही महत्वपूर्ण है और भारत हिंदू राष्ट्र है।

मुझे दुख और ताज्जुब इस बात पर है कि वर्षों इरोम चानू शर्मिला महिलाओं पर हुए शोषण के विरुद्ध अपना एतराज़ दर्ज करवाती रहीं मगर हुआ क्या ? क्या समाज बदला, मर्द बदले, क़ानून में कड़ाई आई ? इन सारे सवालों का जवाब

सूर्यावर्त

भारी-भरकम आवाजों से नारे बुलंद करते हुए, कई अगुवा बंदे विजय राव के समर्थकों का जुलूस लिए सड़क पर बढ़ रहे हैं। उनके पीछे चल रही भीड़ पूरे जोशोखरोश में उनके दिए नारे दुहरा रही है। जिस मुहल्ले से यह जुलूस गुजरता है, वहां के बाशिंदे कुछ दूरी तक शोर मचाते, नारे लगाते हुए, जुलूस के साथ जुड़ जाते हैं। मर्द काम से अपने घरों को लौट रहे हैं। औरतें जुलूस को चुपचाप देखा करती हैं। सड़क के किनारे दौड़ते-खेलते बच्चे जुलूस को देखकर, ठमक जाते हैं। वे उन नारों की नकल उतारते हैं और आपस में खिलखिलाते हैं। शाम का झुटपुटा घिर आया है। जुलूस के पीछे-पीछे, एक काले रंग की खुली मारुति जिप्सी, धीमी गति से बढ़ रही है।

पल्लवी प्रसाद

युवा कथाकार।
विभिन्न पत्र-पत्रिकाओं में कहानियां -आलेख तथा 'काठ का उल्लू' एवं 'लाल' शीर्षक से दो उपन्यास प्रकाशित।
...
कानून एवं प्रशासनिक अधिकारी
गुरु गोविंद सिंह एजुकेशनल सोसाइटी

उनके द्वारा लक्षित पार्टी, हरेक चुनाव में अपनी तरफ से किसी मराठा प्रत्याशी को खड़ा करती है। यह क्षेत्र, मराठा बहुल क्षेत्र जो है। लेकिन अप्पा के साथ मुश्किल यह है कि वे सब कुछ हैं परंतु मराठा नहीं हैं। वे लिंगायत समुदाय के हैं। यह एक ऐसा समुदाय है, जो भगवान शि की आराधना करता है लेकिन अपने को हिंदुओं से भिन्न मानता है। लिंगा समुदाय अपने मृतकों को अग्नि के सुपुर्द करने की बजाय, बैठने की मुद्रा जमीन में दफनाते हैं। अप्पा साहेब ताउम्र अपने गले में लिंग और रुद्राक्ष को करते रहे हैं। वे अपने ललाट पर भभूत या चंदन का तिलक नहीं बल्कि चूने का तिलक लगाते हैं।

परंतु देश की सबसे पुरानी और बड़ी पार्टी द्वारा चयनित मराठा को, पिछले तीन चुनावों से वर्षा ताई चुनाव के अखाड़े में धूल चटा इसलिए इस बार हार कर वह पुरानी पार्टी, बूढ़े अप्पा साहेब को तो उनके छोटे बेटे विजय राव को टिकट देने के लिए राजी हो गई है। युवा प्रत्याशी चाहती थी और अप्पा साहेब अपने बेटे के हक में पी उनका मंसूबा ऐसे नहीं, वैसे पूरा हुआ। अप्पा साहेब का बड़ा बे किंतु कुंद-जेहन है और उसके ससुराली तेज-तरार, यही कारण ने बड़े पुत्र को पीछे छोड़कर, छोटे का नाम पार्टी के सामने है। टिकट के लिए उसके चयनित होने की बात जितनी अनाया रही है, शायद उतनी है नहीं? लगातार पंद्रह वर्षों से यहां क कुर्सी पर जमी, वर्षा ताई बावलेकर खुद कुनबी मराठा जा प्रत्याशी खड़े करने के बावजूद, विपक्ष पार्टियां तीन बार से खा रही हैं। सो लाजिमी है कि पार्टी कमान और उनके सल अपना दांव और रणनीति बदल डालने का फैसला लिया कोशिश करते रहने वाले की कभी हार नहीं होती। इस त साहेब अपने लिए न सही, लेकिन अपने बेटे विजय राव खरीदने में सफल हो गए।

'सांय्य...सांय...भट् भट् फट् फट् फट्...' अनगिनत

जुलाई 2023 मूल्य : ₹ 50

पक्षधर

सृजन की दृढ़

अखबार का हॉकर
सड़क पर खड़ा होकर
चिल्ला रहा था कि
जनता ने सरकार का
विश्वास खो दिया है
(अब कड़े परिश्रम, अनुशा
और दूरदर्शिता के अलावा
कोई रास्ता नहीं बचा है।)

मेरी राय है कि
सरकार इस जनता को भं
और अपने लिए दूसरी जन

सूर्यावर्त

आज शाम की सारी घटनाएं उसके साथ इतनी अनायास और अप्रत्याशित रूप से घटी हैं कि वह किसी मंत्र के वश में है। वह इतना भावशून्य हो उठा है कि इनाम पाने का लालच या खिताब उसके मन में प्रवेश नहीं कर पाया है। वह तो जैसे मंत्रचालित-सा यहां पहुंच गया है! अब जबकि पुलिस अफसर यहां से चला गया है और बैठक में चल रही चर्चा भी मानो शेष हो गई है तो वह असमंजस में पड़कर, यहां से चलने के लिए उठ खड़ा हुआ। यह देखकर, बुजुर्ग बासवप्पा ने ऊंची आवाज में उसे टोका और अपने पास बुलाते हुए कहा, 'यहां आओ, बैठो।'

पल्लवी प्रसाद

युवा कथाकार।
विभिन्न पत्र-पत्रिकाओं में कहानियां और आलेख प्रकाशित। 'काठ का उल्लू' तथा 'लाल' शीर्षक से दो उपन्यास प्रकाशित।

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कानून एवं प्रशासनिक अधिकारी
गुरु गोविंद सिंह एजुकेशनल सोसाइटी
तकनीकी परिसर, कंदरा, चास, बोकारो
झारखंड-827013

वहां बैठे-बैठे जब उसके होश तनिक लौटे, तो अपने बारे में चर्चा, कुछ-कुछ उसके पल्ले पड़ने लगी। उसने देखा कि जिस ने उसे वहां बिठाया था, वह सोफे के पीछे खड़ा होकर फोन पर बातें करने लगा है। वह अपने किन्हीं लोगों को इस हवेली पर के लिए आदेश दे रहा है। क्या वे लोग, जिन्हें अब हवेली पर तैनात को शहर में ढूंढने के लिए भेजे गए थे?

उसी वक्त पहली बार विनायक का ध्यान अप्पा के ठीक आदमी पर गया। वह आदमी वर्दी पहना हुआ, कोई पुलिस उसे और उसकी वर्दी को देखते ही विनायक चौंक गया। उस पर लगा बिल्ला यह बताता है कि वह यहां का थाना-प्रभारी यह सोचकर घबरा गया कि क्या इन लोगों ने उसे पकड़ने के भी बुला रखी है?

उस मोटे आदमी ने थाने जाकर, अवश्य ही उसकी होगी। लेकिन उसने तो कुछ भी नहीं किया?

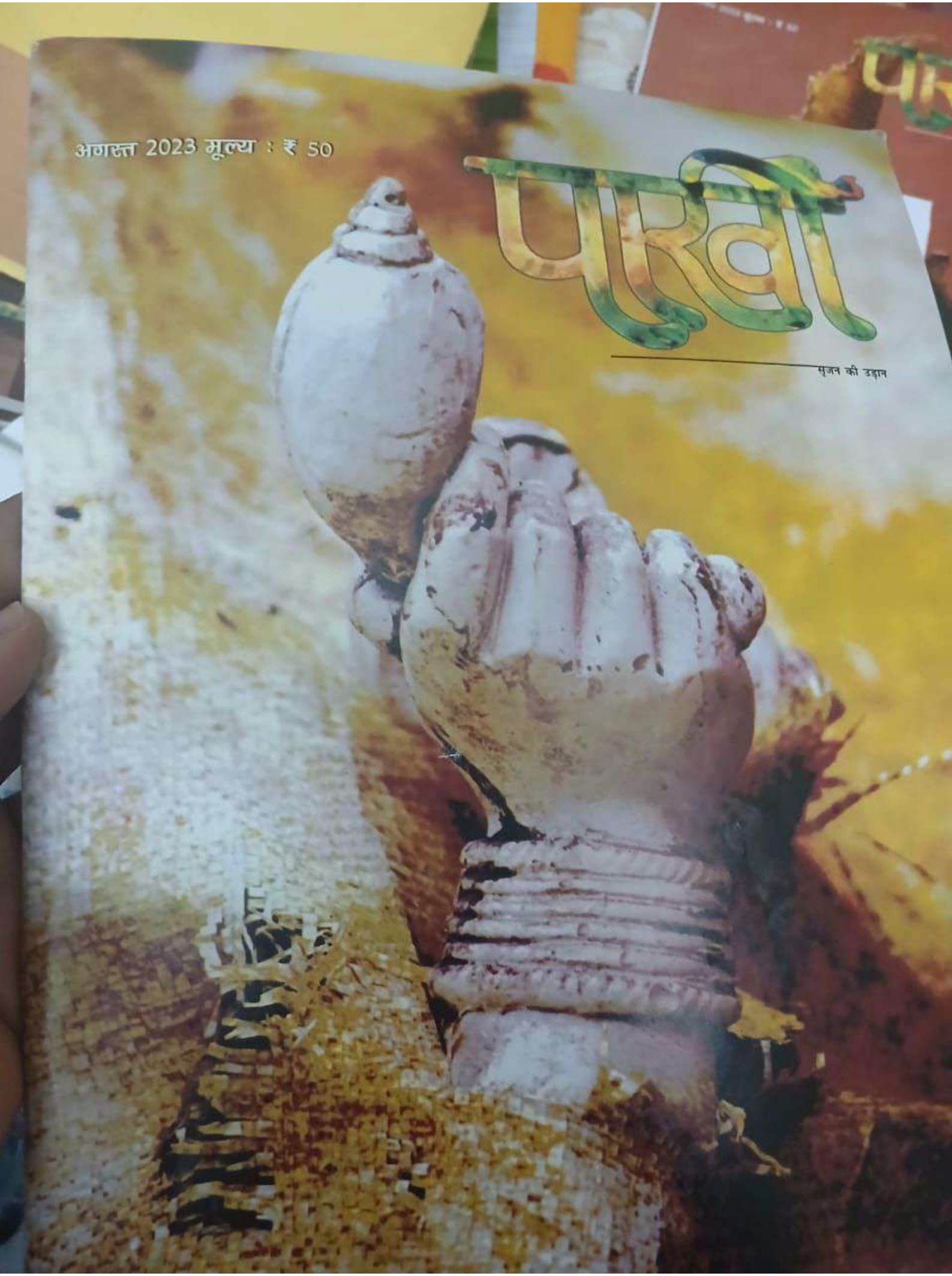
विनायक ने सोचा कि वह इन लोगों को फौरन बता दे कि है...

'अप्पा साहेब, हम तो सरकारी मुलाजिम आदमी हैं। सत्ताधीश हैं। उन्होंने आपकी कम्पलेन कर डाली, तो हमें पड़ी। ओनली औफिशियल साहेब, नथिंग पर्सनल। ...पुलिस है साहेब?

पुलिस जनता की सेवक है। हम आपकी सेवा के लिए अपनी सेवा-भाव पर यूं जोर देते हुए, अप्पा को आश्वस्त दिलाने का प्रयास कर रहा है।

'कितना राड़ा किया तुम्हारे आदमी लोगों ने, मालूम की येइच् सेवा करती पुलिस?' अप्पा के पीछे खड़े घुड़कते हुए यह सवाल पूछा।

'बोला तो मैं आपको। दो नवे रंगरूट रेड-पार्टी नवी नौकरी है, नवी वर्दी...मैंने थाने पर बहुत झांव


अगस्त 2023 मूल्य : ₹ 50
पक्षी
सृजन की उड़ान

सूर्यावर्त

विनायक ने देखा कि संजू भाऊ के पीछे बैठी सहायिका अपना सिर पकड़े, कराह रही है। बेचारे भाऊ का इसमें क्या दोष? लेकिन मरण तो उनका ही है। गाड़ी उनकी है और वे ही उस पर टीचर हैं, तो ऐसे में सारी जिम्मेदारी उन्हीं के सिर है। विनायक ने चोर निगाहों से युवती की ओर देखा। वह सिर झुकाए हुए अपनी टैक्सी का पिछला दरवाजा खोलकर खड़ा रहा। युवती यंत्रवत् पिछली सीट पर बैठ गई, परंतु उसने एक बार भी विनायक की ओर नहीं देखा। गाड़ी चलाते हुए विनायक बार-बार युवती को रियर-व्हियू के शीशे में देख लेता। युवती उसके होने से इस कद्र बेखबर है कि तभी वह ऐसी हिम्मत कर पा रहा है। उस युवती के लिए वह मानो वहां है ही नहीं। वह चुपचाप सुबक रही है।

पल्लवी प्रसाद

युवा कथाकार।
विभिन्न पत्र-पत्रिकाओं में कहानियां और आलेख प्रकाशित। 'काठ का उल्लू' तथा 'लाल' शीर्षक से दो उपन्यास प्रकाशित।

...

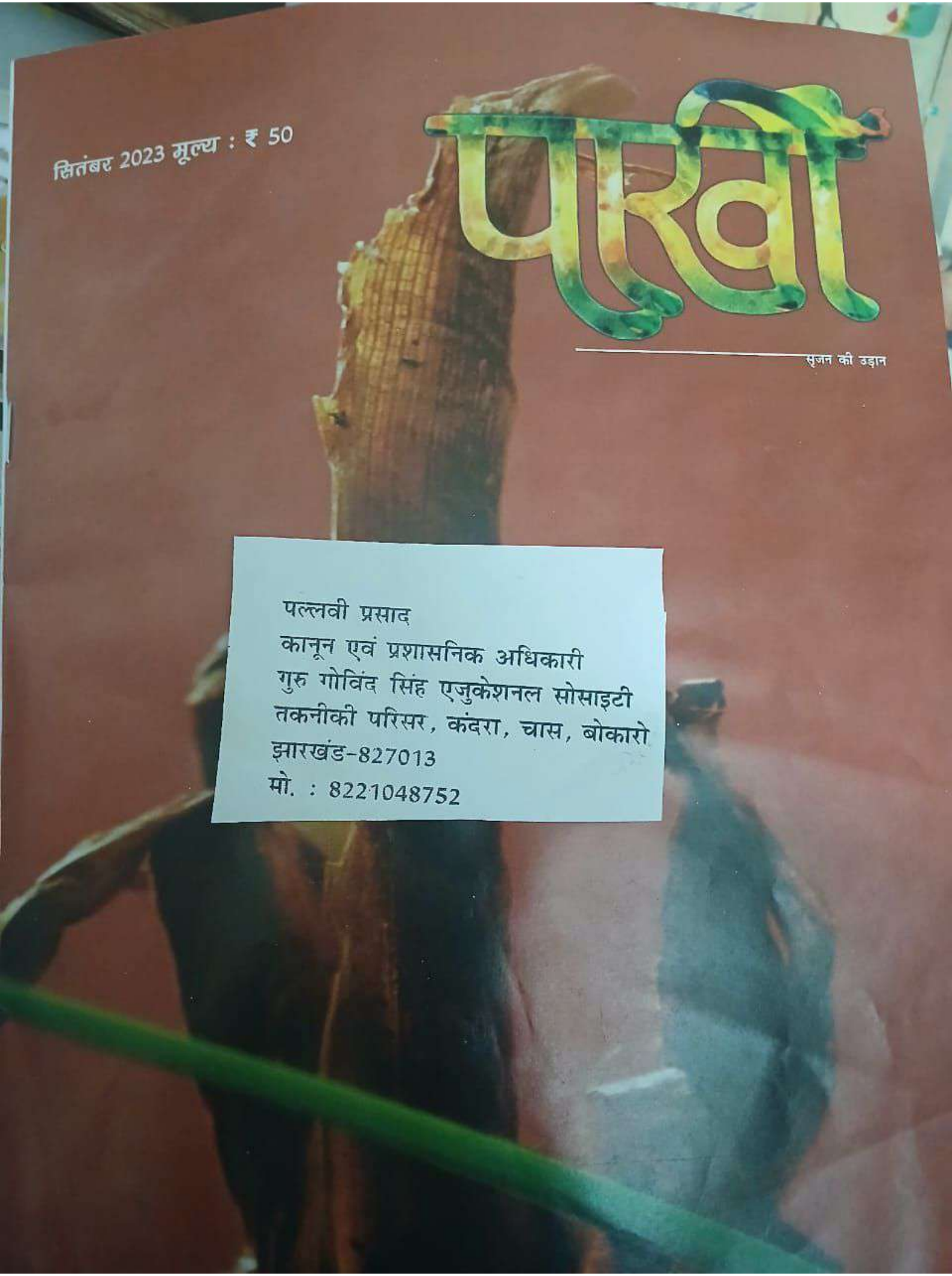
कानून एवं प्रशासनिक अधिकारी
गुरु गोविंद सिंह एजुकेशनल सोसाइटी
तकनीकी परिसर, कंदरा, चास, बोकारो
झारखंड-827013
मो. : 8221048752

इस वक्त दिन का वह समय हो रहा है जब दुकानदार दोपहर का भोजन कर, कुछ सुस्ताने के बाद अपनी दुकानों पर लौटते हैं। इस समय धूप तेज है और सड़कों पर आवाजाही मध्यम। एक ढाई साल का बच्चा अभी-अभी दोपहर की नींद से जागा है। आया ने गोद में लिए उस बच्चे को प्रांगण में बनी हुई क्यारी की ओर लटका दिया है। ...बच्चा अपनी 'सू-सू' की धार को एकाग्रचित्त होकर देख रहा है। कुछ पल बाद वह अपनी आया की ओर देखकर जोर से खिलखिलाता है, मानो उससे कहता हो कि 'यह सू-सू कितने मजे की बात है।' आया उस बच्चे को उसकी दोनों कांख से थामे हुए है। उत्साहित बच्चा अपनी दोनों गुलथुली टांगें पटक-पटक कर उछलता है, किलकता है। आया अपने एक हाथ से बच्चे को ऊपर, अपनी गोद में खींच लेती है और साथ ही अपने दूसरे हाथ से बच्चे की उतरी हुई इलास्टिक-पैंट उसकी कमर पर चढ़ा देती है। फिर वह बच्चा मचल उठता है और आया की गोद से नीचे फिसलकर उतरता है और हवेली के प्रांगण के बीच दौड़ जाता है। वह मुलायम घास पर नंगे पैरों से दौड़ता हुआ, किलकारियां मारता है। और वह 'थुजा' माने मोरपंखी की झाड़ियों के पीछे छिप जाता है। आया 'राजे... राजे...' कहकर पुकारती और पुचकारती हुई उसे ढूंढने का नाटक करती है।

उसी क्षण, नीले रंग के बंद फाटक के बाहर एक मोटरगाड़ी आकर रुकती है। ड्राइवर हॉर्न बजाता है। और अनायास हवेली के भीतर से उस बच्चे की मां बरामदे में निकलती है। मां कहीं बाहर जाने के लिए तैयार है। वह मंझोले कद की छरहरी युवती है। उसका रंग गेंहुआ है। उसकी चोटी कमर तक जा है और उसके चेहरे पर की व्यस्तता उसे अधिक लावण्यमयी बना रही उसका नाम सुप्रिया है। उसके पीछे एक ऊंचे कद की, मोटी, अधेड़ उम्र सहायिका टाइप सुस्त-चाल महिला भी है। अधेड़ सहायिका की नव्वारी उ लंबे कद के चलते उसकी पिंडलियों पर ज्यादा उटंग है और कंधे पर गया पल्लू उसके विशाल नितंबों पर किसी पर्दे की तरह पड़ा है।

सहायिका ने खुश्क आवाज में बच्चे की मां से पूछा, 'बाई साहेब, को साथ ले चलने का है?'

इस पर सुप्रिया की आंखें बच्चे की आया की आंखों से जा उलझीं। भर के लिए वह सोच में पड़ गई। फिर उसने कहा, 'बाबा को यहीं रह यह खुश है और खेल रहा है। हम जल्दी लौट आएंगे।' सुप्रिया ने



पल्लवी प्रसाद
कानून एवं प्रशासनिक अधिकारी
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मो. : 8221048752

सूर्यावर्त

शोभा को हंसी आ गई। गनी की बीवी अद्भुत है। गालियों को इंसान के मुंह से निकला हुआ भाष जानना चाहिए। आदमी जिंदा है तो मुंह से भाप छोड़ेगा ही। गालियों का भी भला कोई बुरा मानता है? नित्य नई विपदाएं भेजने वाले भगवान का तो कोई बुरा मानता ही नहीं फिर अकर्मण्य शब्दों का क्या बुरा मानना? यह गंदे शब्द मन का मैल धो देते हैं। और शोभा को ही गोपाल और उसकी दूसरी बीवी के संबंध में जानने की कौन-सी पड़ी है? उसने गोपाल को कभी अपना आदमी माना ही नहीं।

हरी-हरी ऊंची दूब से ढंके खेतों के मेड़- 'सांय!' नाला, गड्ढे- ठांय से रुकी। लोगों को झटका लगा। कोई गंवई बस-स्टॉप मालूम पड़ता है। बस के दरवाजों की तरफ होने वाली हलचल से जान पड़ता है कि बस में यात्री चढ़-उतर रहे हैं। सामने सड़क किनारे, एक बरगद का पेड़ खड़ा है। एक मामूली सी गेरुआ-रंग इमारत पर मर्दानगी बढ़ाने की दवा का इश्तेहार रंगा हुआ है। वे लोग जिन्हें मर्द होना स्वप्न में भी सताता है, उनके इस दोष का निवारण कोई डॉक्टर करते हैं, ऐसा यह इश्तेहार कहता है। वह और भी बहुत कुछ कहता है। जैसे मर्दों का कल-कब्जा दबा-उकसा कर दुनिया भर की औरतों को खुशियों से गदबदा दिया जा सकता है। फिर क्यों न ऐसा हो कि इन मर्दों से दुनिया-भर की वे औरतें प्यार कर बैठें, जिन औरतों के वास्ते ये मर्द अपने स्वप्नों को दोष-रहित रखना चाहते हैं, जो इश्क मजाजी में इन स्त्रियों के संग क्रीड़ा करने और उन्हें सुख प्रदान करने की कामना में ही, अलां-फलां नीम हकीमों से अपना इलाज करवाते फिरते हैं? जाहिर बात है कि ठीक-ठीक यही खयाल, शोभा के दिमाग में न आए होंगे, परंतु इश्तेहार को देखते-समझते, उसके चेहरे का रंग लाल हो उठा फिर न जाने क्या याद कर, धीरे-धीरे फीका हो गया।

सूर्यफूल!

