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Bridging Communication Gaps: Real-Time Sign Language Detection Platform

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Abstract: ***This paper adopts an interdisciplinary methodology that mixes digital education with disability theory to examine disabled children's digital use practices for educational purposes. Research indicates that children's lives have been revolutionized through interaction with digital technologies, i.e., computers, laptops and mobile phones. Nevertheless, empirical research on disabled children's uses of technology is still in its infancy, especially research that incorporates disabledown opinions in context. As a reply, an exploratory, participatory research investigation was undertaken with the aim to learn about up-to-date, visually impaired children, as a case study in point, having used digital technology for learning, in the situation of inclusive education policy. Disabled children and staff were interviewed in English mainstream schools; data were analyzed based on social practice theory to outline digital use practices defined as digital learning and digital accessibility practices in addition to children's experiences. Findings were mixed. Children perceived advantages in utilizing digital technology, specifically tablets, for educational purposes. However, digital accessibility practices were possibly stigmatizing and had an added task burden to overcome difficulties that arose when teachers had not established inclusive digital pedagogy. The paper addresses the implications of these findings and urges more research to lead schools to utilize digital technology to facilitate inclusion.***

Keywords: Digital Inclusion, Assistive Technologies for Education, Social Practice Theory, Teachers' Perceptions, Professional Development

I. INTRODUCTION

It is important that children with disabilities have the same opportunity to participate in society as their nondisabled colleagues. An i mportant part of this is how you can integrate them into your school to access the curriculum and create contacts. This involves the use of digital technology. Digital technology shows that it has changed the lives of children in the Global North. H. Computers, lapt ops, mobile phones. These developments have influenced learning and education, social life, friendship, and the acquisition of digita l skills and skills required to interact online effectively and safely (Ferrari, 2012). However, it did not focus on how children with di sabilities integrate digital technology into their daily lives, particularly research that interacts directly with children with disabilities. In education, it is often a specific intervention rather than an attempt to find a "real state" (Selwyn, 2011). This lack of research is h ardly surprising as research with children with disabilities is generally underdeveloped.

II. MOTIVATION

This part introduces the most important terminology to the central goals of this research. In this article, three central subgroups were distinguished. Technically enhanced learning, technology used in the learning process of children with special needs, and playbased learning and gamification in this field. TechnologyEncanced Learning (Tel) is the use of technology to accelerate the learning proce ss of students. The assumptions and fundamentals of a technically enhanced student-
centric learning environment are the terminology of information and communication technology (ICT) that emphasizes the telecom munications remedy capabilities of computer software that allow users to manipulate, store and access information. ICT is one of th e most important factors when the learning process of people with special needs is used to promote learning activities of people with special needs using ICT. It's the area. The authors discuss the conditions that provide learning techniques to people with autism and provide recommendations for designing new techniques and additional research. Attempts to improve the learning process of people with autism are not limited to software design. You can also find research into how people with special needs use computers. The a uthors of the large study conducted computer usage data from the parents of approximately 600 children with Down syndrome. Seri ous games have been found to be effective tools to improve your learning process. The potential for serious games as an effective an d motivational learning tool for people with intellectual disabilities is that the authors define challenges and opportunities in relation to gamer learning methods with a facet of gamification.

It is also being discussed. In primary schools, gamification models are used as learning strategies. The author analyzes the impact of computer games on students' scientific skills. The author examines the number of elementary school lessons for success in gamification. Technology can be used to access the information needed to support students with disabilities in order to successfully complete the learning process. For example, Audio Link is an interactive audio virtual environment for visually impaired students that promote learning science. Given these previous efforts, the experience of implementing technology in schools is considered positive. However, new research shows that technology is used to mimic previous teaching methods. The list of related tasks in this section shows that there is a real interest in the research community of research that examined how technology is used in the learning process of children with special needs.

III. LITERATURE SURVEY

Smart Education is a new way of teaching that uses technology to adapt lessons and makes it more accessible to everyone, including students with special needs. It is based on the idea that each student learns in his own way and at his own speed, and using technology to provide a personalized learning experience that meets each student's requirements.

There is growing evidence that wise education is used when supporting students with special needs. For example, a recent study conducted by the National Center for Educational Assessment and Community Support shows that students with disabilities, classroom skills, and autistic students working in the TaylorMade Learning Program at the University of California, Berkeley I did. Students are comprehensive needs:

Assistance technology integrated into intelligent education. These technologies play an important role in supporting communication, improving learning, and fostering active participation among students with different needs in integrated classrooms. Additionally, these assistive technologies allow for assessment of the education system, allowing students with disabilities to access the same foundation as their peers and interact with educational content to ensure a more integrated and equitable learning environment. This article contains intelligent education systems, curriculum orientation, data protection, inclusiveness, educational awareness, and the assistive technology built into tmain maintenance. Contains specific topics that are included. Providing fair access, personalized support, and smooth integration of assistive technologies is to create an integrated learning environment where students can learn and grow their disabilities. To close these gaps, collective measures by educational institutions, technology developers, political decision makers and disability activists are required to optimize the beneficial effects of assistive technologies on special needs. [1]. (Lewis, S., & Clarke, M. (2015). People with assistive technology and disabilities.)

A personalized learning plan (PLP) framework.) Personalized Learning Plans: In relation to personalized Learning Plans, intelligent education can adapt and optimize these plans in real time using data controlled intelligence and continuous assessment . Monitoring allows student development and interests to be built on individual strengths by adapting the curriculum to correct specific weaknesses. . Afterwards, wise education enables dynamic and oriented strategies that promote higher commitment, motivation and ultimately better educational outcomes for students, including students with special needs. However, there are some challenges. Personalized learning plans for intelligent education systems may meet student-

specific needs, but still present challenges. Successful implementation includes a range of learning styles, target facilities for resources, target facilities for monitoring and assessment strategies, and thoughtful attention to students' responses to changing needs. To close these gaps, teachers and institutions need to prioritize on continuous professional development, data control decisions, and adaptive lesson priorities so that individual plans can successfully address each student's different needs.

