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Understanding the Role of E-Governance Challenges in Evacuation Response for Building a Safe and Secure Community

Ms. Supriya Priyadarshini Prusty[1], Mr. Santosh Kumar[2], Ms. Parna Sarkhel[3]
[1]*M. plan Student,* [2]*Assistant Professor,* [3]*Lecturer, Odisha University of Technology and Research, Bhubaneswar*

Abstract: ***This study aims to understand the role of e-governance services for evacuation response using advanced technologies. Disasters are an inseparable part of human life and have always afflicted civilizations. In a cyclone prone area like Balasore district of Odisha, people are facing a lot of problems in their livelihoods before and aftermath of the disastrous situations. Even with the advent of new technologies, natural hazards are still causing environmental destruction, human suffering, and social and economic disruption. There is necessity of utilizing technologies to facilitate vital information integration and sharing among disaster responders and organizations. While geographic information systems (GIS) can provide information on the static locations of critical infrastructure and evacuation routes, they do not provide the dynamically changing locations of things and people on the move. In contrast, radio frequency identification (RFID) wireless network technology can automatically identify and track the movement of assets (i.e., fire engines, ambulances, and rescue workers) and vulnerable citizens on the move (i.e., the elderly and the disabled), and hence providing local governments and communities with real-time information and enhanced decision-making capabilities, during chaotic disaster response operations (i.e., evacuation). So, we need to understand the e-government services needed to build regional disaster preparedness, as an integral part of e-government development policy.***
Keywords: Evacuation, RFID Technology, Regional disaster, GIS (Geographic information system)

I. INTRODUCTION

E-governance is defined as "the application of ICT to transform the efficiency, effectiveness, transparency and accountability of exchange information and transaction between government, between government agencies, between government and citizens, between government and business. Through e-governance, government services will be made available to citizens in a convenient, efficient and transparent manner.

1) The "e" in e-governance stands for "**electronic**". The term e-governance came into existence with the advent of government websites in late 1990s.
2) A well-defined and comprehensive system of information forms the core of the e-governance.
3) Electronic governance acts as an important tool for good governance in making democracy meaningful through interactive communication and exchange of information among various stakeholders.
4) In the e-governance framework, the citizen is put at the center stage and is encouraged to participate in the process of governance.
5) Disasters are an inseparable part of human life and have always afflicted civilizations. Even with the advent of new technologies, natural hazards are still causing environmental destruction, human suffering, and social and economic disruption. There is necessity of utilizing technologies to facilitate vital information integration and sharing among disaster responders and organizations.
6) Providing precise and timely information can highly help both disaster managers and healthcare managers to make appropriate decisions.Different Information and Communication Technologies (ICT) have been employed to support healthcare in disasters, and Disaster e-Health (DEH) has been recently defined by researchers as a systematic way of integrating e-health technologies into the Disaster Management Cycle (DMC).

II. STUDY AREA

Balasore District also known as Baleswar District or Baleshwar District, is an administrative district of Odisha state, in eastern India. Balasore is one of the coastal districts of Odisha and lies on the northernmost part of the state. Balasore is said to have got its name through the regional derivation of the word Baneswar, from Lord Baneshwar (Lord Shiva), the presiding deity of the town.

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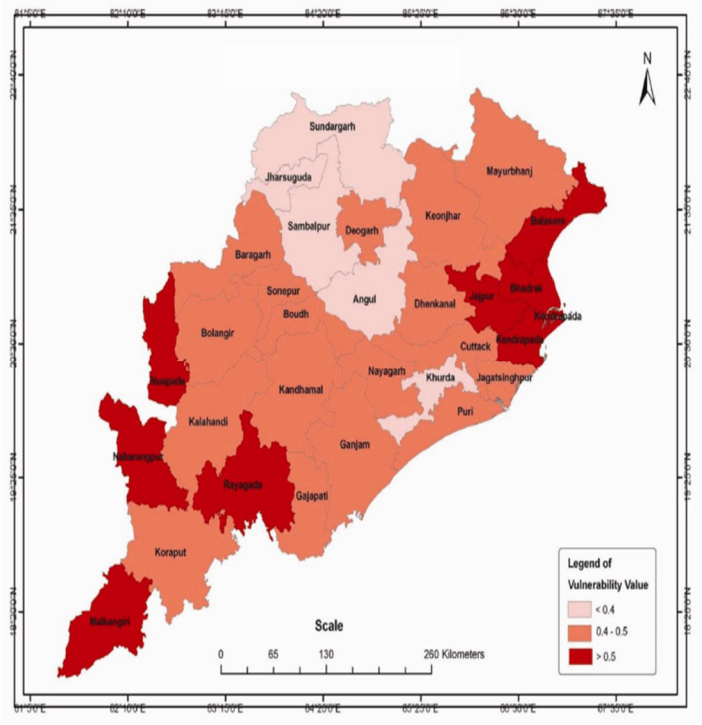
Table 1. Study area profile