इस रास्ते के आगे सूरजमुखी के खेत पड़ते हैं। यहां दूर तलक, बड़े-ब पीले फूल लहलहा रहे हैं। फूलों का झूमता समंदर! इन्हें जो देख ले, उस मुंह खुला का खुला रह जाए और उसकी आंखों पर चौबीस कैरेट क मढ़ जाए! शोभा की सांसें उसके सीने में फंस कर रह गईं। वह जहां ज है...जिसके यहां जा रही है...जिसके छोटे भाई के बुलावे पर जा रही भला वहां जा ही क्यों रही है? ओह! उसके मगज में, असंख्य विचार- उलझ पड़ीं। शोभा ने अपने सिर को टेढ़ा झटका। जैसे कोई बच्चा गलत लिखे हुए को रबर से मिटाता है, वैसे ही शोभा ने मन में सवाल को 'भूस' दिया। उसने नए सिरे से सोचा और सीधे मतलब सोची-'क्या इस साल, उसने भी अपने खेत में सूरजमुखी बोए हैं

आज से पहले, 'उसके' बारे में यह खयाल शोभा के मन में आज से पहले शोभा का बेटा जवान भी तो न हुआ था? शोभ

पल्लवी प्रसाद

युवा कथाकार।
विभिन्न पत्र-पत्रिकाओं में कहानियां और आलेख प्रकाशित। 'काठ का उल्लू' तथा 'लाल' शीर्षक से दो उपन्यास प्रकाशित।
...
कानून एवं प्रशासनिक अधिकारी
गुरु गोविंद सिंह एजुकेशनल सोसाइटी
तकनीकी परिसर, कंदरा, चास, बोकारो


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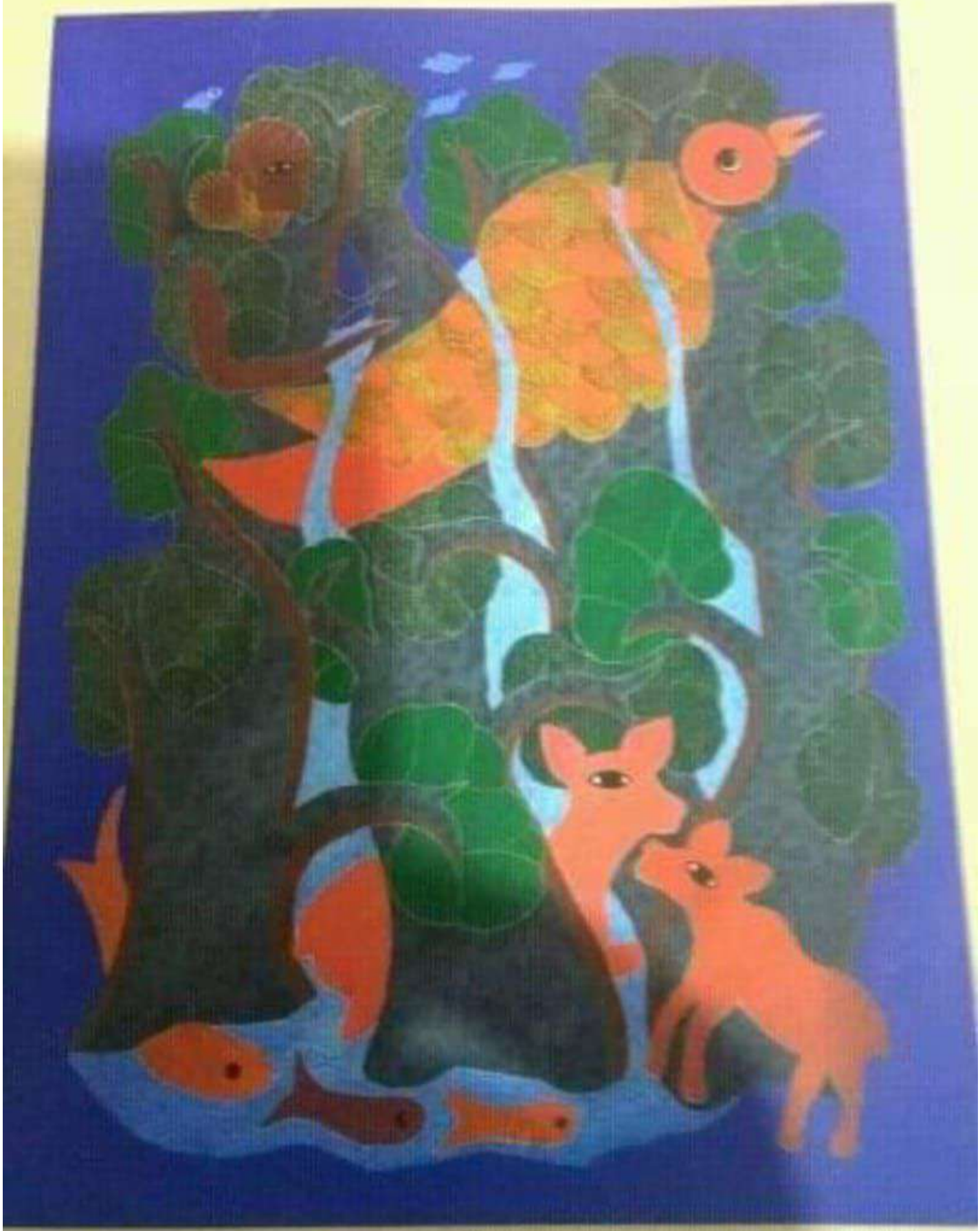

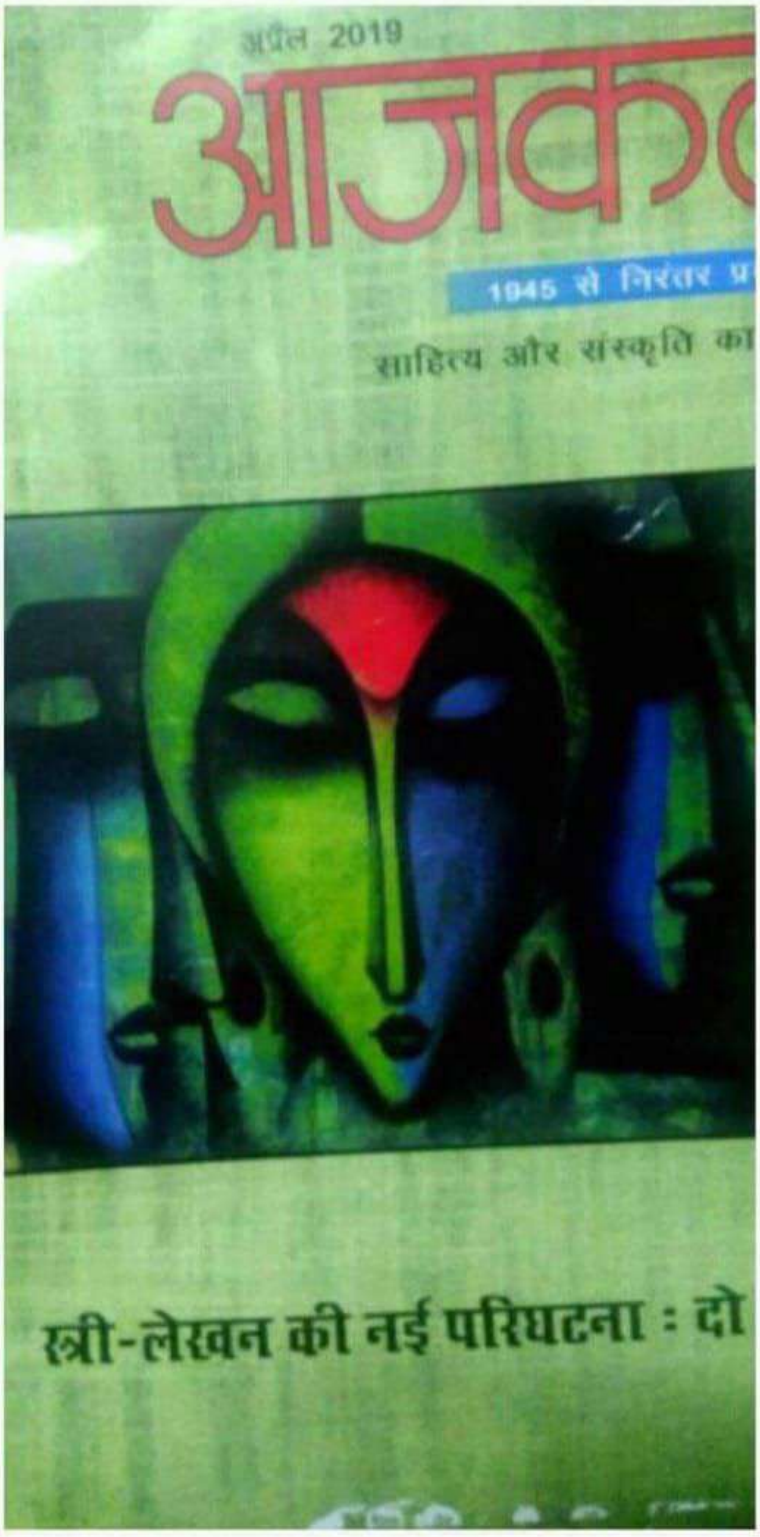
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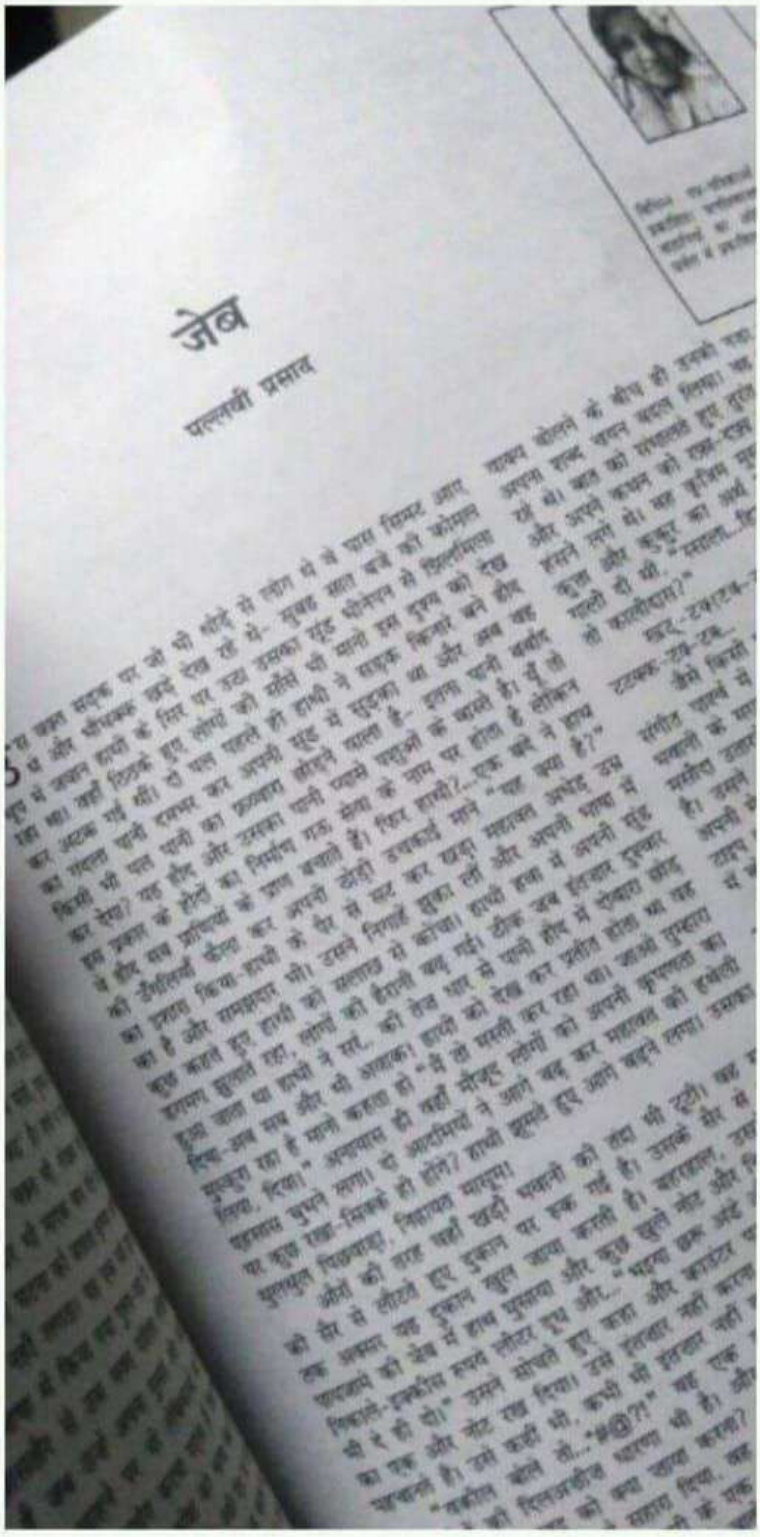
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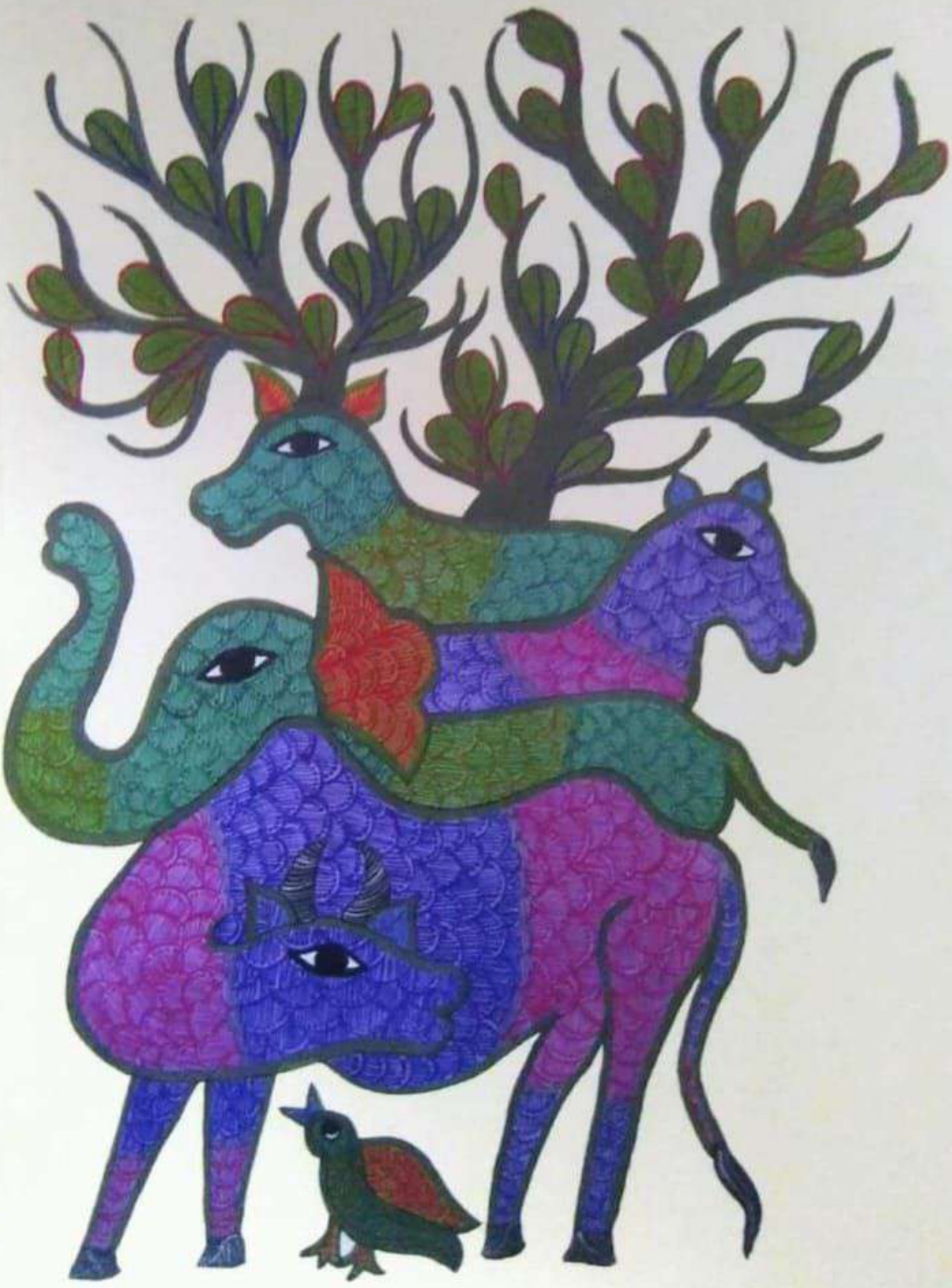

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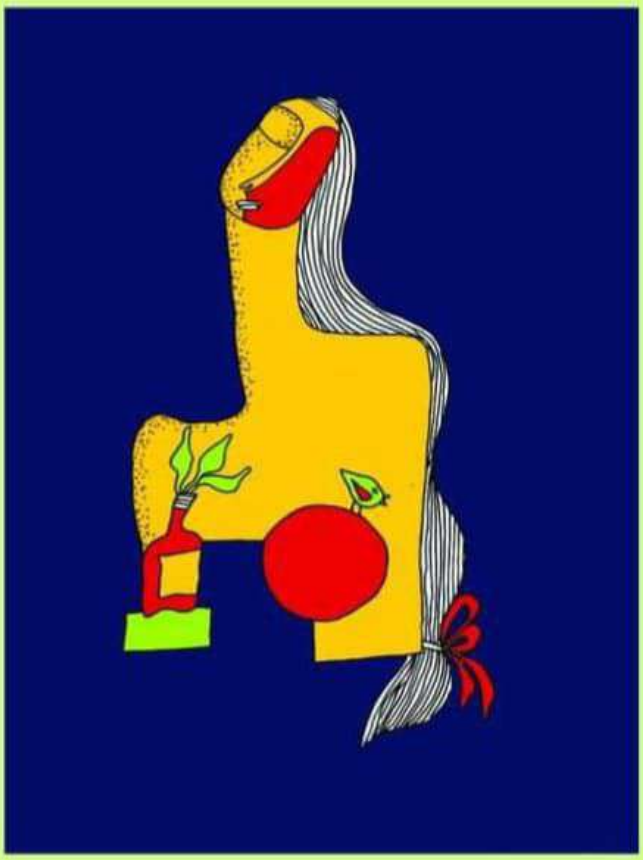

पल्लवी प्रसाद

हंस, कथादेश, नया ज्ञानोदय,आजकल, दोआबा, लमही, पाखी, सबलोग, युद्धरत आम आदमी, दैनिक जागरण, सत्यार्थी, डेवलपिंग इंडिया मिरर' आदि पत्रिकाओं में कहानियाँ तथा लेख प्रकाशित।

सत्यार्थी रिसर्च जर्नल, सदानीरा, रचना समय, इंडियन लिट्रेचर - साहित्य अकादमी पत्रिकाओं में अंग्रेजी अनुवाद प्रकाशित।

'काठ का उल्लू' (उपन्यास) दोआबा, जून 2019 में प्रकाशित।

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पल्लवी प्रसाद

पल्लवी प्रसाद

काठ का उल्लू

यह उपन्यास जिसके हाथ में है,
उसके लिए ।

वह जो उल्लूओं में श्रेष्ठ है। वह जो उल्लू बनने के बाद उल्लू बने रहने में सुरक्षा महसूस करता है यानि जो रूढ़िवत उल्लू है। वह जिसके पंख सजीव हैं किंतु जिन्हें वह फड़फड़ा कर उड़ नहीं पाता क्योंकि उसकी बुद्धि काष्ठ हो गयी है।

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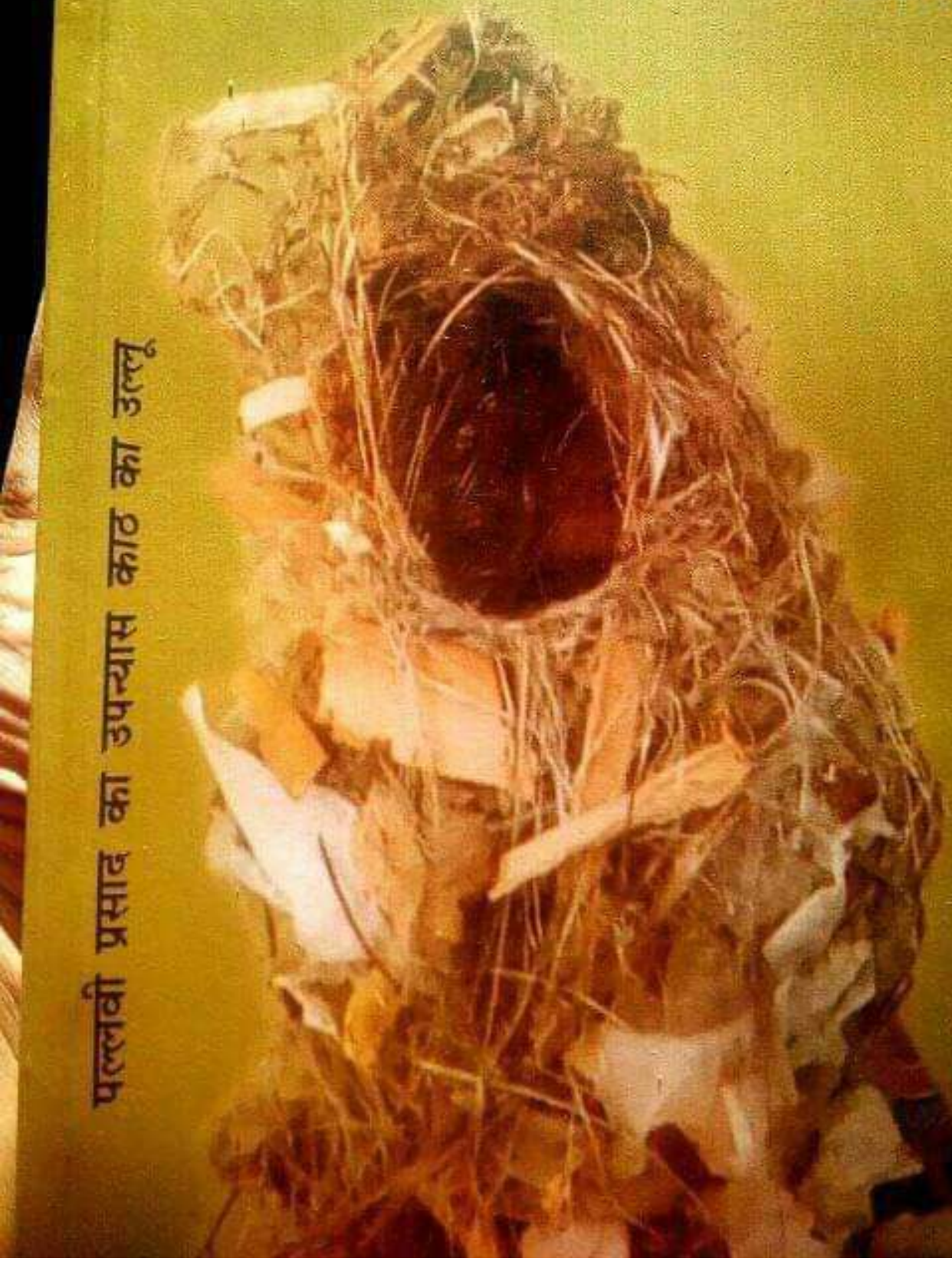


