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Performance Enhancement Over Wireless Mobile Adhoc Network

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Abstract: face detection research confronts the full range of challenges found in general purpose, object class recognition. However, the class of faces also has very apparent regularities that are exploited by many heuristic or model-based methods or are readily "learned" in data-driven methods. One expects some regularity when defining classes in general, but they may not be so apparent. Finally, though faces have tremendous within-class variability, face detection remains a two class recognition problem (face versus non face). The system correctly classified expressions for each individual using only still images. It distinguishes 3 expressions (Happiness (HA), surprise, anger, and fear) precisely and identifies 1 other, Happiness by the Average Recognition Rate accuracy of 85.25%. Also many people made mistake identifying surprise from happiness. According to Carlo research Surprise is mis-recognized as happy. Following this information, Output membership functions are built and clearly depicted some expressions due to the mentioned facts. Experimental results demonstrate the superiority of the proposed method to existing ones.

Keywords: IEEE 802.11 media-access, Data packet, Mobile Ad Hoc Environments, mobile communications. Multicasting, broadcasting.

I.INTRODUCTION

Ad hoc networks are a key factor in the evolution of wireless communications. Self organized adhoc networks of PDAs or laptops are used in disaster relief, conference, and battlefield environments. These networks inherit the traditional problems of wireless and mobile communications, such as bandwidth optimization, power control, and transmission- quality enhancement [1]. In addition, their multi hop nature and the possible lack of a fixed infrastructure introduce new research problems such as network configuration, device discovery, and topology maintenance, as well as ad hoc addressing and self-routing. Communication between two hosts in an ad hoc network is not always direct it can proceed in a multi hop fashion so that every host is also a router [2]. Ad hoc network hosts can use protocols such as the IEEE 802.11 media-access control standard to communicate via the same frequency, They can apply Bluetooth or other frequency hopping technology. Because power consumption is directly proportional to the distance between hosts, direct single-hop transmissions between two hosts can require significant power, causing interference with other such transmissions [3].

II.RELETED WORK

Chao Gui, and Jian Li describe various techniques for group communications in ad hoc networks, including multicasting, broadcasting, any casting, and geo casting and discuss representative protocols for each of these categories[4]. They also provide an overview of related issues such as protocol design, state maintenance, and performance; examine issues such as reliability, power conservation, quality of service, and security; and comment on future research directions for group communications in ad hoc networks

In Year 2002 Reputation-based systems are a new paradigm and are being used for enhancing security in different areas. These systems fare lightweight, easy to use and are capable of facing a Wide variety of attacks. Among these mechanisms, core, confidant and ocean gain a special mention. Reputation based systems do not rely on the conventional use of a common secret to establish confidential and secure communication between two parties. Instead, they are simply Based on each other's observations. Reputation based systems are used for enhancing security in adhoc networks as they model cooperation between the nodes which is inspired from social behavior [4,5]. Such systems are used to decide whom to trust and to encourage trustworthy behavior. Resnick and Zeckhauser identify three goals for reputation systems: To provide information to distinguish between a trustworthy principal and an untrustworthy principal [6].

In Year 2003-To encourage principals to act in a trustworthy manner to discourage untrustworthy principals from participating in the service the reputation mechanism is present to protect. Watchdog and Path-rater are some essential components of any typical reputation based ids. Watchdog performs the activity of monitoring its neighborhood and based on these observations, pathrater ranks the available path in route cache. Misbehavior detection and reputation-based intrusion detection may be either distributed or local. Here, fully distributed means that information regarding one's reputation change is immediately propagated in the whole network. In the latter case, called local reputation based systems, nodes are fully dependent on their personal opinion about other nodes' reputation and behavior [7].

In Year 2004 Distributed ids protocols rely only on first-hand information with optional second-hand information. core proposed by P. Misheard and confidant proposed by Buchegger and Le Boudec fall into this category. Some basic problems with this approach of global reputation systems are Every node has to maintain O(n) reputation information where n is number of nodes in network. Extra traffic generation in reputation exchange. Extra computation in accepting indirect reputation information (secondhand information) esp. Bayesian Estimation. Confidant detects misbehaving nodes by means of observation or by Alarm signals from neighborhood. It aggressively informs nodes in neighborhood about misbehavior of the malicious node [8].