STUDY AREA PROFILE	
Study Area	3634 sqkm.
No.of Blocks	12
Total Population	23,17,419 (Census 2011)
Population Density	609 /sqkm

A. Study Area Justification



Map 1: Showing the Disaster Prone area of Odisha District Map

1) We can observe from Map 1 that, the most disaster prone districts of Odisha are, Balasore, Bhadrak, Jajpur, Kendrapada, Nabarangpur, Rayagada & Malkanigiri.
2) Among the districts, Balasore district is highly vulnerable to multiple disasters. Due to its sub-tropical littoral location, the district is prone to tropical cyclones, storm surges and tsunamis. Its densely populated coastal plains are the alluvial deposits of its river systems.
3) So, in this study, we will focus on the evacuation response for Balasore district using the e-governance services.

III. METHODOLOGY

To accomplish the study two types of techniques have been used for data collection and analysis.

A. Primary Survey

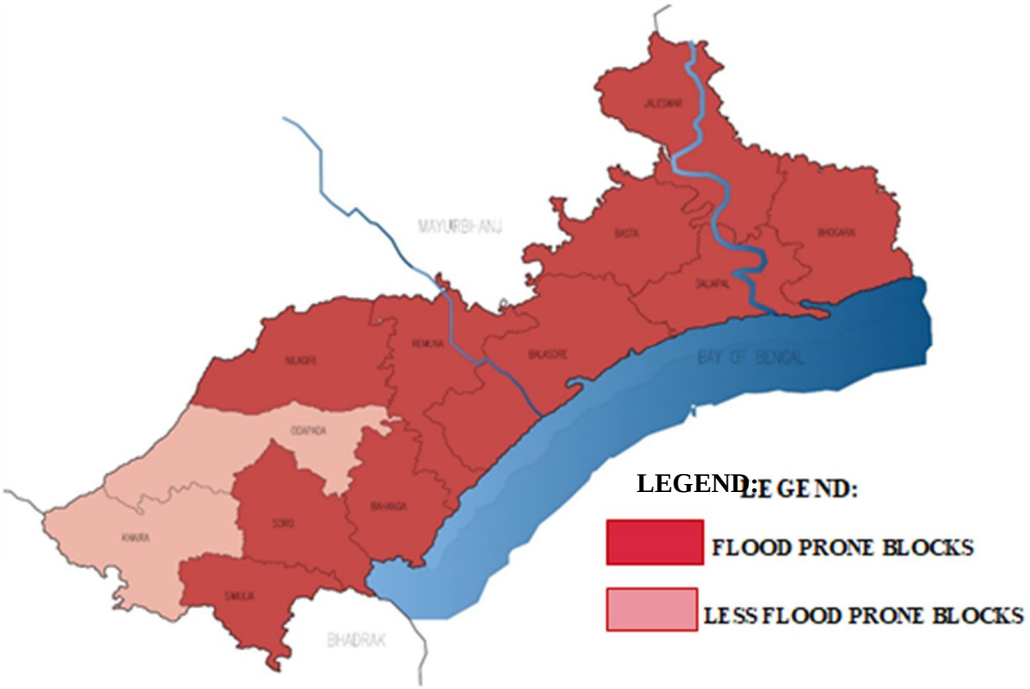
1) To know about the past natural hazards (flood & cyclone) occurred in the district and steps taken by the government i.e. e-government services to evacuate and recover people and community.
2) To observe the working conditions of the Multi-purpose Cyclone & Flood shelters provided by the government.

B. Secondary Survey

1) To collect data of the population, livestock & infrastructure that are affected in the past disastrous situations.