पल्लवी प्रसाद का उपन्यास काठ का उल्लू

उड़ा लिए
चिड़ियों ने
मेरे
आंगन के
खर पात
नहीं हुई
बरसात
कि सूखा
आ पहुंचा

A Birth Centenary Tribute to Phanishwarnath Renu

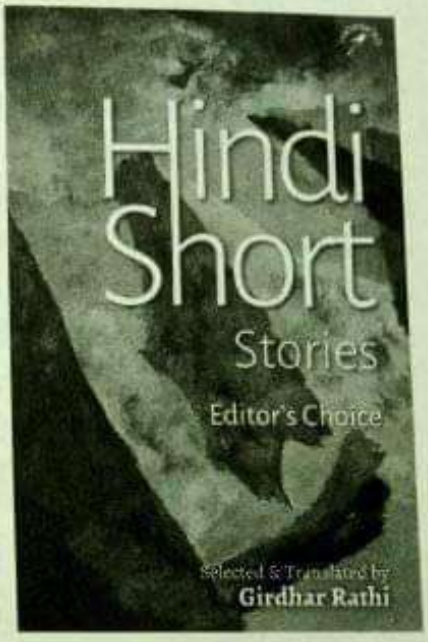
Pallavi Prasad

The author Phanishwarnath Renu is the cynosure of Indian literature. He was born to a family of land-owning agriculturists on 4th March, 1921 at the village Aurahi Hingna in Araria district of Bihar. He studied up to intermediate college. He led a life of an activist since his early years. He participated in India's freedom struggle in his youth and was twice sent to prison. He was imprisoned the second time in 1942 for participating in the Quit India Movement. While in prison he suffered from a lung infection which was diagnosed as Tuberculosis and he was sent to Patna Medical College Hospital for treatment. After his release from prison in 1944 he began writing reportages and stories regularly. He also participated in Nepal's revolution, a country that shares border with his native place and which he fondly called 'Mausi' (mother's sister), India being his motherland.

Renu not only lived but also wrote by his conviction. He wielded both a gun and a pen with equal calm and ease. He was an activist with deep political insights and socialist leanings. In the year 1970 he was awarded the fourth highest civilian award, the Padma Shri for his contribution to literature. However, he returned the honour in 1974 to protest the Emergency which was proclaimed undemocratically by the then prime minister Indira Gandhi. In the year 1972, he even contested state legislative elections as an independent candidate from Forbesganj but he had to suffer defeat.

Renu was not a slave to power. In spite of his political engagements, Renu the man and his work were not politically-driven. His literature bears

Myriad Aspects of Human Existence



Hindi Short Stories: Editor's Choice. Translated and Edited by Girdhar Rathi. New Delhi: Niyogi Books, 2018, Soft Cover, Pp. 220, Rs. 395/-

"I firmly believe writing is a social act," says Girdhar Rathi, a renowned poet, playwright, critic, translator and journalist. He is the editor and translator of the book *Hindi Short Stories: Editor's Choice*. This collection of 17 Hindi short stories takes the readers to 1960s, the decade which brought on post-Independence legal reforms and great political and social changes in the country. During this time, the communist and socialist ideologies gained momentum and youth power came to be reckoned in India. These were the years of intellectual and ideological catharsis and is also known as the golden era of Hindi literature. A pantheon of writers came to the fore who experimented in thought, style, and themes both in prose and poetry. The story writers wrote not only about the social and political disillusionment, class disparity and privations but they also explored individualism and other subjects that were unorthodox to Indian society. Their works came to be collectively known as the "Nayi Kahani (New Story) movement."

A dismal employment scenario in an indifferent, divided society forms the backdrop to many stories of this collection. The first story "Empty Canvas" by Ram Kumar tentatively probes the possibility of intimacy between two long-time neighbours who have lost their respective partners and need to start their lives afresh. Another story "The Beginning" by Govind Mishra is about a child who leaves his village to live in a city. The story delicately portrays the child's alienation in an urban colony until at last he bonds with an older girl over flowers and a birthday invitation. The collection includes two of Nirmal Verma's finest stories which are both set in London. His story "The World Elsewhere" is about a man unwittingly entering the

दैनिक भास्कर

अहा ज़िंदगी 25-10-2020

अब यह सोचने का समय नहीं है कि आपके पास क्या नहीं है। यह सोचिए कि आपके पास जो कुछ भी है, उसके द्वारा क्या कर सकते हैं।

- अर्नेस्ट हेमिंग्वे

रविवार, 25 अक्टूबर, 2020

अहा! ज़िंदगी

नया युग | नया विश्वास | नई ज़िंदगी

भोज-कथा

कुछ अरसा पहले ही अंतरराष्ट्रीय और राष्ट्रीय खाद्य दिवस धूमधाम से मनाए गए। इन मौकों पर हमने देशी खानपान के शनैः शनैः अंतरराष्ट्रीयकरण की बात पर गौर किया। यूं, बात में कहन की नमकीन शामिल हो तो कहना ही क्या। आइए, पढ़ने का जायका लेते हैं...

हम भोजन से जुड़े हैं!

पल्लवी प्रसाद

अधिवक्ता, कथाकार और लेखक। 'काठ का उल्लू' और 'लाल' शीर्षक उपन्यास प्रकाशित। ऊना में निवास।

खाने का ज़िक्र चलते ही कुछ लोग नफ़ीस हो उठते हैं। वे यूं बनते हैं, मानो इस ज़रूरत से ऊपर हों। उन्हें देखकर, लुई बुनुएल की फ़िल्म 'ले फ़ान्तोम दे ला लिबरते' के रात्रि-भोज के दृश्य स्मरण हो आते हैं, जिसमें कुछ अभिजात लोग खाने की मेज़ के गिर्द बैठे होते हैं और शिष्टाचारवश बातें कर रहे होते हैं, परंतु वे भोजन नहीं करते। वे पात्र सबसे छुपकर, एक छोटे-से कमरे में ख़ुद को बंद कर खाना खाते हैं। वे खाना खाते देख लिए जाने पर शर्म से पानी-पानी हो जाते हैं।

बताओ ज़रा - टीचर ने पूछा

'तुम जीने के लिए खाते हो या खाने के लिए जीते हो?' मॉरल साइंस के टीचर की आवाज़ कक्षा में गरज उठी। एक उकताया हुआ बच्चा बोल पड़ा- 'मैं खाने के लिए जीता हूं।'

सन्नाटा! टीचर ने बच्चे को अजीब ढंग से देखा। कक्षा हंस पड़ी। बच्चा झेंप गया। यानी हम खाने-पीने के लिए जिएं या जीने के लिए खाएं-पीएं, इस बात के चयन का अधिकार हमसे बचपन में छीन लिया जाता है। फिर हमारा बचपन तो वो बचपन था, जो देश और काल के इतिहास में सुनहरे हर्फों में लिखा जाना चाहिए। मुमकिन है, इतिहासकार जीने के लिए खाते हों और इस प्रकार के निम्न महत्व वाले खाने पर इतिहास लिखने को अपनी तौहीन समझें। बहरहाल, ये दर्ज रहे, हमारी वाली पीढ़ी के बचपन पर खाने के सर्वाधिक प्रयोग किए गए हैं।

कल ने निर्धारित किया खाना

वे हम ही हैं, जिनके बीते हुए कल ने निर्धारित किया है कि इस देश का 'आज' सुबह और शाम के वक़्त नाश्ते में क्या खाएगा। चूंकि हमारे वालों की शुरुआत बंदरछाप काला दंतमंजन से हुई, हम टूथपेस्ट का उपयोग करने लायक बनते ही उसे मिठाई समझ बैठे! वो हमारी पहुंच से बहुत दूर रखा जाता। बचपन की सबसे हैरतअंगेज़ जगहें होतीं- ननिहाल/ददिहाल टाइप। इन घरों में एक भंडार-घर अवश्य हुआ करता। वहां बच्चों की क्या बात है, बिल्लियां भी यहां मुंह न मारतीं! अनाज के पीपे, लोहा-लक्कड़, चक्की-जांता, ओखली-सिलबट्टे और दौरे-टोकरियों में खुली पड़ी सूखी बड़ियां, मिर्च, हल्दी की गांठें और गोभी के सुखौते- ऐसे कि उनमें कीड़े भी न पड़ते।

हमारी माताओं की तो बात न पूछें! वे ग़ज़ब उद्यमी थीं। देश में पहले कभी ऐसी माताओं की खेप न हुई, न आगे होगी। वे पहले की बनिस्बत आज़ाद ख़यालों की थीं और स्वयं आज़ाद होने को तत्पर भी। वे नौकरियों में कम थीं और उनकी महत्वाकांक्षा रसोईघर और गृहकौशल में उनके नए-नए नुस्ख़ों में देखते ही बनती थी। तब बाज़ारवाद नहीं आया था और कस्बों में नए उपकरण आसानी से नहीं मिला करते थे, न लोगों में होटल जाने का चलन आम हुआ था।

खाना कमजोरी कैसे हो गया?

एक दिन मैंने किसी नई सिने तारिका का इंटरव्यू पढ़ा। उससे सवाल पूछा गया था- 'खाने में आपको क्या पसंद है?' उसने जवाब दिया था- 'चाइनीज़ फ़ूड इज़ माय वीकनेस।' मैं महीनों दिमाग़ी कसरत करती रही कि उससे जब उसकी पसंद पूछी गई थी तो उसने 'कमज़ोरी' क्यों बताई? हां, एक बात जो मुझे तुरंत समझ आ गई थी, वह चाइना एक देश है और वहां के लोग भी खाना खाते ही होंगे, जिसे चाइनीज़ फ़ूड कहा जाता होगा।

तब हमारे वालों की ज़िंदगी में चाइना का तूफ़ान आया, 'नूडल्स' के नाम से! लेकिन दुकानदारों के पास तब तक चिली सॉस और सोया सॉस नहीं थे। आलम ये कि प्लेटों में नमक पड़े सफ़ेद नूडल्स का गर्म लोंदा थरथरा रहा था, इस आस में कि हम उसे उदरस्थ करें। फिर ये हल्ला उड़ा कि नूडल्स अकेले थोड़े खाए जाते हैं, वे तो पत्ता-गोभी की सब्ज़ी और सॉस के साथ खाए जाते हैं। अब थाली में एक तरफ़ नूडल्स, एक ओर पत्ता-गोभी की सूखी सब्ज़ी और एक किनारे टोमैटो सॉस परोसे जाने लगे। एक पंजाबी आंटी ने नूडल्स में हींग और ज़ीरा का छौंक तक लगाया! तब तक लोगों ने ये जान लिया कि वास्तव में चाइनीज़ का मर्म चिली और सोया सॉस हैं। ये अब दुकानों पर उपलब्ध भी होने लगे। लेकिन हमारे दुःखों का कहां अंत होने वाला था! ये सॉस किस परिमाण में डाले जाएं, ये नया मसला खड़ा हुआ। आख़िरकार, एक कम्पनी ने हमें राहत दिलाई, जब वो 'दो मिनट नूडल्स' लेकर आई।

अनेक देश हैं हमारी खाने की मेज पर

'दो मिनट' वाली परिघटना आज भी अपने पूरे शबाब पर है। शादी या अन्य दावतों में अनेकानेक महंगे, अनोखे, देशी-विदेशी, आकर्षक, विविध व्यंजनों के स्टॉलों के बीच एक सस्ता स्टॉल 'दो मिनट' वालों का भी होता है। देखकर हैरानी होती है कि बेशक़ीमती कपड़ों में सजे-धजे लोग वहां भी लाइन लगाकर खड़े हैं। क्या हमारे वालों की तरह इनके ज़ेहन में 'वसूली' का ख़याल नहीं आता? इन्हें देखकर यक़ीन हो जाता है कि बेशक़ हमारी नस्ल में क्रमागत उन्नति हुई है। साथ ही हमारे खाने में भी लगातार क्रांति आई है, जिसका श्रेय पास्ता-पित्ज़ा, फ़ूड चेन, होम डिलीवरी और होटलों से पहले हमारी 'पायनियर माताओं' को जाता है, जिन्होंने समय खपाने वाले गरिष्ठ पारम्परिक पकवान, जैसे ठेकुआ, मठरी, गुझिया, शकरपारे वग़ैरह से आगे बढ़कर पोहे और उपमा जैसे सहज व स्वस्थ व्यंजनों को गले लगाकर देश में क्षेत्रीय सीमाओं को धूमिल किया। क्योंकि, खाएगा इंडिया तभी तो जुड़ेगा इंडिया! और हमने सीमा के पार सिर्फ़ चाइना पर फ़तह करके थोड़े संतोष मना लिया है! हम मलेशिया, थाइलैंड, इटली, मेक्सिको, जापान, कोरिया और न जाने कहां-कहां के झंडे उखाड़कर अपनी खाने की मेज़ पर गाड़ रहे हैं। रही अपनी बात? अपने जीवन में एक 'फ़ोकस' है। ख़ुशगवार दावत-पार्टियों में हमने कभी 'पूड़ी-पुलाव' से नज़रें नहीं उठाईं। अपना पहला प्यार खाना है...और अंतिम प्यार भी वही। बाक़ी जीवन में जो कुछ भी है, वो प्यार के दरमियान है।

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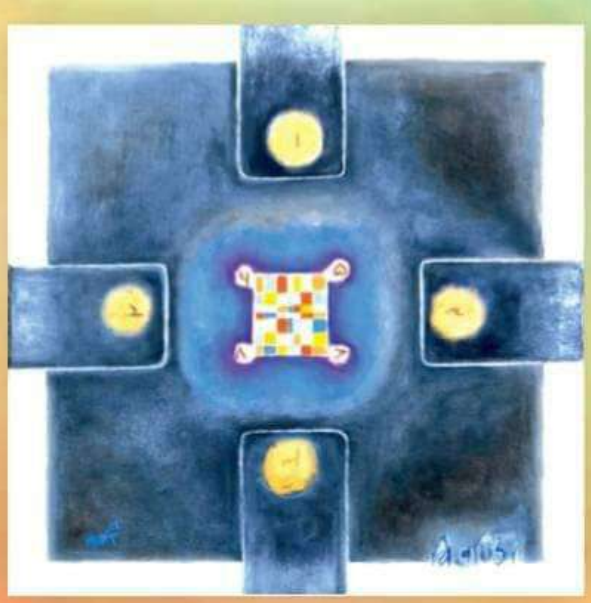

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संपादकीय पत्र व्यवहार :
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कमरा नं. 601डी, सूचना भवन
सी.जी.ओ. कॉम्प्लेक्स, लोधी रोड
नई दिल्ली-110003

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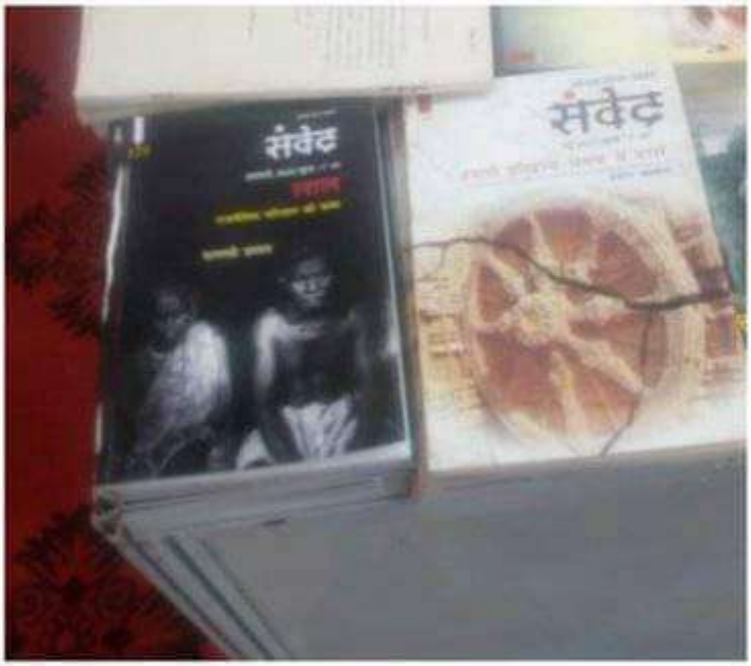
नई दिल्ली-110003
फोन नं. 011-24367453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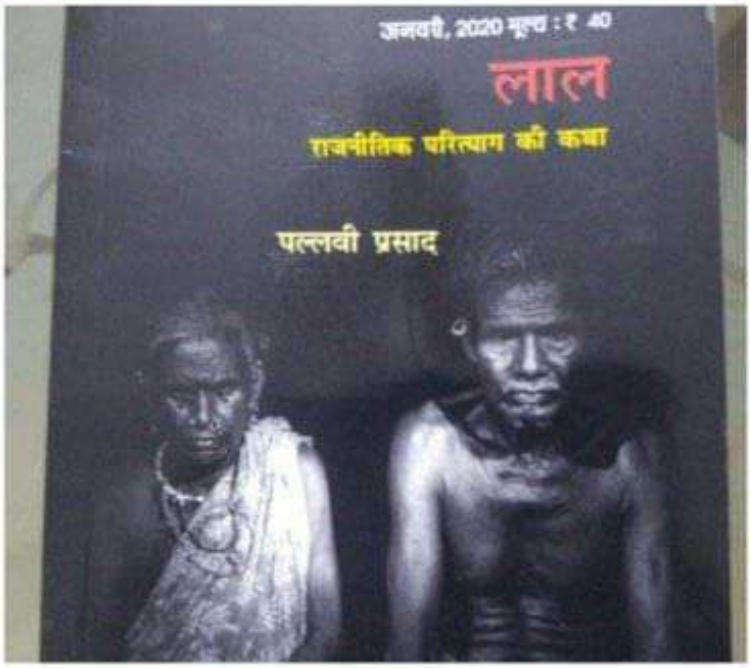
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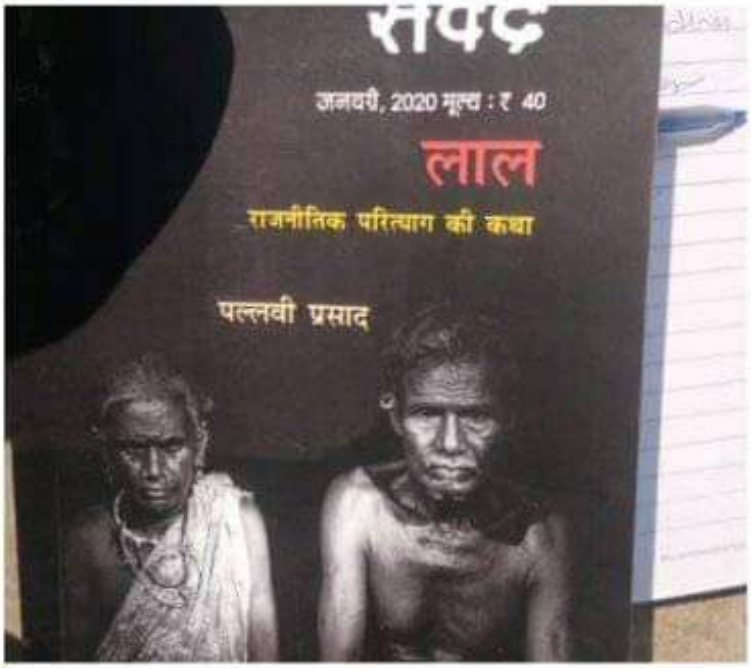
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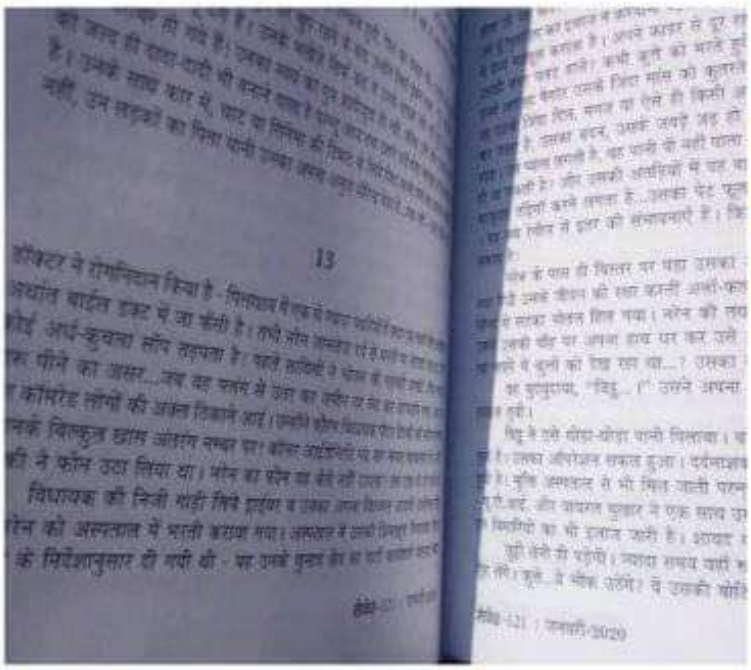
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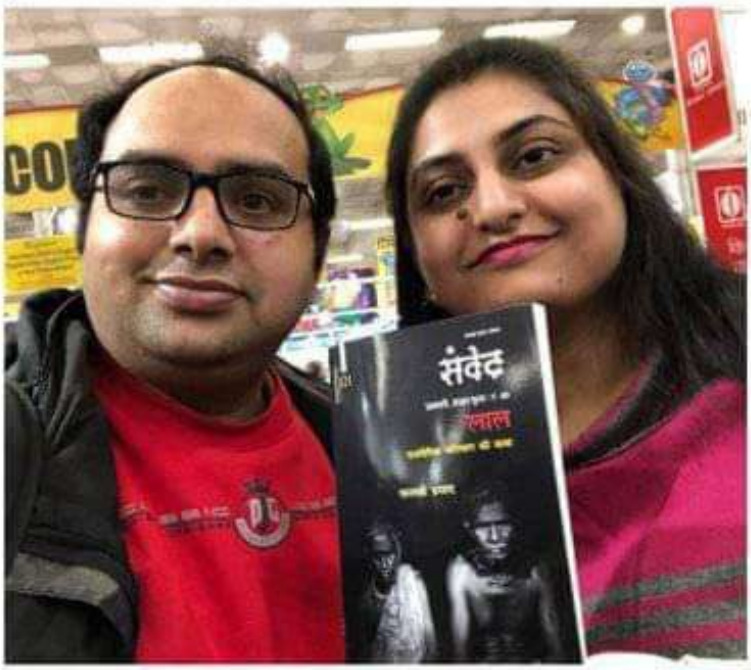
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✍ पल्लवी प्रसाद