In Year 2005 The weight age of Alarm warning signal depends upon the level of trust of receiving node about the sending node. In addition, it uses bayesian estimation for various Measures and calculation of trust and reputation and thus, the ids becomes complex. Confidant is vulnerable to false accusations if trusted nodes lie or if several liars collude. Core proposed by P. Michiardi et. al. uses a mechanism to enforce node cooperation in manets[9]. In this mechanism, Reputation is a measure of someone's contribution to network operations. Members that have a good reputation can use available resources while members with a bad reputation cannot, because they refused to cooperate earlier and are gradually excluded from the community [10]. core three types of reputation Subjective reputation is a reputation value which is locally calculated based on direct observation. Indirect reputation is second hand reputation information which is established by other nodes. Functional reputation is related to a certain function, where each function is given a weight as to its importance[11]. For example, data packet forwarding may be deemed to be more important than forwarding packets with route information, so data packet forwarding will be given greater weight in the reputation calculations [4,12].

In Year 2006 -Core reputation values range from positive (+1), through null (0), to negative (-1). core from the problem of unwanted consequence of good reputation, where a good node may even wish to decrease its reputation by behaving badly to prevent its resources being over-used. The core mechanism assumes that every node will use the same reputation calculations and will also assign the same weights to the same functions [13]. This is a potentially inappropriate assumption in heterogeneous adhoc networks, where devices with different capabilities and roles are likely to place different levels of importance on different functions depending upon cpu usage, battery usage etc.One can take advantage of this situation and may perform only those functions which have higher preferences in calculating reputation [5,14].

In Year 2007 -The second type of ids may be categorized as local systems. They solely depend upon the first hand observation of their neighbors for reputation maintenance. Ocean by Bansal and Baker falls into this category. In these systems, nodes make routing decisions based only on direct observations of their neighbor nodes. This eliminates most of the trust manager complexity, but, doesn't well to a highly mobile adhoc network. In such a network, it may be difficult for the reputation upgrading process to cope up with the node mobility and it might not be appropriate to depend solely upon personal observation. Also, using secondhand information can significantly accelerate the detection and subsequent isolation of malicious nodes in manets [6,15].

In Year 2008, The articles in this special issue review emerging ad hoc networking technologies, techniques, algorithms, and protocols, with emphasis on recent developments offering potential solutions to problems encountered in these networks. In "Cooperative Cache-Based Data Access in AdHoc Networks," Guohong Cao, Liangzhong Yin, and Chita Das propose efficient solutions to the data-caching problem [16].

In Year 2009, In cooperative caching, some nodes in an ad hoc network replicate data from servers, using replicated files rather than original files to satisfy other nodes' access demands. This should reduce traffic in the network or even provide service if the server becomes disconnected in the meantime. The proposed solutions include caching data paths toward replicated copy, making another copy of data at the node, and using some novel hybrid methods [8].

In Year 2010 An emerging area of research in sensor networks is area coverage and monitoring. In "Energy- Efficient Area Monitoring for Sensor Networks," Jean Carle and David Simplot-Ryl classify sensor data reporting into two categories: event-driven and on-demand. They propose dividing the area monitoring problem into three sub problems, each of which requires an energy-efficient solution. These sub problems consist of constructing a broadcast tree (request propagation), selecting sensors for area coverage, and reporting sensor data with data aggregation. The protocols implement periodic changes in sensor roles to extend network life [9,16].

In Year 2011 The proposed solutions use dominating sets and Localized minimal spanning trees. In "Cross-Layering in Mobile Ad Hoc Network Design," Marco Conti and coauthors describe a European project that overcomes manet performance problems by allowing protocols belonging to different layers to cooperate, sharing network status information while still maintaining separate layers. The authors propose applying triggers to the Network Status so that it can send signals between layers. This lets each layer maintain network information and adapt its performance accordingly [10].

In Year 2012 This innovative cross-layering approach addresses, in particular, security and cooperation, energy management, and quality-of-service issues. Many potential mobile ad hoc network applications involve collaboration among a group of nodes. Group communication models include one to- many, one-to-any, many-to-many, and one to all patterns that facilitate collaboration among a group of nodes [17].