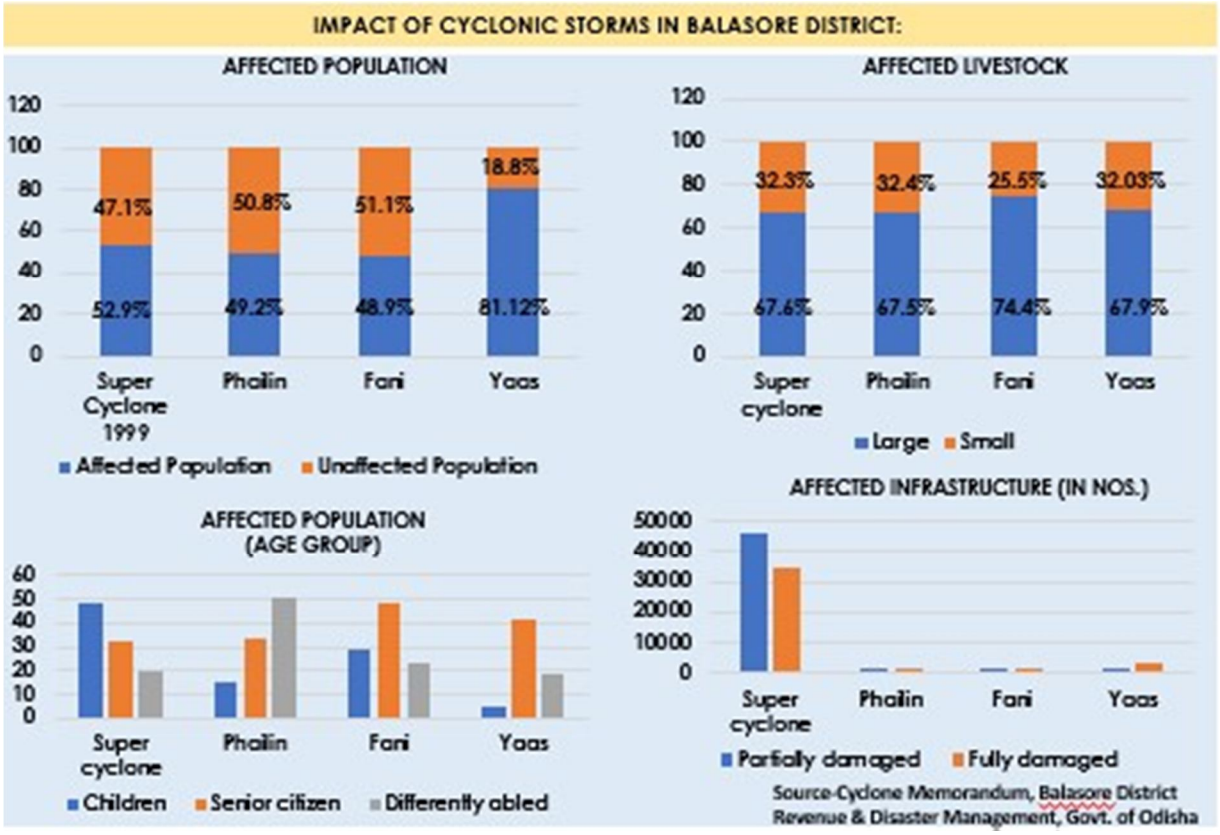
IV. DATA COLLECTION & ANALYSIS

A. *Vulnerability Analysis of Cyclone in Balasore District*

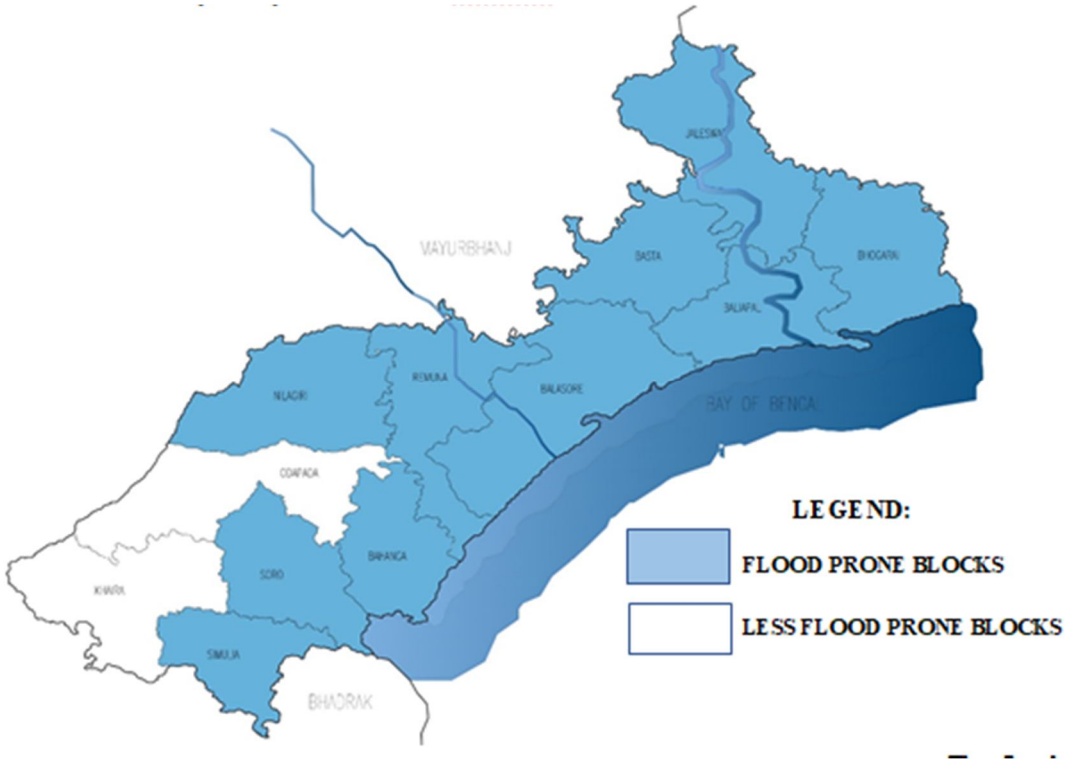


Map 2: Showing the cyclone prone blocks of Balasore District

- The cyclone prone blocks of the district are Basta, Balasore, Odapada, Khaira, Simulia, Jaleswar, Bhogarai, Baliapal, Soro, Bahanga, Remuna, Nilagiri



B. Vulnerability Analysis of Flood in Balasore District



Map 3: Showing the flood prone blocks of Balasore District District Map

- The flood prone blocks of the district are Basta, Balasore, Odapada, Khaira, Simulia, Jaleswar, Bhogarai, Baliapal, Soro, Bahanga, Remuna, Nilagiri
- The total population affected from flood is 11% of the total population.
- The total houses affected from flood are 7.9% of the total houses existing in Balasore district.

C. Disaster Management in Balasore District

1) Warning dissemination to the list of Nodal person & concerned BDOs
2) Recording the receipt of information & regular Status update
3) Transmitting updates to SEOC in regular interval as instructed
4) Collector to take up a department coordination meeting & distribute works among all the Departments
5) Collector issues circular to keep Govt. offices open cancelling all holidays.
6) A fixed time to be finalized every day for reporting at all level.
7) A nodal officer is identified for media management Circulate the minutes of the meeting with clear-cut role & responsibility
8) Identifying & designating Nodal Officer for different stages of disaster & affected areas.
9) Positioning of ODRAF/NDRF/Fire services/ Police/Home Guard in the affected areas
10) Pooling Volunteer services (Civil Defense/Task Force/NCC/NSS/Scout & Guide)
11) Take stake of required materials for search & rescue, first aid, casualty management, evacuation, relief etc.
12) Make necessary arrangements of shelters for evacuation
13) Constitute a special team for special care to vulnerable section like specially abled, Sr. Citizen, Pregnant & lactating women, Infants & children, etc.
14) EOCs to Ensure back up (Power/Fuel/internet/ Communication at Dist./Dept. & Block levels
15) Response force under guidance of Nodal officers ensure complete Evacuation (Human/ Animal), carry out Search & Rescue, clear relief lines
16) Collector to submit requisition of vehicle/boat/ helicopters & list of support from state & Centre to all concerned authorities