रेणु–साहित्य में बाल यौन शोषण

विख्यात लेखक फणीश्वरनाथ रेणु का यह जन्मशती वर्ष है। लेखक का साहित्य विभिन्न मंचों से चर्चाओं के केंद्र में बना हुआ है। हम उनके साहित्य की विवेचना–आलोचना लगभग सात दशकों से करते आ रहे हैं। हम पर यह बात उजागर होती है कि रेणु के साहित्य की आलोचना करना सामान्य से अधिक मुश्किल काम है। रेणु अपने लेखन में समाज को मय 'फूल और शूल', जस का तस, पाठकों के सामने परोस देते हैं। उनके लेखन से पाठक क्या चुनता है, यह पाठक का अपना चयन है। रेणु न क्रोध चुनते हैं, न सांस्कृतिक विरोध, न 'आउटरेज'। इसलिये रेणु को मजे–मजे में पढ़ा जा सकता है और 'बेमजा' चुनना लेखक आपकी मर्जी पर छोड़ता है। रेणु अपने लेखन में निजी रूप से प्रवेश नहीं करते। इस प्रकार, वे आपके पाठ में हस्तक्षेप न करते। पाठकों को भी यह अधिकार नहीं है कि वे किसी लेखक के कथानक, कथा– शैली, उसके विचार, क्रोध, प्रतिरोध, समझ इत्यादि पर अपनी माँग को थोपें। वह सिर्फ अपने सामने प्रस्तुत साहित्य को पसंद या नापसंद कर सकता है। इसलिये पाठक यह नहीं पूछ सकते कि रेणु के लेखन में क्रोध अथवा सांस्कृतिक विरोध क्यों नहीं है ? अथवा उनका साहित्य, सुधार की और उसका आग्रह क्यों नहीं रखता है ? लेकिन पाठक यह अवलोकन कर पाते हैं कि रेणु के साहित्य में ये तत्व नहीं

मैं रेणु को मजे–मजे में पढ़ती हूँ और 'बेमजा' आप चुनती हूँ। रेणु की अनेक रचनाओं और कृतियों में बाल यौन–के प्रकरण अथवा संदर्भों का चित्रण पाया जाता है। इस विषय पर अन्य लेखकों ने भी लिखा है, परंतु रेणु से कम। य याद दिलाना उचित होगा कि मूल भारतीय समाज में बाल यौन–शोषण जैसी कोई अवधारणा नहीं है। यह अवधारणा अ है और उपरोक्त नाम, 'चाईल्ड एब्यूज' का महज अनुवाद है। क्योंकि हम तो बाल–विवाह करते आये हैं। नन्हीं बालिक अधेड़वय वरों को कन्यादान में दिया जाना, बालिका के पिता के लिये इहलोक–परलोक में मुक्ति प्राप्त करने का माना जाता रहा है। विवाह जैसे धार्मिक संस्कार में, बालिका/स्त्री के शोषण का प्रश्न ही कहाँ उपस्थित होता है परिणिता का उद्धार है! रेणु की कहानी 'तीसरी कसम' सिर्फ बहुचर्चित ही नहीं रही, उस पर फिल्म भी बनी है। बेहद लोकप्रिय है। परंतु क्या इस बात पर कभी चर्चा अथवा चिंतन किया गया कि कहानी का नायक हहरामन तक कुँवारा क्यों था ? हीरामन की भाभी की यह जिद क्यों थी कि गौना से पहले विधुर हो चुके अपने अधेड़– रेणु लिखते हैं, कनिया माने पाँच–सात बरस की लड़की। परिवार में च भाभी के निर्णय के अधीन है। अवश्य ही

अनुक्रमणिका

सूर्यावर्त

विनायक ने घुप्प अंधेरा हुए घर में प्रवेश किया। कमरे के अध-भिड़े दरवाजे को उसने अपनी [illegible] के अगले पहिए से ओर से धकेला तो दरवाजा चरमरा कर खुला। उसने झुक कर हाथ बढ़ाया और आंगन पर की इकलौती ट्यूब लाइट जला दी। उसके पीछे-पीछे कमरे में रोशनी घुस आई। [illegible] अब तक कमरे की दीवार पर साइकल टिकाता, उसकी मां तब तक पीढ़े पर बैठ कर स्टोव में पंप मारने लगी। 'जा! पहले पानी ले आ!' विनायक ने मां की बात अनसुनी कर दी। उसने संदूक के ऊपर, हाथ में ली हुई किताब हौले से उछाल दी और खटिया पर लेट गया। अब वह तिल भर नहीं हिलने का! शोभा को बहुत गुस्सा आया लेकिन तभी उसे दुबारा पानी की बात याद आ गई...उसका गुस्सा काफूर हो गया।

पल्लवी प्रसाद

युवा कथाकार।

विभिन्न पत्र-पत्रिकाओं में कहानियां और [illegible] प्रकाशित। 'काठ का उल्लू' तथा '[illegible]नाल' शीर्षक से दो उपन्यास प्रकाशित।

[redacted]

मनी-प्लांट के पौधों पर कलियां नहीं उगा करतीं। उगती तो कलियां भी नहीं। न कभी कोई फीकी-रंग निकली हो सकती है। यह बेल शोभा को अपनी [illegible] बहन 'मनि' की याद दिलाती है, जो बचपन में ही मर गई थी। लेकिन उसका नाम या कारण [illegible], धरती पर पिसलते [illegible] हाथ-पैर उसे यदा-कदा याद आ जाते हैं। न जाने क्यों? यह तो बहुत बाद में हुआ कि न जाने कब और किसने उसे यह बात पता चली कि इस वनस्पति का संबंध [illegible] से नहीं, 'मनी' से है याने रुपयों से। तब से उसके मन के भीतर पर हसरत की धड़कन और तेज हो गई है और जीवन का कसैलापन उसकी हलक-तल में मानो 2-3 मि.मी. और गहरे पैठ गया है।

उसके घर... दरअसल, वह बहुत छोटा-सा कमरा है। लेकिन काम से लौटते वक्त किसी के टोकने पर वह यही बताया करती है 'मैं घर जा रही।' तो उसके इस घर के ठीक सामने, थोड़ी दूरी पर जो मकान है उसके अहाते में एक 'जबर' मनी प्लांट की बेल, अहाते और फाटक का चक्कर लगाती हुई मकान की छत पर ऊंची उठती चली जाती है। जबर माने जबर! यह बेल देखने वाले हर आदमी की आंखों की किरकिरी है। 'बाप रे! इसके रुपए!' हर कोई सोचता होगा।

यह बेल सदा उसके दृष्टि-पथ पर बनी रहती है। इस प्रकार, बेल उसे निरस्त करती रहती है। शोभा चाहती है कि वह सदा सूर्य के उन्मुख होकर जिए परंतु उसका यह कमरा पश्चिम-मुखी है। वह काम से रोजाना शाम को लौटती है और यहीं, इस दरवाजे पर बैठकर अपने हाड़-गोड़ सुस्ताया करती है। दिन भर की मजदूरी और पीठ से ज्यादा खट्टे अनुभव...। हर कमाने वाला काम से लौटने का सुकून मनाता है। यही समय है शोभा का अपना, जब वह दो घड़ी बैठ पाती है। उसके बैठने की यही दिशा मुकर्रर हुई है खुद के घर में। और उसकी आंखों के वास्ते यही एक दृश्य है हरित से काली पड़ती हुई जबर मनी-बेल के नेपथ्य में डूबता हुआ सूरज।

आज शोभा के पेट का पानी स्थिर नहीं। कह और रहा है। उसके जबड़ों के पाटों के बीच टूटते पिसते सुपारी के नन्हें टुकड़ों की मिठास बहुत पहले गुम हो चुकी है...'कड़-कड़ कुड़-कुड़'...उसके मुंह और समाज दोनों के अंदर 'फ्रिक्शन' चल रहा है। आज बस-अड्डे से गुजरते हुए, अनायास उसकी

About the Author

Sarfaraz Karim was born in Bokaro Steel City, Jharkhand on Dec. 23, 1979, son of Sheikh Fazale Karim and Amina Khatun. He entered the Department of Management at the Hamdard University (Delhi), in July 2003, receiving a Master of Business Administration (MBA) degree in July 2005. Sarfaraz enrolled in Shri Venkateshwara University in March 2013 for his Doctorate Degree and earned his **Ph.D. in the field of Management** in June 2016. He is having more than 10 years of experience in academic and corporate field. Sarfaraz has worked with Wollega University (Ethiopia) where he served the university as a lecturer for four and half year. He also served as a research and training coordinator at the university level. Sarfaraz is also an author/coauthor of six research article which was published in the reputed journal. He has also worked with GEMA (Global Entrepreneurship and Management Academic) as a faculty and Karvy Stock Broking Ltd. as a relationship manager. Sarfaraz loves reading, travelling and cricket. He is married and has two adorable daughters. He is looking for enchantment of his teaching and learning process in a scientific manner by utilizing his experience and qualification.

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MANAGEMENTPEDIA
[1000 TERMS & CONCEPTS]

SARFARAZ KARIM

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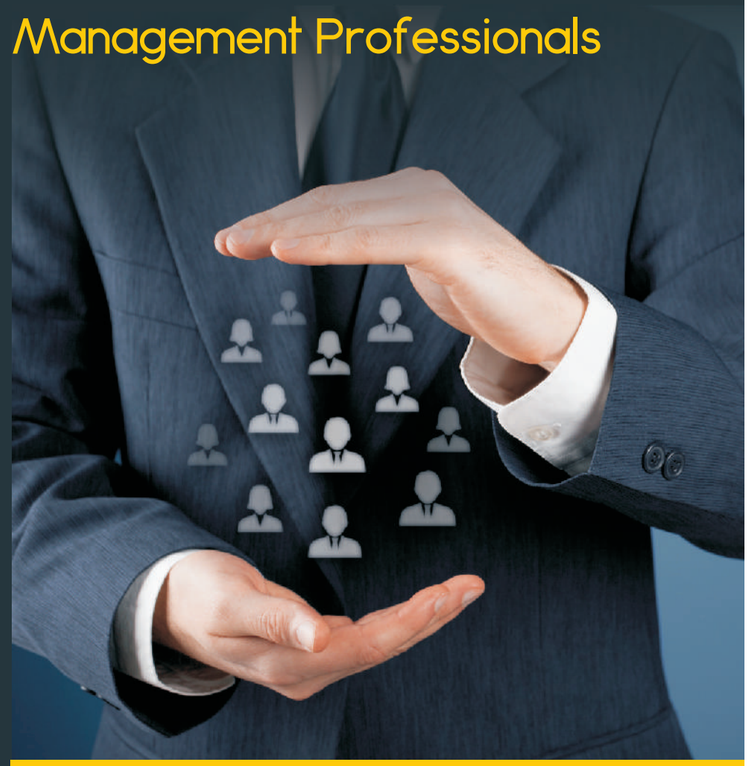
A Guidebook for Management Professionals



SARFARAZ KARIM

RIP Research India Publications

Competency Mapping of Academicians at Private Universities in Kabul, Afghanistan

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Abstract- **This study aims to assess the overall competency level of academic staff in the five major categories of competencies in four private Universities in Kabul, Afghanistan. Competency mapping becomes the core human resource tool that enables the enterprise to manage and develop the skills of their employees and attain higher productivity. It helps the university prepare a competency calendar, training, and development areas for academic staff. The competencies categories included are teaching and learning, research, community service, personal competencies, team orientation, and student orientation. All the academic employees of universities, i.e., Kardan University, Bakhtar University, Rana University, and Kateb University, in a total 450 was used as the population of this research/ study because the study used a descriptive design. A total number of 250 out of employees of the different departments of Universities were selected that give the in-depth coverage and analysis of the results and the findings. In finding it was seen that most of the respondents meet the competencies areas under the consideration of this study. Still, few staff are expected to improve the required competencies since everyone in the institution is expected to be competent, and team orientation competency requires more attention by the management. This study also helps private universities hire and develop employees to attain individual and organizational goals and higher productivity.**

Keywords **– Academic competency, Competency mapping, Performance Criteria, Core Competencies, Communities Service**

I. INTRODUCTION

Competency Mapping is identifying critical competencies for a company or Institution. The competency required for a particular job depends on many factors. The factors include social culture, nature of the business, business environment, organizational culture, work environment, organizational structure, duties and responsibility, the spirit of processes and assigned activities, attitude and motive of colleagues, superiors, and subordinates. Some of these factors may change with time, thus changing competency requirements for the same job position in the organization. Unlike other resources, the human being is the only asset that can appreciate with user inputs. It is one such asset that adds value to itself concerning time. And therefore, it is considered a resource that the manure of training and development can cultivate. Competencies can provide the logic for designing an organization that will continually enable human resources to add value to its firm.

According to houtzagers (1999), the competency framework serves as the bedrock for all human resource applications. As a result of competency mapping, all the Human resource processes like talent induction, management development, appraisals, and training yield much better results. Competencies and skills management has been highly linked to the efforts of companies to create a setting for the empowerment of their workforce to increase competitive advantage, innovation, effectiveness.

It's about identifying a person's job skills and strengths in teamwork, leadership, and decision-making. Large organizations may use some form of this technique to understand how to use each worker best or how to combine the strengths of different employees to produce the highest quality work. Individuals may also find that this type of assessment can help them prepare for a career change or advance in a specific job field. (Solomon, 2013).

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Regular paper

Resistive tunable memristor emulator model and its application

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ARTICLE INFO

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Memristor emulator (MRE)
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Adaptive learning
High pass filter
Chua circuit

ABSTRACT

Nowadays, memory elements (memristor, memcapacitor, and meminductor) found a wider range of applications in various fields like analog computation, memory-based circuits, neuromorphic circuits, etc. In this article, we have proposed a high-frequency memristor emulator using current-mode analog building blocks to emulate memristive behavior. The proposed design required two analog building blocks and two passive components. It is configured in both decremental and incremental modes, and operates up to 30 MHz. The effectiveness of the emulator is verified by performing various analyses. All simulation is performed using cadence virtuoso software with a 180 nm CMOS parameter. The proposed emulator circuit is also laid out. The layout area is only 570 μm^2 and it consumes 591 μW of power. The post layout simulation has been performed at various operating frequencies and post layout simulation results are well matched with pre layout results. Additionally, an experiment is performed using commercially available ICs CA3080 and AD844. The experimental results well agree with the simulation results. As an application part, Chua's oscillator, a neuromorphic adaptive learning circuit, and a high pass filter are designed. A neuromorphic adaptive learning circuit is designed to predict behavioral response over any change in environmental conditions like temperature.

1. Introduction

In 1971 Chua postulated the 4th fundamental circuit element memristor (MR) [1] in "Missing memristor found." Later in 2008, a solid state application of MR was made by HP lab [2]. After the first physical MR, many researchers got attracted to MR as it offers memory effect and resistive properties. Due to the memory effect of memristor, it finds application in many areas such as a chaotic oscillator, neuromorphic networks, adaptive filters, programmable analog circuits, and many more [3–5]. HP memristor is still not available for commercial use due to the complex fabrication process and high cost. In absence of thin-film fabrication technology, the known memristor [6] is the only commercially available memristor device. Due to fixed specifications and high resistance value in the MΩ range, it finds limited application. Therefore, researchers are starting to design an emulator circuit to mimic the memristor characteristics. In the last decade, researchers have started mimicking the three properties of memristor [7] and proposed various memristor emulators (MRE) [8–22]. The three fingerprints of MR are the following: (1) it displays a pinch hysteresis loop (PHL) in the voltage-current plane when driven by a bipolar periodic signal, (2) The PHL area starts decreasing as applied frequency increases and vice versa, (3) The PHL shrinks to a straight line when applied frequency tends to infinity and start acting like a linear resistor.

Various analog building blocks (ABBs) like CCII, OTA, VDCC, DVCC, CBTA, CFTA, VDBA, CDBA, CFTA, CCTA, etc., are used to design various MREs [8–18]. Some resistors and capacitors are also used along with various ABBs. Memristor emulators based on CCII (AD844AN) and multiplier (AD633JN) ICs are proposed in [8–9]. Multiple output OTA is used to design memristor in [17–18], but its maximum operating frequency is in the kHz range. In 2017, Ayten et. al., proposed a memristor model using CBTA but it required an additional analog multiplier to emulate memristor behavior [10]. Ranjan et al., have proposed a single analog building block based memristor in [11,12], but both designs required four passive components also the maximum operating frequency is 1 MHz. OTA based memristor emulator is proposed by kanyal et. al., in [13], but the maximum operating frequency is only 8 MHz. In 2018, a VDTA based memristor emulator is proposed in [14], but it required an additional analog multiplier also the maximum operating is 2 MHz. Resistor-less memristor emulators are proposed in many articles [15–20], but the maximum operating frequencies of these designs are

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Electronic Tunable Bi-Quad Filter Using MO-CCCDTA

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Abstract. **This paper presents an active resistor less analog bi-quad filter having multiple input and single output (MISO). It consists of one multiple output current controlled current differencing transconductance amplifier (MO-CCCDTA) as an active block and 2 grounded capacitors. The proposed circuit would realizes low-pass filter (LPF), high-pass filter (HPF) and band-pass filter (BPF). The passive elements used in the presented design are grounded and no resistor, it utilizes the internal resistance of the active block, so it is easy to implement. The proposed MO-CCCDTA is MOS based uses 0.18µm TSMC CMOS technology with supply voltage of ±1.5 V. Non-ideal analyses with parasites effects are calculated. The theoretical postulations are verified through PSPICE simulation and post layout simulation. Its parameters are tunable. Monte-Carlo analysis and percentage Total Harmonic Distortion (THD) response are performed. The proposed design has high output impendence, so easy to cascade with other current mode circuits. The simulation results validate the theoretical proposition.**

Keywords- CCCDTA, Bi-quad, MISO, Current mode, Analog filter

I. INTRODUCTION

The current mode approach for designing signal processing circuits have attracted researchers worldwide and have shown immense interest in adopting current mode techniques. One of the standard research topics in current-mode circuit design [1, 2] is analog filters. The active analog filters come across many applications in the electrical and electronic domain including measurement, instrumentation, control system, and communication. Active analog filters with different filter architectures like Single Input Single Output (SISO), Single Input Multiple Output (SIMO), Multiple Input Multiple Output (MIMO) and Multiple Input Single Output (MISO) are extensively used for continuous time signal processing. The presented design is MIMO type active analog bi-quad filter, wherein by simply switching the input conditions, different output filter functions can be analyzed. When the active analog current mode filters are designed, focus is laid on branch currents rather than nodal voltages involving the entire circuitry or certain portion of the area. The synthesis of current mode active devices has been a centre of attraction due to its several advantages like greater bandwidth, larger range of frequency of operation, consumes inherently less power and offers better linearity. The high output impedance of active analog current-mode filters is considered to be the main advantage because even in absence of buffers, cascading becomes easy and moreover driving the loads are much easier. Bi-quad filter based realization, of various active transfer functions, has received extensive attention. Apart from PLL, there are other useful applications such as FM stereo, memristive circuits, crossover networks [3-4]. Applications such as in demodulators are also prominent. All of the above mentioned applications are used in three way high fidelity loudspeakers. An active current mode filter is more popular than the voltage mode because it finds its place in battery driven equipment's that are generally portable and more suited to current mode technique. Since a low-voltage operating circuit becomes necessary, the current-mode technique ideally befits this purpose. First order all pass filter [5-6] was designed using CCCDTA. Second order Current mode LPF and BPF are created [7, 12, 15] using third generation Current Conveyor (CCIII), Operational Transconductance Amplifier (OTAs) and second generation Current Conveyor (CCII). Ref. [8, 16] uses BJTs in its internal structure for realising second generation Current-Controlled Current Conveyors (CCCIIs) and Current-Follower Transconductance Amplifiers (CFTAs), which makes them temperature dependent. [9-10] makes use of single active block, Current-Differencing Trans-conductance Amplifier (CDTA) and Differential Voltage Current Conveyors (DVCC), but contains four passive components, two resistors and two capacitors also. The later one entails external passive matching constrains. Ref. [7-9, 11, 13] have floating type passive components, making them unsuitable for IC base implementation. In Ref. [12, 15 & 16], more than two active blocks are used to construct the filters. Ref. [12, 16 & 18] encompass tuneable pole frequency (ω_o) and quality factor (Q_o). In the last few decades, many electronically tunable current mode filters are proposed in literatures, using different current mode building blocks such as Operational Trans Conductance Amplifier (OTA) [12] and Current Follow Trans-Conductance Amplifier (CFTA) [16, 18]. The electronically tunable filters are either Single Input Multi Output (SIMO) or Multiple Input Single Output (MISO).