III.PURPOSE of RESEARCH

Challenges in MANET

(1) Data communication problems include. Routing—sending a message from a source to a destination node, Broadcasting—flooding a message from a source to all other nodes in the network,

(2) Multicasting—sending a message from a source to a set of desirable destinations,

(3) Geocasting—sending a message from a source to all nodes inside a geographic region, and

(4) Location updating—maintaining reasonably accurate information about the location of other nodes.

(5) Limited wireless transmission range: In case of wireless network the radio band will be limited as compared to wired network so that wireless network protocol are required keeping the low overhead as possible for using bandwidth always in optimal manner.

(6) Asymmetric links: It supported asymmetric link that mean node X send a signal to Node Y very good but reverse direction node Y to X is not be good.

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(7) Battery constraints: To maintain portability, size, and weight of the device because wireless network have limitation on the power source.

(8) Packet loss due to the transmission errors: In case of wireless network much packet loss due to factors such as high bit rate in the wireless channel , hidden terminals, interfaces, unidirectional links ,due to the mobility of the network.

(9) Mobility induced route changes: wireless network supported highly dynamic topology due to the movement of nodes, hence paths frequently breaks. This condition leads to fast route changes in wireless ad hoc networks (MANET) [1,3].

(10) Routing overhead: Nodes often to change their location within wireless network so that some stable routes are generated in the routing table which leads to unnecessary routing overhead in wire-less mobile ad hoc network (MANET) [1].

IV. EXPERIMENT.and.IMPLEMENTATION. SIMULATION ENVIRONMENT

The goals of Rate Estimation TFRC (RETFRC) are to reduce MAC layer congestion, reduce TFRC loss event rate and average round-trip time, and improve throughput without changing. The MAC layer protocol. The first step is a detailed analysis of RETFRC performance in a seven hop simulation. This is followed by simulation experiment results where the number of hops is varied from 4 to 15 and other simulations where three flows generate the offered load. The section concludes with a study of the behavior of the RE TFRC in typical Bit Error Rate (BER) network environment [9].

A. PERFORMANCE IMPROVEMENT

A seven hop chain topology was used to compare a standard TFRC implementation against the Rate Estimation TFRC (RETFRC) algorithm. Since the RTS back off mechanism drops an RTS frame after seven consecutive collisions, this event represents a packet loss as seen by TFRC. The Cumulative Density Function (CDF) for RTS retransmissions for the two simulations [4]. The x-axis is the number of RTS contention back offs from 0 to 7 where 0 implies no collisions and 7 means TFRC will see this as a loss event. Figure 8 shows that TFRC has a 89% chance of not having to retransmit an RTS while RE TFRC, has a 93% chance of not having to retransmit an RTS, so RE TFRC will experience less back off delay. Since the back off algorithm causes exponential growth in back off delay with an increase in the number of retransmissions, the seemingly small differences in the CDF curves represent significant changes in the contention delay. The reduced collisions result in a lower loss event rate and round-trip time and a smoother sending rate for RE TFRC.

MULTI-HOP PERFORMANCE EVALUATION

The next evaluation of RE TFRC involves varying the number of wireless hops from 4 to 15. Figure 1. shows the improvement of MAC layer loss rate for RE TFRC. The MAC layer drop ratio is reduced by between 13% to 66% compared to TFRC. Figure 10 demonstrates that the round-trip time of RE TFRC is 5% to 40% lower than that of TFRC, and Figure 11 shows that the RE TFRC loss event rate is 8% to 55% less than that of TFRC. From the results of multi-hop simulations, RE TFRC also shows up to 5% throughput improvement over TFRC when the number of hops is increased from 5 to 15.

C.MULTI-FLOW PERFORMANCE EVALUATION

This section considers situations where three flows are providing the offered load. Table II shows RE TFRC reduces the MAC layer drop rate, TFRC loss event rate and average roundtrip times significantly. However, RE TFRC has little effect on throughput in the multi-flows scenarios [14]. The "-" in the table means the difference is less than 1%.