17) CSO to store required relief materials (Dry Foods) in the nearby storage points
18) CDVO to store, transport & distribute required fodders for animals to the affected areas
19) Cyclone shelter committee & Village Disaster management committee to organize free kitchen in the shelters with help of revenue dept.
20) EE- RWSS & CDMO to ensure supply of drinking water, disinfection of water & maintain Health & hygiene in the shelters
21) CDMO to carry out First aid & casualty management
22) Collector to collect & transmit First Information Report (FIR) & Daily Situation Report as per requirement

D. Incorporation of E-Governance in Disaster Management

1) Pre-disaster

- Officer in charge of DEOC: The DEOC shall be in overall charge of Collector & District Magistrate
- The officer in charge of Emergency Operation Center shall be personally responsible for implementing the SOP (Standard operating procedure)

2) During-disaster

- Assembly in District EOC: Following staff and officers shall assemble in the DEOC on getting any information from any reliable source about any upcoming emergency / urgency
- DEOC need to be kept in readiness from all aspects during normal period and the following preparatory steps needs to be taken
- Alert message to be given to field officers like BDOs, Tahasildars, MOs, VAS, Police, Industries, etc.
- Civil Supplies Officer shall ensure availability of food stuff
- CDMO will take stock of the medicinal items through Health Emergency Operation Center
- Veterinary measures: CDVO will take stock of Cattle feeds and will contact immediately to MD, OMFED
- Boats: Requisition of boats within district through the Tahasildars of District
- Thorough assessment of relief items available in stock at different places
- Functional distribution of work shall be done

The Following functional distribution of works shall be done. Each team will have staff and resources. The team leader will have full powers to take decisions

- Transportation team
- Stock and store team
- Finance team o Information and office documentation team
- Food and other relief items team
- Civil Society and International Organizations
- co-ordination team

ODRAF & Fire Service shall be in close contact to assist the administration in clearing the relief lines (ODRAF-Odisha Disaster Rapid Action Force)
Regularly contact required with RDC (Revenue Divisional Commissioner), SRC (State Resource Center),) OSDMA (Odisha State Disaster Management Authority), IMD (Indian Meteorological Dept.), and Water Resources Dept. & Dam Safety Divisions for updates.

V. RECOMMENDATION & PROPOSALS

A. Proposal-1

Incorporation of RFID technology for enhancing the efficiency for better services of e-governance in disaster management Radio Frequency Identification (RFID) refers to a wireless system comprised of two components: tags and readers.
The reader is a device that has one or more antennas that emit radio waves and receive signals back from the RFID tag.
Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify and track tags attached to objects.
When triggered by an electromagnetic interrogation pulse from a nearby RFID reader device, the tag transmits digital data, usually an identifying inventory number, back to the reader. This number can be used to track inventory goods.

Need of incorporating RFID in disaster management

- There is necessity of utilizing technologies to facilitate vital information integration and sharing among disaster responders and organizations.
- Providing precise and timely information can highly help both disaster managers and healthcare managers to make appropriate decisions.
- Different Information and Communication Technologies (ICT) have been employed to support healthcare in disasters, and Disaster e-Health (DEH) has been recently defined by researchers as a systematic way of integrating e-health technologies into the Disaster Management Cycle (DMC).
- This integration can improve the performance of healthcare and the quality of the delivered services at the four stages of DMC: mitigation, preparedness, response, and recovery.

RFID applications can support disaster management and medicine, and its systematic integration into DMC could prepare healthcare organizations for disasters, facilitate disaster response activities, and support disaster recovery and mitigation tasks.

B. Proposal 2

To empower people and improve the citizen centric services

C. Proposal 3

For providing one stop online services

1) Autonomous driving

- The key component of any autonomous driving platform is surveilling vehicular road traffic.
- It is important to be capable of tracing paths around objects, and predict their locations and trajectories to discern and track the moving objects.
- Road Traffic Monitoring can be further divided into object segmentation, object tracking, and object recognition.

2) GPS for the visually impaired

- It is imperative that impaired people are able to navigate and move across their cities without any external supervision.
- The aim of this work is to improve navigation solutions for the visually impaired, specifically, problems with the heading given by the current GPS antennas.
- This heading is not reliable when the speed of the pedestrian or of the car is less than 10 km/h.