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A compact floating and grounded memristor model using single active element

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ARTICLE INFO

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Monte-Carlo

ABSTRACT

Memristor with defined operational specifications is a challenging task that promotes innovation in emulation circuit modelling. This article presents a single active block based compact memristor emulator architecture which is suitable for both floating and grounded circuit topologies. It effectively operates in incremental/decremental modes in both the configurations. The proposed model utilizes only one Differential Voltage Current Conveyor Transconductance Amplifier (DVCCTA) as an active block along with a few passive components. It discourages the use of extra sub-circuit components like multiple active blocks, summers and multipliers. The circuit is intended to work at ±1 V of dc power supply and has a power consumption of 8.74 mW. The proposed emulator model exhibits all the characteristics of an ideal memristor with an operating frequency of 12.8 MHz. It has wide working voltage range of 50–500 mV. The memristor model is built and simulated using the TSMC 0.18 μm CMOS process parameter. The reliability and effectiveness of the proposed model is verified through non-ideal, Monte-Carlo, process corner, non-volatility and temperature variation analysis. Furthermore, the memristor prototype is constructed on the breadboard using discrete ICs AD844AN and CA3080. The experimental outcome is found in accordance with the simulation. The applicability of the proposed memristor model is verified by implementing a memristor based Schmitt trigger circuit.

1. Introduction

In 1971 Leon O. Chua postulated the memristor as a circuit component through establishing the missing link between the charge and flux [1]. Memristor, along with the resistor, capacitor and inductor is considered to be the fourth most important part of a circuit [2] due to its unique dynamic features when excited by sinusoidal signals. It is a two-terminal device represented by the memristance function, whose value depends on the magnitude and direction of the charge flowing across. It maintains its previous state in the absence of external signals, enabling it to work as a non-volatile resistive memory justifying the name memristor (resistance with memory). Memristor are either charge controlled or flux controlled depending on flux derivative with the charge, or the time integral of its excitation voltage respectively [3,4]. Therefore the amplitude, phase and frequency of the excitation signal impacts the memristance value. To qualify as a memristor, a device must follow a pinched-hysteresis loop (PHL) in the current–voltage plane (I-V), non-volatile nature, and act like a linear resistor at higher frequencies [5].

Decades later, in 2008 at HP Labs, R. S. Williams and their team made the first successful fundamental model of a nanoscale memristor [6]. They did this by switching the resistance of the thin-titanium-oxide-film (TiO2) between less and high-conducting states. This finding grabbed the scientific attention worldwide owing to its physical viability and unique non-volatile nature, along with its resistive property. This makes it suitable for a wide range of electrical applications, including neuromorphic circuits [7], biomedical applications [8], analog circuits: adaptive amplifiers [9], filters [10], and chaotic oscillators [11]. It is useful for developing digital circuits and memory circuits [12–14]. Several notable attempts have been made to develop commercially viable memristor models, such as organic memristor [15], spintronic memristor [16], Ferro-electric memristor [17] and so on. However, high cost of nanoscale device fabrication, technical complexity and operating parameter constraints remain the major drawbacks to its physical production. Hence, a simple but effective circuit model is required to

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ORIGINAL RESEARCH

Capping carbon emission from green data centers

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Abstract
The world has witnessed a global surge in energy consumption and carbon footprint since the industrial revolution. Data centers are claimed to be the second most significant contributor of the havoc greenhouse gasses. This paper deals with modeling carbon footprint of green data centers. Initially, we use a panel dataset of a green data center that mostly relies on green energy resources for power. Our study reveals that in spite of massive renewable energy usage, the carbon footprint trend of this data center is quite significant. Alongside, due to massive nuclear energy usage in this data center, a hefty amount of nuclear waste is generated causing a global threat to sustainability. This is a novel paper that pinpoints that though green data centers claim they are zero-carbon data centers but the reality is different. We prove that green data centers also emit significant amount of greenhouse gasses and cause danger to sustainability. Alongside, we provide a nuclear footprint estimator that effectively calculates the nuclear emission and carbon footprint from the data center each hour. We also provide a remedy to this entire situation and provide a carbon footprint model in this paper that optimizes the total carbon emission from this green data center.

Keywords Energy modeling · Power management · Green energy · Brown energy · Carbon footprint · Nuclear estimator

Introduction

Starting with the aviation industry to car manufacturers, and from electrical industries to agricultural plants [1], the globe is trying to manage carbon emission smartly. Data centers are not exceptions; capping carbon footprint has become a prime focus for developing large-scale data centers. Dat centers consume a massive amount of energy to fulfill i daily energy demands. Unsurprisingly, powering and coolin a data center are expensive in terms of energy demand [This enormous power demand results in emitting a signi cant amount of carbon into the air [3]. This carbon emissi causes a threat to global sustainability [4]. Nowadays, d centers are responsible for almost 2 percent of global carb emission [5], which is causing global warming along w ice melt at the poles [6]. In what follows, we describe motivation behind the study of global carbon footprint.

Massive brown energy usage

Electric grids burn mostly coal energy to meet the increasing power demand of the data centers throughou globe. A report of the Lawrence Berkeley National L ratory claims that the US data centers consume up billion Kilowatt-hours of energy which costs around 7 billion [7]. Another report states that these data ce consume over 1000 W/m2 of power—more than 10 that required by a commercial office space [8]. Scie estimate that a large-scale data center uses the ener

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ORIGINAL RESEARCH

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Keywords Energy modeling · Power management · Green energy · Brown energy · Carbon footprint · Nuclear estimator

Introduction

Starting with the aviation industry to car manufacturers, and from electrical industries to agricultural plants [1], the globe is trying to manage carbon emission smartly. Data centers are not exceptions; capping carbon footprint has become a prime focus for developing large-scale data centers. Data centers consume a massive amount of energy to fulfill its daily energy demands. Unsurprisingly, powering and cooling a data center are expensive in terms of energy demand [2]. This enormous power demand results in emitting a significant amount of carbon into the air [3]. This carbon emission causes a threat to global sustainability [4]. Nowadays, data centers are responsible for almost 2 percent of global carbon emission [5], which is causing global warming along with ice melt at the poles [6]. In what follows, we describe our motivation behind the study of global carbon footprint.

Massive brown energy usage

Electric grids burn mostly coal energy to meet the ever-increasing power demand of the data centers throughout the globe. A report of the Lawrence Berkeley National Laboratory claims that the US data centers consume up to 70 billion Kilowatt-hours of energy which costs around dollar 7 billion [7]. Another report states that these data centers consume over 1000 W/m2 of power—more than 10 times that required by a commercial office space [8]. Scientists estimate that a large-scale data center uses the energy of

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Study on wear behaviour of Al6061 MMC with nano-MoC

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ABSTRACT

Employing the stir casting method, the aluminium 6061 (Al6061) metal matrix composite (MMC) was prepared after supplementing it with 0, 1, 2, and 3 mass fractions of Molybdenum Carbide nanoparticles (nano-MoC). The enhancement in wear resistance and hardness was evaluated before and after adding nano-MoC with the Al6061. To test the wear resistance, a pin-on-disc instrument has been used. The findings confirmed that introducing nano-MoC reinforcement in Al6061 MMC improved wear characteristics of the composite. The rate of wear was found to be decreased with the increment in nano-MoC content and increased with the applied load. Further, the rate of wear had shown the steady increase with the sliding length. However, the rate of wear had attained the saturated value at the sliding length of 1600 m. It can be publicized that Al6061 with 3.0 % nano-MoC had shown a better wear resistance comparing to the plain Al6061. Specifically, the resistance to wear was boosted by 79.68 % at 40 N applied force with 3.0 % nano-MoC.
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1. Introduction

Increasing use of aluminium composites due to their low weight, fracture resilience, reduced creep behaviour, machining/-fabrication capabilities, impact strength, and abrasion resistance. Metal Matrix Composite (MMC) containing nano-sized ceramic particles has several uses in automotive, aviation, and military. The final application of the MMC determines the matrix composition and reinforcing particulates [1,2]. Various fillers such as carbides, nitrides and oxides of Silicon, titanium, aluminium and so on., are introduced to the aluminium MMC in the shape of granules, powders as well as bristles [2,3]. Owing to their unique qualities, the nanoparticle reinforced aluminium MMC has a higher significance than the prior works. Aluminium MMCs have recently gained popularity because of their simplicity of improving mechanical characteristics. Hence, Al MMCs could be the potential substitute in aviation and automobile sectors in the forthcoming years. Due to its desirable characteristics, Al6061 based MMCs have been extensively applied in the aerospace as well as automobile sector [4,5]. They have been utilized in airplane components, propellers, gearbox, and defense applications. However, aluminium MMCs are deficient with the weak wear characteristics due to their challenging microstructure homogenization. Hence, they need a strong supportive reinforcement to enhance their tribological behavior [6,7].

MMCs are generally synthesized using three techniques: fluid channel, semi - liquid, and powder form [8]. Stir casting method is a widely utilized liquid revolving manufacturing technology for creating MMCs by employing a mechanical shaker, where the MMCs are formed through the simultaneous heating as well as shaking actions. Stir casting method is the physical blending of reinforcement particles such along with the molten aluminium matrix [9,10]. In order to reinforce the desired nanoparticles within the MMC, the matrix need to be melted first, then the reinforcing nanoparticle has to be stirred. Simultaneously, stirring variables including cast heating rate, stirring frequency, reinforcing agent's concentration, and stir duration must be tuned to reduce perme-

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FUZZY MULTI-OBJECTIVE LINEAR PROGRAMMING APPROACH FOR SOLVING PROBLEM OF FOOD INDUSTRY

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Abstract. Enterprises and industrial centers need current decision for making products in fast changing market. Uncertainty and yield defined goals make decision making more difficult. In this situation fuzzy logic is used for coping surrounding environment. This paper deals with a fuzzy linear programming model for a problem of food industry. The different types of achievement function such as compensatory and weighted compensatory form associated with equal importance of objectives and non-importance of objectives both have been discussed.

Keywords. Fuzzy Linear Programming, Membership Function, Compensatory Operator.

INTRODUCTION

In present scenario of marketing, decision maker need is to apply fuzzy programming model for optimum profit. In decision making environment such as impression, vague, ill defined, etc. the decision criteria such as goals, constraints, and restrictions may be modeled by FST. Bellman & Zadeh [1-4] applied the concept of FST for solving decision making problems. Zimmerman [5] proposed the first model of Linear programming in fuzzy environment. Then we have a large number of authors used different optimization technique in this area. Various research papers [6-45] are showing the advancement in the field of Fuzzy Mathematical Programming (FMP). Obviously FMP provides compromise solution. In this paper a model of FLP with quadratic form of achievement functions has been presented. Mathematical formulation and the methodology is explained by solving a sample problem.

MATHEMATICAL MODELING

MOLP in fuzzy environment:-
Determine $x = (x_1, x_2, x_3, \ldots\ldots\ldots, x_n)$
which optimizes 'k' objectives.

$$F(x) = \{f_1(x), f_2(x), f_3(x), \ldots\ldots, f_k(x)\}$$
subject to 'm' constraints: (1.1)
$g_i(x) \leq b_i, \quad i = 1, 2, 3 \ldots\ldots, m$
$x \geq 01$

Practically we cannot fix $x = (x_1, x_2, x_3, \ldots\ldots, x_n)$ which maximizes all the objectives $f_1(x), f_2(x), \ldots\ldots, f_3(x)$. in such situation DM has to accept compromise solution by setting goals to each of 'k' objectives. Thus the models (1.1) becomes as:

Multi-objective goal linear programming model:
Determine: $x = (x_1, x_2, x_3, \ldots\ldots, x_n)$
which satisfies:
$f_l(x) \leq p_l ; l = 1,2,3, \ldots, k$
$g_j(x) \leq b_j, ; j = 1,2,3, \ldots, m$ (1.2)
$x \geq 0$

Here we have '$k + m$' goals. The model (1.2) can be solved by goal programming algorithm. In goal programming model there is no control over deviation. Sometimes we find that one goal is more deviated and another goal is very less deviated. To overcome such difficulties, we shall use the concept of FST because rigid goals are always not realistic. Imprecise goals are accepted. DM's have to deal such situations by applying the concept of FST. The coefficients of constraints, objective function or right hand sides are imprecise or both are fuzzy numbers, then DM use fuzzy programming approach.

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Simulation Techniques of fluid dynamic Pressure on hip-roof building

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Abstract

Simulation work done on low-level hip roof builds, using various computational fluid dynamics procedures (CFD). For inflow borders, boundary states, near to the wall handling, and so forth, the virtual data in the Wind Tunnel was used for the CFD investigation. In this section too, I can find brief information concerning experimental work by Shakeel et al on a related house.

The effect of such louvers on the wind induced roof loads has not been investigated; therefore, it is of great interest to assess their contribution on the wind loads on a building roof. This paper presents results from an experimental study to assess the wind loads on a hip roof building through large scale model testing.
A comprehensive numerical study of wind effects using Computational Fluid Dynamics (CFD) techniques on the low-rise hipped roof building is presented in this paper. To predict the wind loads and the flow patterns around the hip-roof building. The computed wind pressure co-efficients on the roof of the hip-roof buildings were compared with the wind-tunnel data. I was also found that the CFD techniques are an effective and alternative tool, less time consuming, easy-to-handle, as well as low cost approach for evaluation of wind effects in comparison to wind-tunnel experiments, The study effectiveness of the vents with louvers' in reducing wind induced net mean pressure co-efficient on the building roof. Future research performing to the effect of 'louvered vents' on the wind loads on a building roof must be carried out on other roof configurations.

Keywords: *Computational Fluid Dynamics, Wind force, Hip-roof building, Low-rise building, Wind Engineering, Simulation*

1. Introduction

The building roof is one of the most vulnerable building elements to wind induced damage during a hurricane. It is common practice in buildings to be fitted with 'vents with louvers' that have the mechanism to automatically close during high wind speeds (> 10 m/s) in order to prevent entry of water, while remaining open at all other times

A hip-roof, or hipped roof is a type of roof where all sides slope downwards to the walls, usually with a fairly gentle slope. Thus, it is a house with no gables or other vertical sides to the roof. Hip roofs are thus commonly seen in places of heavy wind such as in hilly regions, coastal regions so on. They are subjected to drag forces. Corners receive a relatively large outward pressure. A flat roof experiences an outward pressure or uplift, in addition to drag forces. The pressure on a pitched roof varies depending on different factors such as the slope of the roof and the building dimensions. Eaves and overhangs are affected by entrapped wind underneath them which leads to a pressure stagnation on them.

Wind flow is turbulent in nature and consists of many complex flow patterns. The field of wind engineering generally comes across with these types of flows. Wind pressures on buildings and structures depend upon the velocity profile and turbulence characteristics of the upcoming wind. These factors in turn depend on the roughness and general conformation of the upstream terrain. Wind loads generally govern the lateral strength of a building and this aspect is

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FACEMASK RECOGNITION IN PANDEMIC CAUSES MULTIPLE HEAD CRUCIAL PROBLEM CLASSIFICATION

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Abstract—**A chronicle respiratory system condition like Breathing issues to Asthma patients after covering his/her mouth and nose make a tough challenge. Mainly the physical barrier are to take breath in oxygen, it also pack CO2 which the person exhale. A mask can feel high suffocation and add a compromised Head crucial problem stratification is in general used for the fore handling ahead of the facial acknowledgement & facial several inclination issues and only for this reason an algorithm like recognition of front facial expressions as a input images. However pretentious by Corona virus epidemic, public put on face masks to safe ourselves safety, for that face will protected by mask. However this research paper set up a proposed method in this research paper of combining the face portrait with the High speed - channel of the Hue Saturation Value color channel and grayscale image, and train the Convolution Neural Networks to enhance applications that is HGL method. In line portrait we have to generate the image insert it into Convolution Neural Networks for training. Without any processing insert the original picture of the Red Green Blue color space into the Convolution Neural Networks. Fine grained Net Structured Aggregation: FSA – NET stand for Fine grained Structured Aggregation. It is the method to use to remember the structure of a single Red Green Blue color space image. Since the output of this network is the Euler angle of the head pose, we have chosen a set of thresholds that are most effective for pose classification. The way to solve this issue is to provide help for the study of multi-angle problems. In practically, we can practice for a face detection algorithm that differentiate between wearing a mask or demask. If the facial image with masks, we can recommend this method proposed in this paper, and if it is a normal facial image, we can recommend Fine grained Structured Aggregation or Line Portrait algorithm, etc. The very first step of this algorithm to resolve the expression of face & get 70 to 99 attribute spikes of that images. And second one is 'Perspective-N-Point in network used.**

Keywords—**head pose classification, color texture analysis, convolution neural network, face with masks**

I. INTRODUCTION

In today's current scenario we have to face second phase/mode of Corona virus pandemic in the year 2021 in all over the world which is announced by World Health Organization. In This situations which we have to face lots of problems regarding facial information under the cover of mask. As we know that this pandemic pay us only losses in every area but at the same time we follow discipline. It is very effective and needful research regarding awareness as well as full of expression presentation in the pandemic situation. Analysis or exploration of Faces poses are very important to know. And this research paper will help to resolve many more obstacles related to this. We have to face problem like express our face expression in different- different situations and mask covered our whole work under it. By the help of Convolution Neural Network to evaluate all features. Our decisive examination of the literature both point up the conservative effects of certain types of face masks in defined risk groups, and highlight their potential risks. We put forward a new way to solve the Multiple Head crucial problem with masks during the COVID-19 pandemic. The examination of dataset shows that our method is comfortable in comparison to other methods. The way to solve this issue is to provides help for the study of multi-angle problems. In practically, we can practice for a face detection algorithm that differentiate between wearing a mask or demask.

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A study of morphology, UV measurements and zeta potential of Zinc Ferrite and Al_2O_3 nanofluids

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ABSTRACT

Nanofluids are generally used as working fluids in heat exchangers and heat transfer equipments because of their unique and improved heat efficacy. But their poor stability due to sedimentation and agglomeration with passage of time has limited them to use in practical applications. Stability of the nanofluids can be increased by addition of surfactants, which induces repulsion between the nanoparticles. Present work focuses on morphology, UV measurements and zeta potential measurements of zinc ferrite and aluminium oxide/water nanofluids. Nanofluids were synthesized by homogeneous mixing of zinc ferrite and aluminium oxide nanoparticles in distilled water to obtain different weight concentrations of the nanofluids using Cetyl Trimethyl Ammonium Bromide as surfactant. Results showed that both the nanofluids offer best dispersion conditions as per zeta potential values, allowing quitehigh stability of the nanofluids. Highest values of absorbance i.e. 3.922 and 3.569 were obtained using 0.5 wt% of the Zinc ferrite and Aluminium Oxide/water nanofluids. Also, highest values of zeta potential i.e. 42.7 and 45.2 mV were obtained using 0.02 wt% of the Zinc ferrite and Aluminium Oxide/water nanofluids.
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1. Introduction

Because of the rapid development in engineering and industrial applications including energy storage, catalysis, electronics, power generation, biosensors, medical equipments and oil refineries equipments needs significant advancement in terms of their cooling techniques and energy efficiencies. As a single material cannot possess good thermal as well as rheological properties. Actually, it is very important to trade off different properties, and because of this nanofluid comes into existence. Nanofluids are a kind of fluids in which high thermal particles are mixed with the base fluid. The surface area of a nanofluid characterizes the performance of a nanofluid. In order to enhance the thermo-physical properties and heat transfer properties of a fluid, nanoparticles are mixed in base fluid. It has been proven from the earlier researches [12345] that thermophysical properties of nanofluids provides better yield in comparison with single base fluid like water, oil and ethylene glycol. (See Figs. 1-3&Table 1.)

Chen et al. [7] experimentally investigated thermophysical properties and zeta potential of titanium oxide electrolyte based nanofluid. The role of electro-repulsive force using the electric charge around the nanofluid for improving the stability was studied. After establishing the stability of the nanofluid, zeta potential, thermal conductivity and viscosity of the nanofluid was studied. Singh et al. [8] studied investigated the morphological characteristics and thermophysical properties of aluminium oxide and copper oxide nanofluids. Thermal conductivity of both the nanofluids was found increasing with temperature and weight concentration while viscosity was found decreasing with increase in temperature.Gupta et al. [9] synthesized different weight concentrations of CuO/water nanofluids and studied characterization using various techniques. The experimental results showed that the nanofluids showed good crystalline nature of the nanoparticles and high content of purity.Chen et al. [7] experimentally investigated the role of electro repulsive force in order to improve the stability of

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Review article

Role of faculty development program in enhancing teaching and learning in professional education

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Abstract:

During the last two decades there has been a tremendous growth of higher education in India in terms of increase in number of colleges and Universities. In order to attain high growth rate of the economy, it is essential to have wide range of courses in higher education with high standard of quality education. It has been reported by Indian Express that there were no takers for 51 per cent of the 15.5 lakh B.E/B.Tech seats in 3,291 engineering colleges in 2016-17. The investigation found glaring gaps in regulation, including alleged corruption; poor infrastructure, labs and faculty. This, according to the report, led to low employability of graduates. Earlier the total number of B.Tech and M.Tech seats across all AICTE-approved institutes in 2019, dropped by 1.67 lakh – the sharpest fall in five years. In 2017-18, less than 50 per cent students got jobs from AICTE-approved engineering colleges. Of the 7.92 lakh students who graduated, only 3.59 lakh secured employment through campus placements (data shared by HRD Minister Ramesh Pokhriyal in Lok Sabha). These figures do not include students who got jobs outside of campus placements, who are self-employed or opted for higher studies. Faculty is key source of knowledge for the students and major factor for institutional development. To maintain the quality of teaching and learning not only updated knowledge of faculties are required but also pedagogical skills are urgently necessary to attract students in professional education. Moreover, we are switching from a conventional method of teaching to a digital learning environment. Hence, faculty development programs are necessary to equip the newly appointed faculties with adequate technological knowledge and scientific teaching and learning methods. This review article summarizes literature reviews on faculty development program and effectiveness of FDP in improving teaching and learning. Finally, the review concludes that professional FDPs generate promising outcomes in improved teaching and learning. High quality professional training programs for faculty members have become indispensable to compete with others in the profession. [1] It is widely acknowledged that the quality of a University or a college is closely related to its faculty members. Based on a study of 500 faculty developers across all institution types, the book examines core issue of challenges and pressures now facing the developers and higher education as a whole while they engage in institutional planning for the future. [2]

Keywords: faculty development program, teaching and learning.