D. BIT ERROR RATE EVALUATION

The Bit Error Rate (BER) in wireless networks is usually higher than in wired networks. Typical BER ranges from 10^{-6}

RETFRC IMPROVEMENT FOR MULTI-FLOW ENVIRONMENT

Table.1

Hops	7-hop	15-hop

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MAC drop fraction reduction	60%	90%
RTT reduction	35%	56%
Loss rate reduction	60%	82%
Throughput improvement	-	-

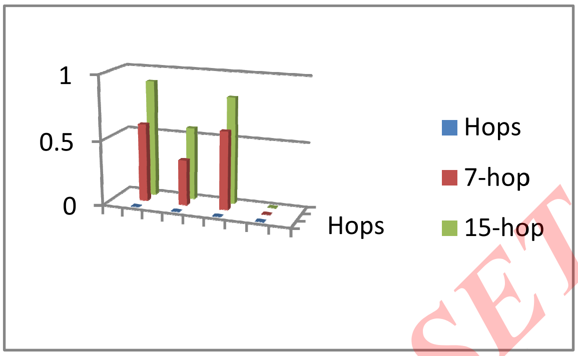

Figure.1. Performance Evaluations

V.PERFORMANCE EVALUATIONS AND RESULTS

(a) Throughput: The total bytes received by the destination node per second (Data packets and Overhead).

(b) In terms of Number of Packets:

The ratio of the total number of data packets that are sent from the source to the total number of packets that are transmitted within the network to reach the destination [14].

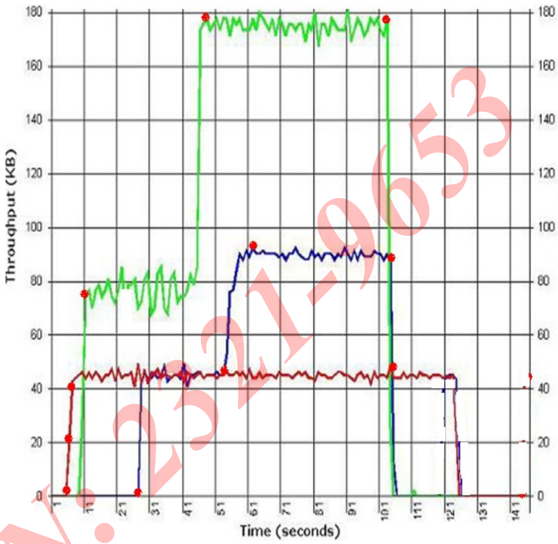

Figure.2. Performance Evaluations

VI.APPLICATIONS OF MOBILE AD HOC NETWORK

(1) Sensor networks: Smart sensor nodes and actuators can be buried in appliances to allow end user to manage home devices locally and remotely. Environment application includes tracking the movements of Animals chemical/biological detection, precision agriculture. Tracking date highly correlated in time and space e.g. remote sensors for weather, earth activities [1]
(2) Tactical networks: Military communication, operations, auto-mated battlefields [2].
(3) Home and Enterprise networking: home/office wireless networking (WLAN) e.g. shared whiteboard application Use PDA to print anywhere trade shows Personal area networks (PAN)[2].
(4) Emergency services: search and rescue operations, as well as disaster recovery e.g early retrieval and transmission of patient data (record, status, diagnosis) from the hospital. Replacement of a fixed infrastructure in case of earthquake, hurricanes fire etc.
(5) Vehicular services: Transmission of news, road condition, weather, music, Local ad hoc network with nearby vehicles for road/accident guidance[1, 2].

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(6) Educational applications: Setup virtual classrooms or conference rooms and ad hoc communication during conferences, meetings, or lectures [1, 3].
(7) Entertainment: Multi user's games, robotic pets, outdoor internet access.[1]
(8) Location aware services: automating call forwarding, transmission of the actual workspace information services such as ad-vertise location specific, location dependent travel guide services like printer, fax, phone, and server [2].