VI. CONCLUSION

1) Deploying RFID applications in e-government services are potentially useful in disaster mitigation and preparedness phases, mostly for the timely identification of resources and tracking their usage.
2) RFID can improve and facilitate data/information management.
3) Improving the quality and accuracy of medical resources assessment; - Analyzing the medical resources usage pattern
4) E-governance helps to transform the efficiency, effectiveness, transparency and accountability of exchange information and transaction, so we need to understand the importance and incorporate it in our daily life.

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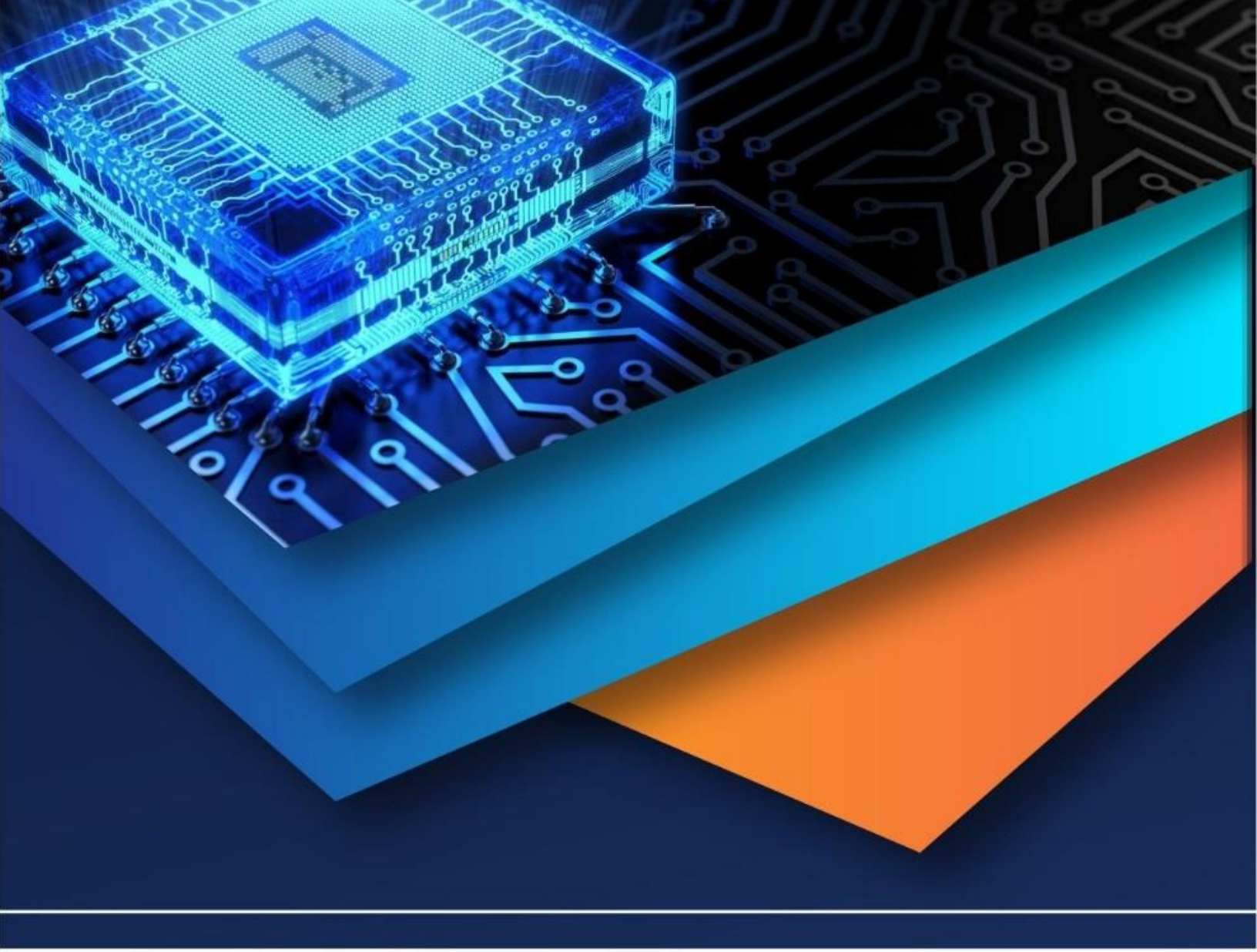

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