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COMPARISION AND EVALUATION OF MECHANICAL PROPERTIES OF BIAXIAL BRAIDED CARBON AND E- GLASS FIBERS

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ABSTRACT

An examination has been completed to research the elastic and flexure strength properties of braided composites made via carbon fiber and glass fiber in various directions. The braid points are kept up at are 15°, 30° and 45° and analyze the qualities among the examples. Braided fibres' versatility makes it possible to create composite materials which are tailored to a certain need. In terms of de-cover obstruction, dimensional solidity, and other properties, braided fibre composite constructions are superior. Research aims to provide a better understanding of the mechanical characteristics of biaxial carbon braided composites, such as tensile and flexural modulus. Carbon fibre and epoxy networks were combined and braided in different directions in this study. The addition of carbon fibre particles to biaxial carbon braided fiber/epoxy composites improves their mechanical characteristics, according to the research. Mechanical characteristics for biaxial carbon braided composite been chosen for dissection based on the results of the trial work. The biaxial carbon braided composite is accomplished acceptable firmness, light-weight, consumption safe, solid and can be framed into practically any ideal shape. Carbon/Carbon is an exceptionally alluring material for use at raised temperatures in underlying applications because of its high solidarity to-weight proportion and expanding strength with expanding temperatures.

KEYWORDS: Carbon fiber, Glass fiber, Mechanical properties, Tensile strength, Flexure strength.

INTRODUCTION:

It is possible to create a composite material by combining at least two distinct types of materials, often with very differing characteristics. It's the combination of the two components that gives this composite its unique features. Regardless, the different components within the composite are easily distinguishable since they do not dissolve or mix together. When two or more component materials having entirely distinct physical or synthetic characteristics are brought together to form a composite material, the resulting substance's attributes are not the same as those of the original segments. Within the final construction, the constituent parts remain distinct and distinct. The following are examples of commonly used composite materials:

Concretes, for example, are composite construction materials. Polymers fortified with fibres, such as reinforced plastics composites made of metals

BRAIDEDCOMPOSITES:

Present day braiding is a promptly computerized, flexible, and high affidavit rate measure best utilized for the creation of net shape consistent fiber composite parts. They are fibrous composite material. Braided composites

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Arun Prasad Burnwal

Fuzzy Rule-Based System for Route Selection in WSN Using Quadratic Programming

Authors Manoj Kumar Mandal, Arun Prasad Burnwal, BK Mahatha, Abhishek Kumar, Santosh Kumar Das, Joydev Ghosh

Publication date 2021

Book Architectural Wireless Networks Solutions and Security Issues

Pages 81-98

Publisher Springer, Singapore

Description Wireless sensor network (WSN) is a part of wireless network which has flexible and dynamic nature in context of real-life applications. It has several usages in terms of user requirements. It consists of several nodes having limited energy capacity. Energy capacity of the nodes does not completely fulfil the requirement of the services. During transaction or transmission, data is dropped and fails to reach the destination node or base station (BS). This BS also suffers several types of difficulties for sending or receiving data packets. So, there is need of some techniques or modelling that help to protect this issue. Apart from energy, distance is also one important parameter for transmitting data successfully. Although energy is the crucial parameter, but, combination of both energy and distance plays an important role for managing efficient route of the network. The proposed method is the combination of intelligent ...

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Arun Prasad Burnwal

Fuzzy Quadratic Programming Based Conflicting Strategy Management Technique for Company

Authors	Manoj Kumar Mandal, BK Mahatha, Arun Prasad Burnwal, Abhishek Kumar, Vishwas Mishra, Nikhil Saxena
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Book	Nature-Inspired Computing for Smart Application Design
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Description	In modern era, due to several variations of user requirements, number of company and start-up increases rapidly. Each company has its own strategy and rules for maintaining company profit and loss. Market condition is one parameter for this situation. Sometime, different crisis or pandemic situation are raised in the society which become crucial for handling and managing. So, company manage their productivity and sales in chronological order that maintain the equilibrium based on customer requirements and market conditions. This chapter is based on conflicting strategy management technique for company using quadratic programming. In this chapter, quadratic programming plays the role of mathematical optimization based on desire objective function along with constraints. In this model, fuzzy logic is used to makes the quadratic programming flexible which is used to maintain variations of the ...
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Arun Prasad Burnwal

Fuzzy-Based Optimal Solution for Minimization of Loss of Company Based on Uncertain Environment

Authors	Manoj Kumar Mandal, BK Mahatha, Arun Prasad Burnwal, Santosh Kumar Das, Aditya Sharma
Publication date	2021
Book	Nature-Inspired Computing for Smart Application Design
Pages	71-83
Publisher	Springer, Singapore
Description	In modern era, technology increases rapidly due to numerous requirements of the user or customer. There are various products and applications produced by the company with the context of requirement. One product is manufactured by several companies with some variants. So, several companies are competitor one to another. In this paper, an optimal solution is designed to minimize the losses of the company in uncertain environment. Here, uncertain environment indicates the environment that consists of several imprecise information. This information is created based on conflicting requirement of the users. So, in this paper, loss of company is minimized by reducing uncertainty. Quadratic programming is used to model the main objective and its related constraints in the form of nonlinear. In this model, decision variables are in the form of square. Fuzzy logic is used to reduce the imprecise information ...
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Arun Prasad Burnwal

Maintaining Manpower in Technical College Using Fusion of Quadratic Programming and Fuzzy Logic

Authors Manoj Kumar Mandal, BK Mahatha, Arun Prasad Burnwal, Santosh Kumar Das, Joydev Ghosh

Publication date 2021

Book Nature-Inspired Computing for Smart Application Design

Pages 267-287

Publisher Springer, Singapore

Description In modern era, the number of college increases rapidly due to simultaneously growing number of students. Although, number of student is vary day by day but according to number of students, number of teachers are less. The proposed method is used to maintaining manpower in technical college based on mathematical optimization. In this paper, there are two mathematical optimization techniques are used such as quadratic programming and fuzzy logic. Quadratic programming is a mathematical optimization model where objective function is a format of nonlinear. Fuzzy logic is used to reduce uncertainty of the problem by reducing imprecise information efficiently. The combination of both efficiently manages the manpower of the technical college. The proposed method is validated in LINGO optimization software for analysing and managing different faculty members and staffs.

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International Journal of Engineering Applied Sciences and Technology, 2021
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SOFT SKILLS IN HIGHER EDUCATION: ENRICHING EMPLOYABILITY OF TECHNICAL STUDENTS

Ms. Sweta Kumari
Assistant Professor, Department of English (BSH)
GGSES Technical Campus, Bokaro

Abstract— **The present paper attempts to intensify capacity and inculcate employability among Technical Students of Jharkhand in respect of globalization. Demands of present business world or work place are higher, and learning attitude, critical thinking, decision making skills along with other employable skills seems crucial in its employees. The technical students must be trained during their technical course in accordance to the industry-demands; and this is a real challenge of the technical institutions in Jharkhand, especially for the private one. Triangular role of the 'Institution-Faculty-Students' needs proper execution to fulfill the dynamic objective of higher education that is 'reaching of the un-reached' in knowledge, skills and values. Learning is a life-long process and students need to learn from their day to day activities. This paper deals with the process which enables the technical students to develop a thought process. Students need to learn appropriate reasons and logics behind their every acceptance or rejections. In this respect, a constructive environment is required to facilitate students where they don't hesitate to do mistakes and solely focus on 'Learning'.**

Keywords— Technical students, Facilitators, Learning, Critical thinking, Employability, Work place demand, Professionalism

I. INTRODUCTION

Primary aim of Higher Education is to provide ample opportunity for employment, either in public sector, private sector or promotes entrepreneurship. Also, employment motivates and encourages students for higher education. It also aims to equip students with skills like communication skills, critical thinking, leadership, team work, time management, and much more in the list. These skills are actually a sure ticket to success, and therefore, institutions and organizations all must concentrate on building these skills.

The present scenario of the work place is that the employees, specially the newly admitted, are really lacking the basics of '–ism'- Mannerism and Behaviorism, Professionalism. Here we can easily find a gap between what the technical students are taught and what the business culture requires. Business culture wants the passion of learning in their employees; and rests they can make the employees learn through varieties of trainings and workshops. Most of the CEOs and Directors of the national and multinational companies have repeatedly sai that most of the technical freshers are lacking soft skills an hence not fit for the job. Even the HR Recruiters of the IT Companies have to achieve the targets of recruiting hundreds of fresh or experienced candidates approximately in every fortnight, but they face multiple challenges due to lack of communication skills and other important soft skills in candidates.

II. SOFT SKILLS AND ITS IMPORTANCE

Soft skills are also known as People skills or Social skills. These are the personality traits and behaviors. It supports situational awareness and enhances individual's ability to get a job done in a desired way. It has been expected from technical students that they must be sound not only in their respective technical fields but also in handling of their work, colleagues, sub-ordinates, customers, and any other person related to them directly or indirectly. These expectations are normally not meant for a person pursuing non-technical studies; but become mandatory and a must for promotion and professional grow for Engineering and other technical students. Unfortunately, the Employers find a 'disconnect' regarding values and ethics, and work place behavior in their employees.

Discussing about the *importance* of soft skills for technical students, first, in getting employment and second, making professional growth are very crucial, and some of the Academicians say that it is the single way to get desired outcomes in professional life. Although, soft skills has a direct link with personal life and upliftment too, but for professional and work place it is mandatory and unavoidable. Shikha Setha says, "Communication skill is essential for an Engineer who aspires to carry out his professional practice in the global arena."[1] Technical students at the edge of completing their studies and preparing for interviews and making themselves

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USE OF FUZZY MATHEMATICAL QUADRATIC PROGRAMMING APPROACH IN JOB EVALUATION

Manoj Kumar Mandal[1*], Arun Prasad Burnwal[2], Neelam Dubey[3], Om Prakash Dubey[4]
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Article History: Received on 12th April 2021, Revised on 30th April 2021, Published on 15th May 2021

Abstract

Purpose of study: The current paper is the based on mathematical model of the job evolution system.

Methodology: The proposed method is the fusion of quadratic programming and fuzzy logic where quadratic programming is used to optimize objective function with related constraints in the form of non-linear formulation. Fuzzy logic is used to control uncertainty related information by estimating imprecise parameters

Main Finding: The optimal solution of the job evaluation based on fuzzy environment where goal is imprecise.

Application of this study: It is used in the areas where information is not exact.

The originality of this study: The novelty of the method is the fusion of quadratic programming and fuzzy logic.

Keywords: Job Evolution, Quadratic Programming, Fuzzy Logic, Achievement Function, Imprecise Information.

INTRODUCTION

Modeling in Job Evaluation is the important tool that facilitates the solution of non-bench mark jobs by reference to the evaluation of benchmark job It is the systematic process to determine the worth of one job in relation to other jobs in any orgation an enterprise. It is required to arc the relation worth of many jobs be paid depending upon the worth of the job. It focuses is typically on the duties and responsibilities assigned to a job, not on the credentials or charters tic the job-related person nor the quality or quantity of the incumbent's performance.

Employment Assessment Goals The following are some examples:

1 To obtain and retain a complete, correct, and impersonal description of each specific job or occupation in the factory.

2 To provide a consistent method for calculating the relative worth or importance of each job in a factory.

3 Establish a just and equal rate of pay for each job in comparison to other jobs in the factory, society, and industry.

4 To ensure that all eligible employees on similar jobs are paying the same salary.

5 Allow workers to be eligible for promotion and relocation fairly and correctly.

6 To provide a factual basis for comparing pay prices for related occupations both Geographically and Nationally.

The following are the requirements:

(a) Determining the work system and architecture.

(b) Making it possible for recognized trade unions to join.

(c) Ensuring that market analysis is conducted successfully prior to work review.

(d) Ensuring that all parties, labor, workers, and management are included on the committee.

(e) Encouraging constructive participation in the assessment process.

(f) Making it possible to recruit outside consultants to contribute experience to the process.

(g) Material on task research is readily available.

(h) The task appraisal framework should be treated as a collective bargaining modification.

(i) The active participation of a labor union and employers is important.

(j) Access to business prices (via a Labour sector survey) in order to determine current wage prices.

(k) Determining which classes of workers and jobs will be evaluated by the scheme.

Job evaluation helps in developing and maintaining pay structures by comparing the relative similarities and differences in the content and the value of jobs. If in an organization the pay structure is illogical then the pay inequalities may exist.

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RESEARCH ARTICLE

An Appraisal of Goa Urban Cooperative Bank: An Empirical Study

Sukthankar S.V [1], Vedant Chonkar[2]*, Ramesh Chandra Rath[3] and Vikash Kumar Jain[4]

Abstract

The Goa Urban Cooperative Bank is one of the oldest and leading cooperative banks in Goa .Cooperative banks provide a helping hand to local people in availing banking facility. The cooperative banks have more reach in rural areas. In order to conduct research primary as well as secondary data has been used. The paper intends to find out the financial performance of the Goa Urban Cooperative Bank from the period of 2010 to 2019 and also study the satisfaction level of customers towards the bank. In order to analyse performance and customer satisfaction SPSS tool has been used. The variable that are used to study the performance are Gross NPA impact on Net profit, Advances, Working Capital, and Investment. The paper also sees the impact of Advances, Deposits, Investment and Operating Income on the profitability of the bank. In order to study the customer satisfaction the overall service quality has been taken a base. The major findings from the paper are that the customer are very much satisfied with the overall service quality of the bank .Gross NPA has shown a significant impact on selected variables .The variables that is Advances, Deposits, Operating income and Investment have shown a impact on the profitability of the bank.

Keywords: Customer Satisfaction (CS), Gross NPA GNPA), Net Profit (NP).

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1. Introduction

Pre-Independence Era: At the end of 18th century there were very less banks in India. The banks that were opened during that period could not survive. During this period very small banks were operating and most of them were owned and operated by a community. In India the banking system was operated and controlled by Bank of Bengal ,the Bank of Bombay, and the Bank of Madras-which then were merged together to form the Imperial Bank of India.

- **Post-Independence era:** When India was independent in the year 1947, the banking system was very well developed. During this period 600 commercial banks were operating in the country. The government of India decided to nationalize the imperial bank to State bank of India from the year 1955 .This was done mainly to provide banking facilities in rural economy.
- **Nationalization:** In July 1969 the government decided to nationalize 14 banks whose deposits national wise were above Rs 500 million. This resulted in nationalization of 54% branches in India that lead to 84% control of the government on these branches. This also led to bank branches expansion in rural and urban areas .There was also an increase in the amount of deposit in the banks.

Banks play a major role in any country's economic development. In India, the banking system consists of a non-organized sector and an organized sector. The regulated sector consists of local money lenders and micro financiers, and the structured sector comprises of commercial banks, including public sector and cooperative banks, separate financial institutions, regional rural banks, postal services.

- **Indigenous bankers:** Indigenous bankers are usually individuals or families who lend money against securities such as gold jewelry, land with their own capital. Such companies are merging banks with their trading business and they are on the higher side of interest charges. Such indigenous bankers account for 50% of the interest, according to the report given by Reserve Bank of India.
- **Commercial banks:** Commercial banks are the oldest banking institutions in the sector. They satisfy the

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YEAR FOR 2015: 4.015 || YEAR FOR 2016: 5.427
YEAR FOR 2017: 7.319 || YEAR FOR 2018: 8.117
YEAR FOR 2019: 9.315

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THIS IS TO CERTIFY THAT : **Prof.Prabhakar Kumar, Prof.Vikash Kumar Jain, Prof.Mahavir Prasad** HAS PUBLISHED A PAPER TITLED :**Impact of COVID-19 on Higher Education in India** IN INTERNATIONAL JOURNAL OF APPLICATION OR INNOVATION IN ENGINEERING & MANAGEMENT (ISSN 2319-4847) AT VOLUME & ISSUE NO: **Volume 10, Issue 3, March 2021**. THIS PAPER CAN BE DOWNLOADED FROM IJAIEM OFFICIAL WEBSITE AT THE FOLLOWING LINK: **http://www.ijaiem.org/Volume10Issue3/IJAIEM-2021-04-01-11.pdf**
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Impact of COVID-19 on Higher Education in India

Prof.Prabhakar Kumar[1], Prof.Vikash Kumar Jain[2], Prof.Mahavir Prasad[3]

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Abstract

The world is battling COVID-19 and economies across the globe have declared a lockdown. Work from home (WFH) has become the norm, especially for service organizations. Following government instructions, even the academic institutions had to shut down temporarily, affecting academic delivery. Thus, they had to find new alternatives to academic delivery, and virtual classes were the way forward. As colleges and universities have shuttered their physical campuses in the face of the spread of COVID-19, they have moved their courses to remote and online formats in rapid fashion. And that's prompted many to wonder what the ultimate impact this period of time may have on online learning in higher education. Based on the present situation, where individuals come to stand on online learning will depend on where they sit currently. That is, there will be both positive and negative impacts on the state of online learning in higher education.

In the present paper, we attempted to study the impact of Covid 19 on the teaching – learning process in higher education. It is found that the gradual shift towards e-learning brings afloat few challenges such as technology up gradation needs investments, Network connectivity, lack of training to handle e-learning issues and mindset of entire stakeholders should align towards a common goal.

Introduction

Novel Coronavirus (COVID-19) pandemic has significantly disrupted every aspect of human life. As the COVID- 19 spread across the globe, alarm bells are sounding in the education sector. The Covid-19 pandemic has forced schools and colleges to shut down temporarily and is causing havoc in the education system. According to UNESCO report more than 157 crore students across 191 countries severely impacted by closure of educational institutions due to coronavirus. The issue of the COVID-19 and its impact on higher education is an emergent focus of debate worldwide. Closing universities and cancelling classes have become a COVID-19 reality in many countries of the world, leading to enormous anxiety anduncertainty.

The current pandemic is not only seen affecting the health of the citizens in the country but is also seen hindering various industries and shaking them to their roots. The national lockdown and the ascending health crisis were striking the education of the students as well, with their universities being shut and their syllabi stranded, until the industry decided to initiate a revolution instead. Reinventing their radicles and making a conscious choice to grow even in the time of crisis, the universities decided to digitalise the sector. The educational reform in India in the COVID-19 era seems to be a live example of how need truly is the mother of invention or reinvention, in this scenario. Allowing educational institutions to adopt online learning and infuse a virtual study culture, the pandemic is already steering the sector forward with technological innovation andadvancements.

CHAPTER
9

A Sustainable Strategic Planning for Development of Local Tourism Market in Post Pandemic COVID-19

Prof. (Dr.) Ramesh Chandra Rath &*
*Ms. Monalisa Pattanayak***

Abstract

At present Scenario, the coronavirus crisis (COVID-19) is having massive impacts on the tourism industry throughout the Globe— many of which will be needs to be reshape the industry's future landscape. What actions should the stakeholders of this industry be taking today from a marketing and communications perspective? It is the truth that, no one knows for sure; we're all figuring this out together.

* Dean (R&D) and HOD-MBA at Guru Gobind Singh Educational [illegible] Steel City, Jharkhand

However, a business-as-usual approach is almost certainly wrong because there is nothing "usual" about this new life we're all living and what's happening to the tourism industry right now. In this Study, we focuses about the local Tourism development in the Post Pandemic COVID-19 with a sustainable planning and we hope it will be effective and again we see the new life than the virtual life on the field of Local Tourism Sector.

Keywords: Sustainable Strategic Planning (SSP), New Virtual Life (NVL), Post Pandemic Covid-19 (PPC-19), Local Tourism Sector (LTS).

Introduction

Today, tourism places are drawing the attention of Global tourist for a happy visit to each and every destination. (Tourist Spot) Tourist are coming from different places of the world, it may eco-tourism, global tourism or local tourism are one of many region that requires proper planning and coordination's for a sustainable economic development in the local region.

In this study, we provides the simple structure and the guide lines for a comprehensive tourism planning at a community or Organizational Level for promotion of local tourism in to a great extent.

Literature Review

In this section, the researcher have trying to their level best research contribution for justifying the taken research title "A Sustainable Strategic Planning for Development of Local Tourism Market in Post Pandemic Covid-19." Here, the researcher have taken 300 no of respondents response as related with the aforesaid research work, due to pandemic effect 214 Countries had been affected and near about 9 Cores and more people becomes COVID-19 positive and 17 Lakhs [illegible] life style of human

CHAPTER
10

An Impact of Pandemic COVID-19 on Post Virtual Quality of Life in India: Emerging Needs and Challenges

Prof. (Dr.) Ramesh Chandra Rath* Ms. Monalisa Pattanayak**
& Dr. Parmeshwar Singh Maravi***

Abstract:

At Present, Covid-19 is a massive pandemic effect in world which is dashing and crashing the entire human life style in world. It is a global pandemic which takes around 26,73,376 of people life and near about 120,815.512 People having positive and most of people having phobia for death by this global Pandemic (COVID-19 anxiety. It will be seems as most dangerous for human society by which everybody life

* Dean (R&D) and Head of Department of Master of Business Administration (MBA) at Guru Gobind Singh Educational Society's Technical campus, Chas, Bokaro, Steel city, India

** Ph.D. Research Scholar, Department of Business Management, KLU

is in danger. The people of India expected for maintaining a life in post pandemic which is susceptibility, optimisti Personal identity as presumed by the researcher and predic

In this Connection, we the researcher have motivate extensive research work for prevention and protection of through adequate awareness, for wearing mask, maintai distance, counsel to people for more vaccination and utilize th properly for more productive way for expecting a qualitati Henceforth, for testing the variability in between family ide various religious groups in India. There are 400 sample collected from the male and female respondent's from differ country and asked to them how they suffer during the C pandemic effect and what are their experiences ? How they from the severe pandemic and expected to maintain quali in near future in post pandemic. The results of this invit paper will certainly help in the rehabilitation and ass maintaining a quality of life (QoL) of Indian citizens in c happily in the aftermath of the COVID-19 pandemic, as they prevent themselves from this major global pandemic vi

Keywords: Global Pandemic of COVID-19 (GPoC Pandemic Effect (PPE), Quality of Life (QOF), Reh Assistance & Maintenance (RAAM).