VII.CONCLUSION

The advantages of on-demand and optimized link-state routing for wireless sensor networks. in "Prioritized Overlay Multicast in Mobile Ad Hoc Environments," Li Xiao and coauthors propose a model that improves the efficiency and robustness of overlay multicast in mantes by building multiple role-based prioritized trees, possibly with the help of location information about member nodes. Like P2P networks, POM forms a virtual network, consisting of only member nodes, on top of the physical infrastructure. Member nodes can form a short-term multicast group to perform certain important tasks. Overlay trees can have different levels of priority depending on the importance of the service they perform.

VIII. FUTURE WORK

In future scope, data packets are stored in a queue until a route to the destination is found. Once a route becomes available, all packets in the queue for the destination are immediately transmitted. (Although we did not test it, an infinite queue in DSR should perform in a similar manner.) If data packet delivery ratio was the only important performance metric, we would set the time to hold packets awaiting routes to infinity.

REFERENCES

1.Performance Measurement of Various Routing Protocols in Ad-hoc Network, Md. Anisur Rahman, Md. Shohidul Islam, Alex Talevski,Proceedings of the International Multi Conference of Engineers and Computer Scientists 2009,1, IMECS 2009, March 18 - 20, 2009, Hong Kong.

1. Sachin Kumar Gupta and Dr. R. K. Saket, protocols in Mobile Ad-hoc Networks, In proceedings of the International Conference on Electronics, Information and Communication Engineering; Jodhpur (Rajasthan) India. pp. 1-5, 28-30 March 2011.

2. Satya Dharanipragada, et.al206, Gaussian mixture models with covariance s or Precisions inshared multiple subspaces, IEEE Transactions on Audio, Speech and Language Processing,vol.14, no.4

3. Yifan Gong, 1997 Stochastic Trajectory Modeling and Sentence Searching for continuous Speech Recognition, IEEE Transactions On Speech And Audio Processing, vol.5,no.1,.

4. Kevin M.Indrebo, et.al, 2008 Minimum mean squared error estimation of mel-frequency cepstral co-efficients using a Novel Distortion model, IEEE Transactions On Audio,Speech AndLanguage Processing, vol.16, no.1,.

5. Mohit Dua, R.K.Aggarwal, Virender Kadyan and Shelza Dua, 2012. Punjabi Automatic SpeechRecognition Using HTK, International Journal of Computer Science Issues, vol.9, no.4,

6. Deepali Y Loni, 2012 *DSP* Based Speech Operated Home Appliances Using Zero Crossing Features, Signal Processing: An International Journal, vol.6,no.2,.

7. Sadaoki Furui, 2005 years of Progress in speech and Speaker Recognition Research, ECTI Transactions on Computer and Information Technology,vol.1, no.2,

8. Min Tang, 2005 Large Vocabulary Continuous speech recognition using linguistic features and constraints, Massachuestts institute of Technology.

9. J. Ortega-García, , J. González-Rodríguez, , and S. Cruz-Llanas 2010 speech variability in automatic speaker recognition systems for commercial and forensic purposes IEEE Transactions On Speech And Audio Processing,

10. V. Anantha Natarajan S. Jothilakshmi 2012 Segmentation of Continuous Speech into Consonant and Vowel Units using Formant Frequencies International Journal of Computer Applications (0975 – 8887) Volume 56– No.15, October 2012

11. Z. Gong, X. Gu, and J. Wilkes, "PRESS: PRedictive Elastic ReSource Scaling for cloud systems," in Proc. IEEE CNSM, 2010.

12. A. Kalbasi, D. Krishnamurthy, J. Rolia, and M. Richter, "MODE: Mix driven on-line resource demand estimation," in Proc. IEEE CNSM, 2011.