1. Introduction

Currently, the effect of COVID-19 is very perceived and observed all around the world. A Wuhan, China, this novel coronavirus disease, or C has spread to 219 countries around the world, wreak on human life in all fields, including infrastructure, information technology, health, tourism, manufact people's social lives. This virus is not referred to as a rather, it has evolved into a disease that affects people's physical health, resulting in many deaths

le of Digital Technology Transformation in Computer lucation: Emerging Needs and Challenges

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Abstract:

At present era, digital technology plays an important role in computer education because of its important role in various segmentations, due to lack of support and application of digital technology, education may not success in to an eye catchable performance. In short, the primary goals of this research paper are to offer a fresh take on the application of digital technology in the context of transformational changes and to provide ground-breaking insight for the important researchers, scientists, teachers, and readers who are curious about the future of computer education. We the researchers have focused on a valuable and up-to-date literature review of the aforesaid research title. We have tried to our level best to justify the aforesaid research title in to a valuable and meaningful research work for the future researchers. In this paper, a thorough summary of the literature on how digital technology contributes to computer education is provided. However, this paper aims to identify many important emerging issues in education technology and major obstacles hinder broad successful implementation in the area of computer education, even though "technology in almost every element of education" are widely used. This study also found similar results, however here the paper is concentrated on the additional difficulties that were discovered due to the advent of the digital

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Abstract:
Now-a-days, application of digital Technology plays an important role in different segmentation for smooth operation and control of office work of various organizations. Creating knowledge has been a key element for companies looking to gain an advantage via innovative manufacturing, especially in an environment where globalization has resulted in severe competition. This process has been hastened by the advancement of information and communication technology. "Nowadays, there are several options available to all of us in every part of human life, whether it is purchasing something or putting your money in the stock market or a mutual fund". As a shareholder or investor, have a variety of investment options from which to choose, based on specific goals, investors have a wide range of mutual fund schemes to choose from based on their Systematic Investment Plan" (SIP) and financial planning assist people become financially prosperous and increase their individual profile in today's society. The main goal of this study is to conduct an empirical analysis of the basic components of digital technology application in public sector banks, as well as to determine whether there is a difference between private and public sector banks in terms of knowledge management practices,

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Abstract:
Digital Technology (DT) is now associated with a slew of issues and solutions that are inextricably tied to the goals of sustained growth for the average economic situation of people in developed countries, particularly India. Globalization is a key enabler, and local uses of technology may help build e-education infrastructure and help young people get higher education and jobs. This includes educational, social, cultural, economic, political, and environmental settings and effects. A new generation of professionals and policymakers is needed to help lead the use of technology to achieve sustainable growth in India's e-education. The advantages of prudent use of increasing information and communication technologies are now widely acknowledged. "The potential benefits penetrated nearly every sector of activity where knowledge and communication are important". Higher teaching and learning procedures, improved student outcomes, higher student involvement, and seamless communication with teachers and parents are all part of it. There is currently a large gap between what children learn in school and what

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A STUDY ON MARKETING PERSPECTIVE OF S-COMMERCE ON ONLINE BUYING BEHAVIOUR & PURCHASE DECISION OF CONSUMERS IN 21ST CENTURY

Monalisa Pattanayak[1] , Dr. A. Udaya Shankar[2], Prof. (Dr.) Ramesh Chandra Rath[3]

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Abstract:

Nowadays, Web-Marketing on S-Commerce has been tremendously developed since last two decades because of the advancement of the Internet and Digital technology. Thus, most of the consumers highly motivated for Internet shopping. The purpose of this paper writing is to obtain a quantitative analysis of S-Commerce transactions and activities made by consumers on the platform of Web-marketing for product selection. buying decision and studying the consumer attitude and its impact on the minds of consumers how reflected online shopping of S-Commerce in world.
Therefore, consumer trust, belief, privacy, buying decisions, security, perception, loyalty, value-added and their preferences are the major factors for using Web-Marketing, which is being analysed by using statistical tools andtechniques of SPSS method for a scientific study and its data analysis.

Keywords: Web-Marketing (WM), S-Commerce (SC), E-Commerce (EC), World-Wide-Web (WWW), Privacy and Security (PAS), Online Buying Decision (OBD)

1. Introduction

The proliferation of social networking sites (SNS) has spawned new forms of e-commerce which is known as social commerce (or s-commerce) According to (Zhou et al. 2013, Chen and Shen, 2015). Social commerce is the trade of digital products, services, or content with a large online peer network (created by friends, colleagues,

NCESTM31

An Analysis Of Women Entrepreneural Empowerment On SMEs and its Economic Sustainability in Odisha: Special Reference to Twin City Cuttack and Bhubaneswar in Odisha

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Abstract. At present scenario of economic Development in India, the entrepreneurial development process for women plays a vital role in India. It is increasingly being recognized as an important untapped source of economic growth since women entrepreneur's empowerment create new jobs for themselves and others and by being different also provide society with different solutions to management, organization and business problems. Women entrepreneurs see the world through a different lens and, in turn, do things differently. Daniel Pink's book A Whole New Mind makes a case that in the twenty-first century, the most important growth industries will be in the realms of beauty, empathy, harmony, and other aesthetic and quality of life values. He makes the case that Asia, Automation, and Abundance will dictate this transformation. The author refers to a future in which both the left brain—analytical—and the right brain—intuitive and holistic—will be more valued than they have been in the past, especially when used together. It seems likely that the future will favour women entrepreneurs to a greater and greater extent in Indian Economic Development and its Sustainability. Even though we recognize that the journey of a woman entrepreneur is laid with huge challenges, the major one of them is the availability of finance at different stages of the life cycle of the enterprise. We would like to study this problem from both the demand and the supply side. This paper endeavours to create awareness about the contribution of women enterprises to the economic development and also the need for creation of a vibrant entrepreneurial ecosystem for women entrepreneurs. This study is primarily based on extensive secondary research and insights drawn from own experience upon the twin city of Odisha named as Cuttack and Bhubaneswar city in order to study the women empowerment through their entrepreneurial and economic sustainability in Indian economic development and its present context.

Keywords: Women Entrepreneurial and Empowerment (WEAE), Women Enterprises (WE), Access to Finance, Entrepreneurial Eco-System (AFEES), Economic Sustainability (ES)

1. Introduction

The rationale for the study of women entrepreneurs in Small and Medium Enterprises (SMEs) and their access to finance is that while there are about 8 to 10 million women-owned SMEs in emerging markets, the average growth rate of women's enterprises is significantly lower than the average growth rate for SMEs run by men. Women's participation in entrepreneurial activity varies widely across the globe, ranging from just over 1.5% to 45.4% of the adult women in an economy. In the factor driven economies, 19.9% of women between the ages of 18 and 64 are starting and running new businesses. This figure was 9.7% in the efficiency driven economies and 3.9% in the innovation driven economies (GEM 2010 Women's Report). Women are fifty per cent of the world's population, do two-third of the world's work, receive ten per cent of world income and own less than one per cent of world's property (ILO, 1980). According to the MSME Annual Report 2011-12, the MSMEs account for 45 per cent of India's manufacturing output and 40 per cent of India's total export. Despite scarce sex dis segregated data on women's participation in the MSME sector, it is recognised that a huge number of women in India are engaged in the MSME sector, the majority of them in the in organized sector.

According to the same report, only 13.72 per cent of enterprises in the registered MSME sector were enterprises managed by women, representing about 2.15 lakh (or 215,000) enterprises across the country. Most of the women enterprises (almost 91 per cent) are micro enterprises, 5 per cent are small and 4 per cent are in the medium sector. They are mostly concentrated in Tamil Nadu, Kerala, Karnataka and Gujarat. Only 10 per cent of the registered units belong to women. Majority of women enterprises are in manufacturing sector (50.4 per cent) and 40.9 per cent of the female enterprises are in service sector. Almost 90 per cent of the enterprises are under proprietorship or Hindu Undivided family. 13 per cent of them are owned by women. Women largely prefer being proprietors in business.

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Research Pedagogy of Blended Learning and Digital Technology for Transformation of Learning System

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Abstract. At the present context, the new education policy (NEP) is playing an important role for showing the efficacy and competencies-oriented education system of present pedagogy of education model which refers an effectiveness of pedagogy of Technology with followed present Digital mode of Learning such as: Transformation of Blended Learning in Education system, Digital Technology in connection with number of ICT Tools. Which is contributing student's key competencies for the optimum betterment of themselves? The invited paper has contributed to the field of Blended Learning and Digital Technology has contents a Research pedagogy of present learning system. It summarizing some theoretical issues and perspectives for enhancing the effectiveness of integrating digital technology in to a well and advanced teaching learning process. The application of Digital Technology in various Educational activities open for number of new opportunities and challenges, use of new methods of teaching learning process, dissemination and Management processes through integrating Digital Technology and its information such as: Gathering resources, Use of ICT Tools for Blended learning, which facilitates the necessary competencies of Digital literacy, Assessment of Software, Development of innovative Management skills for problem solving and Decision making processes in various Organizations and Institutions. Therefore, we the Researcher have taken some Advance Research Model of Blended Learning and Digital Technology in order to observe student's learning competencies and practices in to a great extent. The pedagogy of taken learning system is new version of Teaching learning process, which not only focuses about individual learning but also helps to identifying and developing Student's intellectuality (Cognitive), Smartness (Personality), Educational motives and interest. Thus, the aforesaid key competencies play a crucial role in the Education system and it needs to some supplementary trends for development of integral part of Modern Learning process in to a great extent.

Keywords: New Education Policy (NEP), Research pedagogy, Blended learning, Digital technology, ICT tools.

1. Introduction

Today, education is a fundamental asset for achieving all types of potential of human being related with economic, social, developmental, cultural, equality in social justice and cyclic advancement of national education and cultural preservation in India. Therefore, Central Government of India has given more importance for a unique National Education Policy-2020 and digital transformation of blended learning through a strategic plan on Teaching Learning Pedagogy for providing high quality of Educational opportunities to all from primary education to higher education. High quality, personalized learning models are demonstrating powerful gains in student outcomes in a wide range of settings around the country. A proliferation of digital learning programs and interactive content offers educators diverse foundations upon which to design these models. As the transformative benefits and outcomes these programs can deliver are receiving greater attention from media, policymakers, and others, a growing share of the most impressive progress can be found in traditional school districts that are adopting models created around their own educational needs as per the requirements there on.
Therefore, the aforesaid research title has encouraged to us for acquiring knowledge and skill in various segmentations, where an expected outcome will be possible through a meticulous planning and strategy by which quickly and changing employment occurs in country and globe. This Pedagogy of Learning system must be evolved to make education more experimental, holistic, integrated, innovative, learning centred, discussion based, flexible in nature.

2. Review of Literature

In this section of literature review, we focused on four main principles of educational design for blended learning are identified: (a) A thoughtful integration of face-to-face and fully online instructional components; (b)

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A Women Empowerment an Instrument for Human Devel Opment with Reference to Government's Effort in India

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Abstract. India is on the way of becoming a super power but this dream cannot be achieved till 50 percentage of population consisting of women are empowered. The role of women in the comprehensive development of a family, society and nation as a whole cannot simply be overemphasised. The present paper is an attempt to explore the different dimensions of women empowerment with special reference to human development provided by women in different sectors/positions across India. Women start careers in business and other professions with the same level of intelligence, education, and commitment as men. Yet comparatively few reach the top position. This gap matters not only because the familiar glass ceiling is unfair, but also because the world has an increasingly urgent need for more leaders. All men and women with the brains, the desire, and the perseverance to lead should be encouraged to fulfil their potential and leave their mark. There is reduction in women workforce as per worker population ratio (WPR) as shown in the latest quinquenial round (68th) of NSS. This is low as per the previous trends.

The desegregated categories of workers show that there are reductions of workers in Self-employment consisting both agriculture and non-agriculture. A shift in agriculture labour to other labour is marked. Labour force participation rate (LFPR) in case of female has reduced almost half. It has come down from 49.1 to 23.5 per cent during the year 2004-05 and 2009-10. An explanation to this reduction may be due increase in the percentage of higher educational attainment. This reduction is seen in every age group of females. According to industry classification the share of rural employment skewed toward agriculture, though there is sizable reduction both for male and female workforce. This declination is mainly offset by construction, Hotel and trade. Rural female work force is rising in manufacturing. Most striking feature for urban female force is hike in service and public administration, has risen from 2.64 to 45.7 per cent.

Keywords: Women Empowerment (WE), Women Population Ratio (WPR), Women-Un-Employment (W-U-E), Labour Force Participation Rate (LFPR), Worker Population Ratio (WPR)

1. Introduction

In the Indian context, the pattern of society is predominantly patriarchal and the state of Jharkhand is not an exception. Girls in this state particularly in rural areas have been on receiving end of cast and division with different problems. Keeping in mind the census of 2011 figures, the women's literacy rate inside our country is 65.5%. The cases of toddler marriage, miscarriage, anaemia, pregnancy death and different fitness related issues are common among the women in rural areas. The sex ratio of Jharkhand is 949 females as compared with 1000 adult males. Literacy rate is 66.41% of which 76.84% is for men and 55.42% for women. India is on the way of becoming a super power but this dream cannot be achieved till 50 per cent of population consisting of women are empowered. In addition to these the government is also working towards bringing legislations to empower women and give them equal opportunities. It has been seen in history that whenever women are empowered those countries flourish because it is women who shape the destiny of the society and decide the future of the nation.

There is no gainsaying the fact that the term women empowerment seriously refers to the process of bringing the women, deprived of the socio-economic, political and educational rights and privileges, into the mainstream development. It also lays great emphasis on bringing about holistic paradigm changes in the status of women in order to create an egalitarian society based upon the Constitutional philosophy of equality and social justice for all the people across the nation. This facilitates the accessibility of women to the ocean of opportunities in the spheres of education, professions, lifestyles and their own passion and potential. Women have made an array of advances and Breakthrough in almost all the domains of human endeavour since independence of many countries including India. The ocean of social, household and economic statistics bear testimony to these various historical achievements and incredible laurels women have brought to their lives, families and the nation.

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Role of Women Entrepreneurship for Sustainable Economic Development: A Perspective Case Study of Smart City Bhubaneswar

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Abstract. At present context, the role of women entrepreneurship in India is not up to the mark due to a lack of women empowerment and education. At present, women are not competent and equal with their male counterparts. Economic development is not only possible through male entrepreneurship but also it needs more participation of women in various entrepreneurial activities. Entrepreneurship is one of the important ways of economic development for Nation building and enhancing GDP for sustainable economic development. In the last four decades Women Entrepreneurship in India is very few because of poverty, lack of education, cultural barrier, and social restrictions for Women participation. In The 1980s, Women Entrepreneurship little bit encouraged by the "New Delhi declaration and plan of action", which is encouraged Women's participation in various Enterprises. In the 1990s, Women got more opportunities for participation in various organizations for getting entrepreneurial Training and skills, which is empowered them for starting new enterprises.

In this invited paper, we motivate to women entrepreneurship in rural areas of Smart city Bhubaneswar, Odisha, where researcher trying to find various problems which is discouraged, demotivated and prevent the establishment of small enterprises for enhancing women entrepreneurial & managerial skills and participation in nation-building. Therefore, we have cited various entrepreneurial models of women and focused on how to overcome the aforesaid hurdles faced by rural women in Smart city Bhubaneswar. They set up new enterprises by the help of Government Schemes like MSMEs, SMEs, Mahila Bikash Kendra, and other rural development schemes related to women empowerment. The success story of a few Indian women entrepreneur is cited for their entrepreneurial motivation and finally, we hope the rural women of Smart city Bhubaneswar will successful for establishment of various small enterprise and able to have good income & manage enterprises smoothly with their dynamic managerial skill and leadership.

Keywords: Women Entrepreneurship (WE), Sustainable Economic Development (EDP), Women Empowerment & Rural Development (WERD), Micro-Small-Medium Enterprises (MSME), Small Medium Enterprises (SME)

1. Introduction

In India, Women play a vital role in social life of Indian society because they are the backbone for building family and society. They are highly regarded in Indian culture due to their role of motherhood and their satisfactions. As the amendment of Odisha start-up policy, now-a-days more women come forward became self independent through establishment of their own enterprise, SSG group and MSMEs, SMEs and earn money by producing small variety of products thats why they are become economically sound, self-independent and manage their family and their enterprise with their dynamic Leadership and Management skills. In this paper, we motivated to take some perspective Case Study of Women Enterpreneurs from Odisha, who is/are the role model for other Women Entrepreneurs named as Late Mrs. Ila Panda (Founder and CEO IMFA Group), Mrs. Kamala Singh, Sruti Mohapatra, Sasmita Mohanty, Richa Kar, Jayashree Mohanty, Sikruti Pattanayak, Ms. Iti Samanta etc.

2. Literature Review

In literature Review section, we the researchers have trying to finding out the root cause of women entrepreneurship why not up-to marks as comparison to male entrepreneurs. Where Entrepreneurship is a creative and innovative response to the environment and an ability to recognize, initiate and exploit an economic opportunity Manocha (2012) [1]. Today, sustainability or innovative idea-based entrepreneurship needs renewing the process of stakeholders where, traditional businessman doing routine-based work has not been recognised as an entrepreneur because of their socio-cultural aspects that men have higher Entrepreneurial self-efficacy (ESE) than women Entrepreneur.

Women Entrepreneurship is an essential element for economic progress Acs et al (1990) as it manifests its fundamental importance in various entrepreneurial activities such as

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An Impact of Pandemic COVID-19 on Post Virtual Quality of Life in India: Emerging Needs and Challenges

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Abstract. At Present, Covid-19 is a massive pandemic effect in world which is dashing and crashing the entire human life style in world. It is a global pandemic which takes around 26,73, 376 of people life and near about 120,815 512 People having positive and most of people having phobia for death by this global Pandemic (COVID-19 anxiety. It will be seeming as most dangerous for human society by which every body life is in danger. The people of India expected for maintaining a qualitative life in post pandemic which is susceptibility, optimistic bias and Personal identity as presumed by the researcher and predicator.

In this Connection, we the researcher have motivated to do the extensive research work for prevention and protection of human life through adequate awareness, for wearing mask, maintaining social distance, counsel to people for more vaccination and utilize the resources properly for more productive way for expecting a qualitative life style. Henceforth, for testing the variability in between family identification, various religious groups in India. There are 400 samples have been collected from the male and female respondent's from different parts of country and asked to them how they suffer during the COVID-19 pandemic effect and what are their experiences ? How they over come from the severe pandemic and expected to maintain a qualitative of life in near future in post pandemic. In this invited research paper, the findings would indeed, aid in the rehabilitation and assistance for maintaining a quality of life (QoL) of citizen of India in order to live happily in Post Pandemic COVID-19 crisis, and how they prevent themselves from this massive global pandemic virus effect.

Keywords: Global Pandemic of COVID-19 (GPoC-19), Post Pandemic Effect (PPE), Quality of Life (QOF), Rehabilitation Assistance & Maintenance (RAAM)

1. Introduction

Currently, the effect of COVID-19 is very severely perceived and observed all around the world. This novel coronavirus disease or COVID-19 apart from the Wuhan City of China and spreading 219 countries in the world and have crashed the human life in all segmentations such as infrasture, education, IT, health, tourism, manufacturing, Social life style of People all around in India. This virus is not called as a pandemic, this is becoming a disease which impacts not only the physical health of individuals, resulting in many fatalities the world over, but also their quality of life has severely affected. Here, research on the viral outbreak has largely indicated negative outcomes such as people are suffering panic, psychological fear, imbalance, depression and anxiety (Wang et al. 2020a), feelings of fear, stress and worry (Ahorsu et al. 2020; Bao et al. 2020), psychological distress (Rehman et al. 2020) and even stigma and xenophobia towards people suspected of being infected with the disease (Mamun and Griffiths 2020).

In connection with, due to fear of the disease, many cases even led to suicides (Suicide leading cause for over 980 lockdown deaths in India happened as per the report of the Economic Times (2020). This pandemic is an adverse outcome of the disease, necessitating an empirical shift towards COVID-19 outcomes that are preventive as well as positive, such as quality of life how re -stored and how to save the human life now it is a headache for India and all around the globe. The government of India has taken some initiative steps on priority basis for vaccination process and save its life of citizen.

2. Literature Review

In this section, we the researcher have taken empirical evidence which indicates that people show high levels of anxiety, perceived susceptibility and perceived severely related to COVID-19 Pandemic. This pandemic leading to preventive health measures and individual behavior related to their family group, religious group, and cultural group of diversity and individual groups. Therefore, the aforesaid factors play out at an individual level an individual's personal identity that drives their direction, convictions, goals and future expectations (Baray et al.

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An Efficient LEACH Clustering Protocol to Enhance the QoS of WSN

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Abstract: *The development of an energy-efficient routing protocol for wireless sensor networks has been a challenging task for academics. It is very different from the conventional routing protocols, which are based on I.P. addresses. These conventional routing protocols are not preferable for WSNs since conventional routing protocols depend heavily on the routing tables, which often require updates. Also, the WSN varies from thousands to ten thousand, making the task of managing routing tables not easy and economical in terms of hardware resources. There is always research going on to develop an efficient routing protocol in terms of energy for WSNs. LEACH protocol is one of them. Energy consumption in WSNs became a vital factor to be focused on in enforcing an efficient routing strategy. Numerous LEACH protocol variations propose improvements to the current Protocol. In our study, we looked at different LEACH protocol iterations and adopted a modified LEACH protocol to extend the lifetime of wireless sensor networks. We adopted various power levels for transmission between the cluster node, cluster head, and base station, as well as a novel method for choosing the cluster head. Our modified Protocol performs better when compared to parameters like network lifetime, dead nodes per round, Cluster heads formed, packets sent to the base station, etc.*

Keywords: *CH Selection, Network lifetime, Energy Efficiency, WSN.*

I. INTRODUCTION

In general, the Internet of Things shapes computing and connectivity in the future. Nowadays, broadband connectivity has become cheap and ubiquitous. This gave birth to more powerful and smaller devices available with onboard sensors. Physical objects are becoming part of the internet. This phenomenon allows various application domains, from Green-IT to energy-efficient military applications.

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Recent developments in the IoT field made mobile Ad Hoc and WSNs necessary [1]. Researchers in recent years have challenged WSN. It has been a challenge since conventional routing algorithms, the ones that we use in IP-based networks, which depend on routing tables are not suited for WSNs. The size of the WSN may vary from thousands to tens of thousands. This makes the routing table the size used during the routing state in conventional routing algorithms, which is not an easily maintained thing in the case of WSN because of the size and the hardware limitations of the routers and nodes [1].

Despite the fact that WSNs are a subtype of wireless Ad Hoc networks, these networks should not use the same routing techniques. The route from the origin to the destination is included in each packet sent using ad hoc network routing techniques, which presuppose a thorough understanding of the complete network. Two headers will result in more data packets and more energy being used because they include the complete path in the packet. [2].

Section I contains the introduction of WSN, Section II contains the recent related work done. Section III describes the methodology of the proposed protocol, and Section IV describes the results after the tests. Section V is the concluding section explains research work with future directions.

II. LITERATURE SURVEY

Various routing protocols control the flow of packets in the network. LEACH or "Low Energy Adaptive Clustering Hierarchy," is a hierarchical-based protocol that is widely used. It has many forms, each having advantages in its own form. LEACH protocol reduces the consumption of Energy of WSN. Essential features of the LEACH protocol in WSN are [1,2]:

- Clusters formation and selection of the Cluster head.
- Distribution of energy consumption in the entire network evenly.
- A better lifetime of the network.

The performance of the LEACH is far better than the conventional clustering through the use of adaptive clustering and cluster head rotation making energy distribution even over the network. LEACH is able to achieve a reduction in dissipation by using an adaptive hierarchical approach. Many forms of the LEACH protocol came into existence each trying to improve the original Protocol. Some primary forms are the Comparison of different protocols in WSNs, which is either LEACH-based or Fuzzy logic-based [3],[4],[5],[6],[7].

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Comparative Study of Existing Hierarchical Based Routing Protocols for WSN

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***Abstract*—Wireless sensor network is a type of Ad hoc network but routing protocols for WSN are different from MANET because the factors like power, communication type, node deployment etc. are different in both. WSN protocols are classified on different parameters like Network Structure and Protocol Operation. On the basis of network structure there are three types of routing protocol flat routing, hierarchical routing, and location based routing. Flat routing protocols uses flooding and hierarchical routing protocol worked base on clusters resulting hierarchical protocols are energy efficient and easily scalable. The main aim of this paper is to evaluate, analyze and compare four existing hierarchical based routing protocols named Low Energy Adaptive Clustering Hierarchy (LEACH), Threshold Sensitive Energy Efficient Sensor Network (TEEN), Adaptive Threshold Sensitive Energy Efficient Sensor Network (APTEEN), and Distance Adaptive Threshold Sensitive Energy Efficient Sensor Network (DAPTEEN).**

***Keywords*—WSN, MANET, LEACH, TEEN, APTEEN, DAPTEEN**

I. INTRODUCTION

Wireless sensor network is an infrastructure less, random deployment of sensor nodes that cooperatively perform sensing information and process it with the help of a gateway or sink node via any medium like internet to end user shown in Fig1. Sensor nodes are mobile in nature and have limited capacity in terms of energy, storage, coverage area etc. [1].

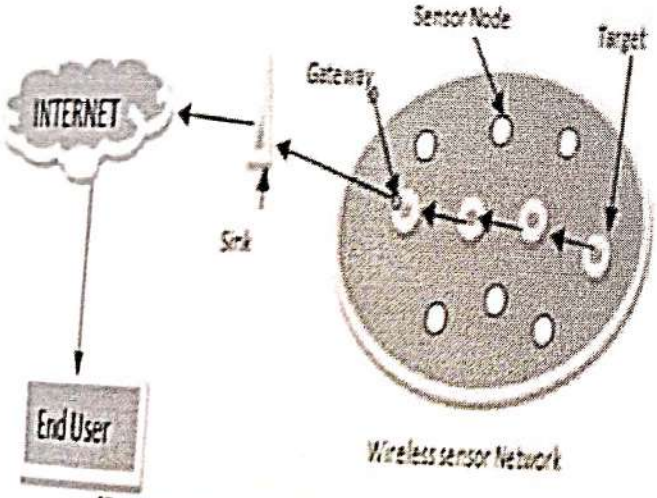

Figure 1: Wireless Sensor Network

On the basis mode of operation sensor nodes are classified in two categories first one is proactive and second is reactive. In proactive nodes are periodically active their sensors for sensing at regular gaps but reactive networks are active when a drastic change occurs [2].

In current decade too many research are taking place to improve energy efficiency, coverage area, capacity and efficient Routing etc. in WSN. In the last few years WSN has supported a variety of applications to satisfy needs of human life, different applications need different mechanisms for routing. Routing is a vast area for research in WSN, lots of work done in this area but still needs to work in this area. At present no clear classification for Routing protocol but it can be classified on the basis of network structure and protocol operation. Flat network, hierarchical and location based routing are types of network structure based routing [3]. all the sensor nodes perform similar job in flat routing, hierarchical routing is energy efficient in comparison than flat routing because nodes are divided in several clusters and each cluster have a master node and remains slave node, master node collects data from all nodes in the cluster and forward data to base station this scheme resulting decrease in traffic load of WSN and location based routing scheme is useful for location based applications or position based application that use in WSN [3] . In this paper main focus is on study and comparison of hierarchical routing protocols [4]. Section I tells about description about WSN and routing types, section II contains description about existing hierarchical routing protocol i.e. LEACH, TEEN, APTEEN, and DAPTEEN, section III contains comparison between discussed protocol and section IV is conclusion.

II. EXISTING HIERARCHICAL BASED ROUTING PROTOCOLS

Hierarchical routing is also known as cluster based routing in this routing scheme sensor nodes are divided in several

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Research Article

Analyze the Mechanical Characteristics of Fabricated MMCs on Nanocarbon Influencing with Polymer Composites

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The intention of this research is to recapitulate the two different fillers like E glass fiber and nanocarbon fiber, which were utilized to fabricate the polymer matrix composites by the assistance of epoxy resin. The mechanical compression molding was influenced to produce the polymer-based nanocomposites under consideration of optimal process parameters. There are three different weight fractions E glass fiber (40%, 45%, and 50%), nanocarbon fiber (10%, 15%, and 20%), and epoxy concentrations (30%, 40%, and 50%), respectively, that were used to produce the polymer matrix composites. Those processing parameters were designed by the L9 Taguchi with DOE technique to conduct the mechanical tests like tensile strength and hardness properties. The signal-to-noise ratios were successfully accomplished to identify optimal process parameters for improving the individual responses. The ANOVA and interaction was additional supports to enhance the mechanical properties. The scanning electron microscope was used to examine the fracture surfaces at the tensile fracture specimens with optimal conditions. Moreover, the maximum mechanical characteristics were attained by the increasing of nanocarbon fiber in the processed polymer matrix composites.

1. Introduction

To improve unique characteristics like chemical stability, maximum thermal conductivity, withstand breakdown potency, and better insulation properties which depend on the various applications of packaging-based materials and enhanced electronics-based applications, utilization of nano-based filler materials on the various resins agents was done to produce the polymer nanocomposites. In most of the applications, polymer-based nanocomposites contain better thermal conductivity under the maintenance of 0.5 W/m·k which is less than the limits [1–5].

Maximum utilization of various applications like aerospace, automotive, and biomedical are related to different fields. The nanoreinforcement into the polymer composites fabrication improves the mechanical attributes. In current

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Role of Digital Technology Transformation in Computer Education: Emerging Needs and Challenges

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Abstract **–At present era, digital technology plays an important role in computer education because of its important role in various segmentations, due to lack of support and application of digital technology, education may not success in to an eye catchable performance. In short, the primary goals of this research paper are to offer a fresh take on the application of digital technology in the context of transformational changes and to provide ground-breaking insight for the important researchers, scientists, teachers, and readers who are curious about the future of computer education. We the researchers have focused on a valuable and up-to-date literature review of the aforesaid research title. We have tried to our level best to justify the aforesaid research title in to a valuable and meaningful research work for the future researchers. In this paper, a thorough summary of the literature on how digital technology contributes to computer education is provided. However, this paper aims to identify many important emerging issues in education technology and major obstacles hinder broad successful implementation in the area of computer education, even though "technology in almost every element of education" are widely used. This study also found similar results, however here the paper is concentrated on the additional difficulties that were discovered due to the advent of the digital revolution to improve the empowered use of digital technology on education across all sectors, digital transmission must be applied to achieve this.**

Keywords: Digital Transformation (DT), Business Strategy (BS) Processes Operations (PO), Computer Technology (CT), Education & Challenges.

I. INTRODUCTION

Today, in each and every field, we able to see "the rise of new digital technologies, e.g., social networks, mobile, big data, etc., firms in virtually all industries domains are conducting multiple initiatives to explore and exploit their benefits [1, 2]". The design of critical business processes often requires changes to essential business activities, which has an impact on goods and processes, as well as organizational structures. "Due to the rapid development of digital technologies and their widespread penetration of all markets, society as a whole is going through a rapid and dramatic transformation." Globalization [5] and competitive pressures from competitors such as Amazon, Facebook, and Google have brought about a rise in customer demand. As a result, companies are feeling greater competition and must go digital before others. These new digital pioneers (e.g., Amazon, Facebook, and Google) have grown into formidable behemoths. Companies that have long dominated their industries, on the other hand, are finding their traditional value proposition threatened. Yet despite the wealth of new technologies and ways to apply them, true Digital Technology Transformation is happening more slowly and encountering more obstacles than anticipated [8].

II. LITERATURE REVIEW

Through finding data in both primary and secondary ways, the researcher collects and synthesizes the research work in order to produce an article which focuses on the idea of digital technology transformation and contrasts it with prior literature studies. Many other ideas have been proposed to identify digital transformation. One of them is called "the process of digitalization" and others include "digitations". The terms "invisible to the naked eye", "transparent to the eye", and "invisible to the naked eye, but transparent to the eye" are often

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Review

Adaptive Traffic Light Control System: A PLC Approach

Alok Kumar[1,*], Pankaj Kumar Ray[1], Pankaj Rai[2]

Abstract

This study presents the adaptive approach for traffic light control system by using programmable Logic ladder for the monitoring the PLC based traffic light system which helps in improving public transport service and traffic guidance system. The system is developed by setting the appropriate duration for traffic signals to react accordingly. In the rapid growing countries like India, accidents occur in huge numbers due to unmannered level of crossings are increasing day by day. The main aim is to control the flow of vehicles through a lane for preventing accidents or road blockage. These systems are also used at points wherever a vehicle needs to be stopped for any purpose. When the wheels of the vehicles move over the lane, sensor sends the signal to the PLC. There are three signals RED, GREEN, and YELLOW according to the lane density. Basic PLC functions such as timing, sequencing, controlling, and relaying were implemented based on logic ladder programming. In today's scenario, sensors are used to sense the presence of vehicles in a lane to calculate the density and send an interrupt signal to the control unit. Then PLC checks the status of the sensor and certain logical operation is performed to decide which lane is to be serviced first on the basis of priority. Ladder diagram was developed for the implementation of this situation in PLC, which has to check the priorities and after execution of program, provide output to the traffic light poles for ON or OFF the RED, YELLOW, or GREEN lights and the ON/OFF time period is dependent on the specific priorities.

Keywords: Traffic light, control system, central processing Unit, PLC System, sensor

INTRODUCTION

This system is used where there are more than two paths for passage of vehicles or passage given for pedestrians to cross a road or wherever two paths cross each other thus creating a four way lane or where there are by-lanes attached to the main road. In the present scenario, Indian traffic control system is mostly based on sequential logic which has three lights: red for stop, yellow for ready and green for go; each one operates for a given time period one after the other. The programming is done so that two lanes won't have the green light at the same time. In India, at maximum places, traffic has been controlled manually by traffic police but human error calls for automation to prevent undesirable incidents on road. They are connected to electronics systems which control the signals [1–3].

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PLC mainly works on ladder logic which can be classified as a signal phase and cycle length which are dependent on the traffic flow on the desired tracks and system responds to interrupts or timing-based system (Figure 1).

AUTOMATION

Automation is used for various control systems like operating equipment such as machinery, process control in industries, heat treating ovens, switching in telephone network, steering and stabilization of ships, aircraft and other applications which reduce human intervention.

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Failure analysis of rear axle shaft of a heavy vehicle

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ABSTRACT

Failure of the rear axle shaft of a heavy vehicle was thoroughly investigated. It was noticed that the axle shaft had failed during service and broken into two pieces. Different types of investigations were carried out on the failed axle shaft which includes visual examination, chemical analysis, Mechanical testing, Fractography and ultrasonic testing. Several cleavages were noticed in the Fractography, which depicted a sign of brittle fracture. Fatigue striations were observed in scanning electron microscopic analysis of the as received failed axle, which a typical indispensible characteristics of fatigue failure. The tensile fracture surface revealed mixed component of dimple as well as cleavage facet. Results indicated that failure occurred due to sudden loading on the axle shaft. The shear stress in the weak portion of the axle was not sufficient to counter the stress imposed by sudden loading.
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1. Introduction

An Axle shaft is a rotating shaft that is generally used to link wheels and differential for the purpose of transmitting wheel movement and driving force. These shafts go through millions of cycles and undergo torsional and bending stresses. Due to fluctuating (cyclic) loading [1], these axle shafts are prone to fatigue failure. There are three phases in fatigue failure; crack initiation followed by crack propagation and then fracture. Fatigue accounts for about 90% of all service failures [2]. Fatigue failure starts at a vulnerable point, where there is a stress concentration such as steps in diameter, grooves, keyways, threads, notches, press fit components and so on. Metallurgical stress may be developed due to quench cracking, corrosion, inclusions, second phase particles etc. [3].

Clark et al. [4] carried out failure analysis of induction hardened automobile axles. They found that single overload failure usually originates at flange radius, while fatigue fracture occurs at the axle journal surface at outboard edge of roller bearing. Nanaware et al. [5] conducted failure analysis of rear axle shaft of 575 DI tractors. They noted that failure of rear axle shaft was due to insufficient spline root radius, resulting in crack initiation and subsequent crack growth under cyclic loading. Tawancy et al. [6] investigated the failure of the rear axle shaft of an automobile. They suggested that the most likely cause of failure could be improper heat treatment of shaft, resulting in poor ductility that contributed to brittle fracture. Topac et al. [7] investigated fatigue failure prediction of a rear axle housing prototype using finite element analysis. They concluded that crack causing fracture was initiated at the stress concentration regions of the housing. They also noted that if this load is applied in a cyclic manner, premature fatigue failure will occur before expected minimum cycle limit of 5×10^5. Kursat Celik et al. [8] examined the failure of a location axle in a tracked tractor. They found that failure was caused by lack of material quality control and casting conditions.

Present research reveals through examination of the detailed post failure analysis of the rear axle shaft of a heavy vehicle. Fig. 1 represents flow chart of detailed failure analysis process of rear axle shaft. Cause of failure was investigated and it was found that the axle shaft was suddenly loaded; therefore shear stress was not adequate in the weak portion of the axle to counter the stress imposed by sudden loading.

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ANOVA based optimization of process parameters for Electro Discharge Machining of D2 Stainless Steel

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Abstract: Wire-cut electrical discharge machining is extensively used for machining of [illegible] intricate profiles when precision is of prime importance. Wire cut [illegible] production of newer materials, especially for the aerospace and medical industries [illegible] difficult to determine optimal process parameters for improving cutting performance. [illegible] to study the effect of machining parameters of wire cut electrical discharge machining [illegible] experimentation has been carried out to investigate the effect of machining parameters [illegible] off time and feed rate of wire on material removal rate and surface roughness. [illegible] diameter of copper wire is kept constant. It is evident from present study that input parameters [illegible] process performance characteristics. The experimentation was [illegible] orthogonal array of experimental design were used to perform the experiments [illegible] employed to optimize the material removal rate and surface roughness. [illegible] pulse off time are the significant parameters that effect the MRR and surface roughness [illegible] material removal rate and surface roughness increases with increase in pulse on time and decreases [illegible] time.

Keywords: Electric Discharge Machining, L9 Orthogonal array, Signal to Noise ratio, Material removal rate, Surface Roughness, T-on and T-off time, Feed Rate

I. INTRODUCTION

Wire-cut electrical discharge machining (WEDM) is a non-traditional manufacturing process [illegible] part by means of a series of recurring electrical discharges [illegible] alledelectrode and the work piece in the presence of a dielectric fluid. [illegible] mainly in the form of hollow spheres from the [illegible] EDM has potential applicability in machining advanced [illegible] the drawbacks of EDM processes are overcome in WEDM [illegible] surface finishes make WEDM is particularly suitable for [illegible] current power supply between the electrodes [illegible] vaporization of the material. WEDM is being used to machine [illegible] hours of manual grinding and polishing in making [illegible]

[illegible] main process parameters in WEDM are pulse on-time (Ton), pulse off-time [illegible] material and types of electrode wire. Pulse on-time is the duration of time [illegible] removal is directly proportional to the amount of energy applied [illegible] current and the length of the on-time. Pulse off-time is the duration of time [illegible] allows the molten material to solidify and to be [illegible] the cut. Thus, if the off-time is too short, it will [illegible] during the process of EDM, it may be called [illegible] dielectric medium.

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ANOVA based optimization of process parameters for Electro Discharge Machining of D2 Stainless Steel

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Abstract: Wire-cut electrical discharge machining is extensively used for machining of difficult to machine materials and intricate profiles when precision is of prime importance. Wire-cut electrical discharge machining allowed success in the production of newer materials, especially for the aerospace and medical industries. Being a complex process, it is very difficult to determine optimal process parameters for improving cutting performance. The objective of this research work is to study the effect of machining parameters of wire-cut electrical discharge machining on D2 Stainless steel. The experimentation has been carried out to investigate the effect of machining process parameters such as pulse on time, pulse off time and feed rate of wire on material removal rate and surface roughness. The thickness of work piece material and diameter of copper wire is kept constant. It is evident from present study that input parameters have significant influence on process performance characteristics. The experimentation was executed as per Taguchi robust design methodology. L9 orthogonal array of experimental design were used to perform the experiments. Analysis of variance (ANOVA) were employed to optimize the material removal rate and surface roughness. Based on analysis it was found that pulse on time, pulse off time are the significant parameters that effect the MRR and surface roughness. The investigation indicated that material removal rate and surface roughness increases with increase in pulse on time and decreases with increase in pulse off time.

Keywords: Electric Discharge Machining, **L9 Orthogonal array, Signal to Noise ratio, Material removal rate, Surface Roughness, T-on and T-off time, Feed Rate.**

I. INTRODUCTION

Wire-cut electrical discharge machining (WEDM) is a non-traditional manufacturing process based on removing material from a part by means of a series of recurring electrical discharges (created by electric pulse generators at short intervals) between a tool calledelectrode and the work piece in the presence of a dielectric fluid. This fluid makes it possible to flush eroded particles (mainly in the form of hollow spheres) from the gap and it is really important to maintain this flushing continuously.

WEDM has potential applicability in machining industries for achieving good accuracy and surface finish, and contour generation. The drawbacks of EDM processes are overcome in WEDM process by replacing different tools with wire. Due to accuracy andfine surface finishes make WEDM is particularly suitable for manufacture of dies and prototype parts. In WEDM, pulsating direct current power supply between the electrodes (work and tool material) generates an electric sparks, which causes melting, and vaporization of the material. WEDM is being used to machine variety of conductivematerials at miniature levels. It can reduce many hours of manual grinding and polishing in making precision parts.

The main process parameters in WEDM are pulse on-time (Ton), pulse off-time (Toff), arc gap, dielectric fluid, work piece material and types of electrode wire. Pulse on-time is the duration of time (μs) the current is allowed to flow per cycle. Material removal is directly proportional to the amount of energy applied during this on-time. This energy is really controlled by the peak current and the length of the on-time. Pulse off-time is the duration of time (μs) between the sparks (that is to say, on-time). This time allows the molten material to solidify and to be wash out of the arc gap. This parameter is to affect the speed and the stability of the cut. Thus, if the off-time is too short, it will cause sparks to be unstable. Arc gap is the distance between the electrode and the part during the process of EDM. It may be called as spark gap. The dielectric fluid is a catalyst conductor, coolant and also a flushing medium.

About the Author

Sarfaraz Karim was born in Bokaro Steel City, Jharkhand on Dec. 23, 1979, son of Sheikh Fazale Karim and Amina Khatun. He entered the Department of Management at the Hamdard University (Delhi), in July 2003, receiving a Master of Business Administration (MBA) degree in July 2005. Sarfaraz enrolled in Shri Venkateshwara University in March 2013 for his Doctorate Degree and earned his **Ph.D. in the field of Management** in June 2016. He is having more than 10 years of experience in academic and corporate field. Sarfaraz has worked with Wollega University (Ethiopia) where he served the university as a lecturer for four and half year. He also served as a research and training coordinator at the university level. Sarfaraz is also an author/coauthor of six research article which was published in the reputed journal. He has also worked with GEMA (Global Entrepreneurship and Management Academic) as a faculty and Karvy Stock Broking Ltd. as a relationship manager. Sarfaraz loves reading, travelling and cricket. He is married and has two adorable daughters. He is looking for enchantment of his teaching and learning process in a scientific manner by utilizing his experience and qualification.

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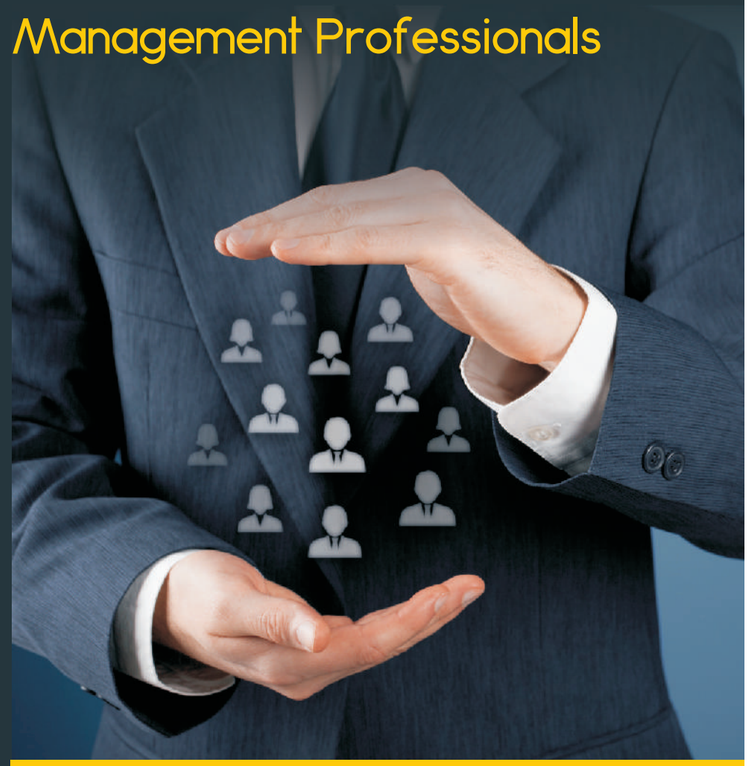

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