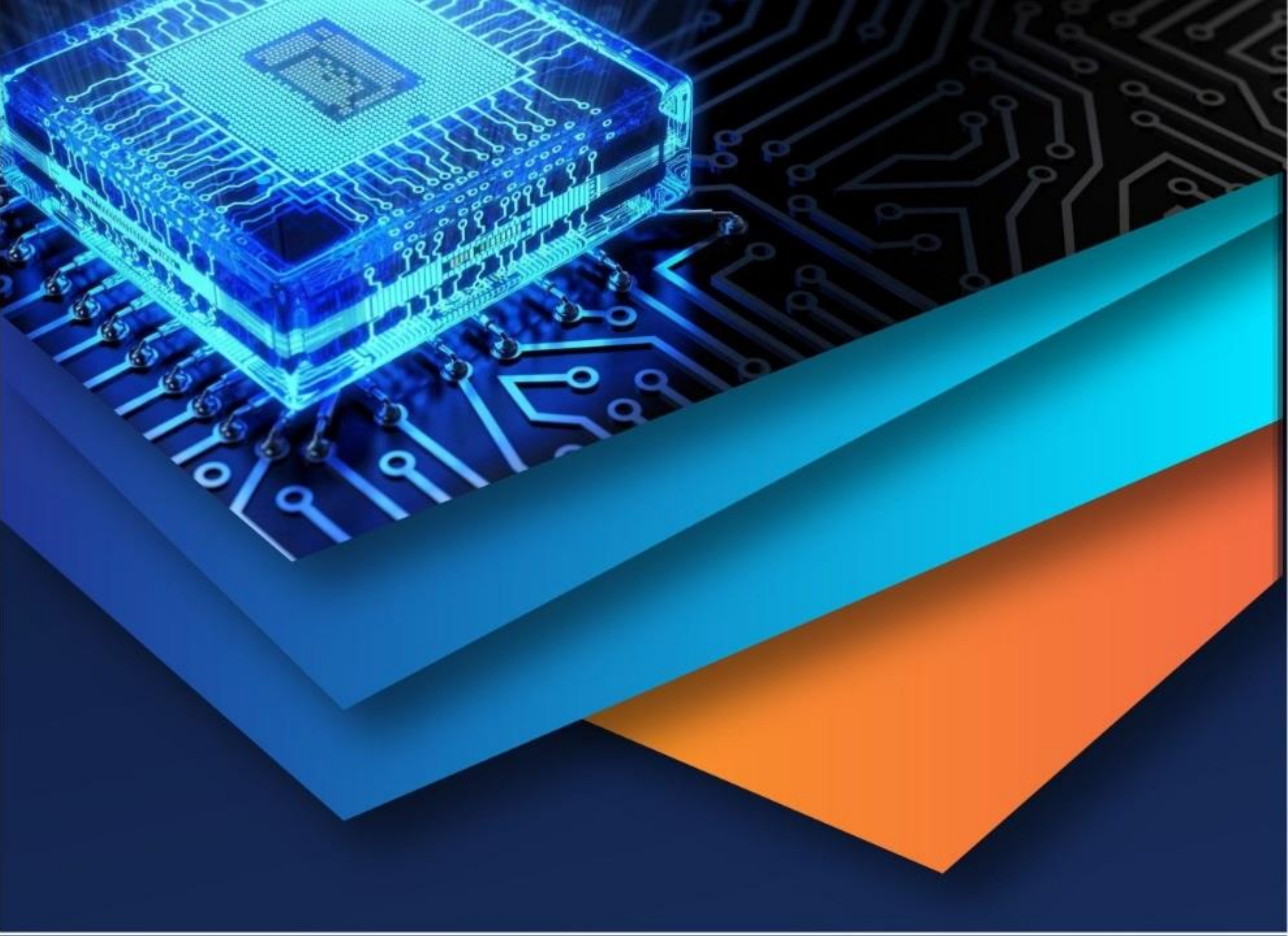
13. Z. Shen, S. Subbiah, X. Gu, and J. Wilkes, "CloudScale: Elastic resource scaling for multi-tenant cloud systems," in Proc. ACM SoCC, 2011.

15.A.-M. Kermarrec, L. Massoulie, A. Ganesh, Probabilistic reliable dissemination in large scale systems, IEEE Transactions on Parallel and Distributed Systems 14 (3) (2003) 248–258.

ISSN: 2321-9653

16.Chandra, V. Ramasubramanian, K. Birman, Anonymous gossip: improving multicast reliability in mobile adhoc networks, in: Proceedings of 21st International Conference on Distributed Computing Systems (ICDCS), 2001, pp. 275–283.

17. Y-D. Lin and Y-C. Hsu, "Multihop Cellular: A New Architecture for Wireless Communications," Proc. IEEE Infocom 2000, IEEE Press, 2000, pp. 1273-1282.



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