[2]. (Bashar, M., Rashid, M. M. & Jovanovic, J. (2019)

Adaptive Learning Platform: Adaptive Learning Platform uses data to adapt content and teaching approaches to the specific needs of a single student. It uses controlled algorithms to provide a personalized learning experience, making it particularly useful for students with disabilities. These systems are usually based primarily on quantitative information that may overlook qualitative characteristics of the student's learning process. education.

[3]. (Vanderheiden, G., Treviranus, J. & Iser, H. (2018)

Training Learners in the middle of training.) Mobile Learning: Mobile devices such as tablets and smartphones are intended to provide accessible and personalized educational content. It is being used more and more. Mobile learning applications provide learners with interactive and dynamic resources with a variety of disabilities. With its ability to provide personalized, accessible educational materials, tablets and smartphones are becoming increasingly popular for mobile learning. However, many are missing to ensure that mobile learning applications are truly accessible. Most applications may not be developed to meet accessibility and students with disabilities can stop.

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To close these gaps, developers prioritize the principles of universal design to create apps that are friendly to everyone, regardless of their capabilities, disability, disability, or disability, and It promotes a highly comprehensive mobile learning experience.
Smart education is not yet an established concept, but it has great potential to change the formation of students with special needs. S tudents with special needs can access assistive technology, tailor-
made learning plans and exciting learning experiences to achieve optimal levels. [4]. (Crompton, H. (2013). Historical Overview of Mobile Learning:

IV. METHADOLOGY

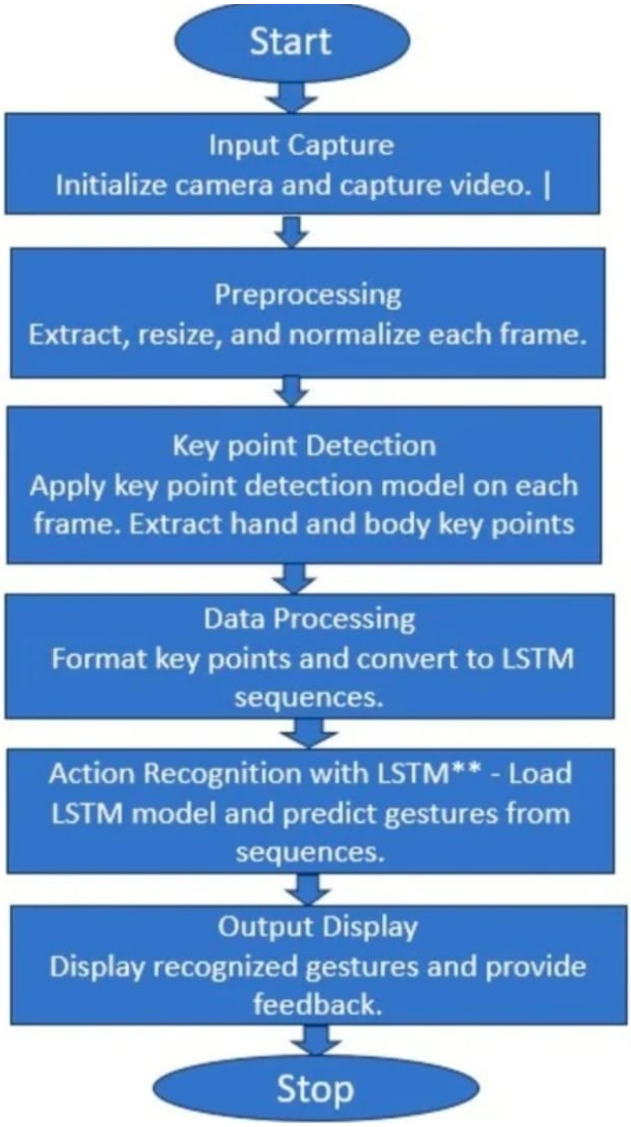

Fig.1 Block Diagram

The primary objective of this qualitative study is to know the attitude of special education teachers towards the application of technology in their classrooms and how they apply technology in their classrooms. Qualitative studies are intended to thoroughly examine and define a case (Fraenkel, Wallen, & Hyun, 2012; Yin, 2011) which represents the view and opinions of the participants (Yin, 2011). This way, a need analysis was done which gives details about the desired and actual state of the phenomenon or situation under research based on participants' views. Primary method of data collection was semi-structured interviews with school administrators and special education teachers. Data were transcribed and coded using constant comparative approach of qualitative data.

A. Technology use by teacher

In this category, technologyrelated codes are current teachers daily and in the classroom. All teachers said they know the technology they are today. From modern technology, it is related to desktops, laptops, tablet computers, internet, smart boards, projectors, mobi le phones. Apart from that, these technologies have access to school teachers for implementation in the classroom, and teachers impl ement them at home, especially on computers, the internet, mobile phones and mobile phones. This section of data shows that teach ers have the hardware, infrastructure, and knowledge needed to implement the technology. Follow your student performance within a specific time frame. Teachers use technology to pursue student performance during performance monitoring activities, students' vi deos are recorded and teacher's complete behavior checklists. These checklists are created on a computer, and teachers fill them up with either a laptop or a desktop computer. Teachers have found that students' videos recorded their recordings from measurement p oints to concepts and skills to another point, but they usually do this with observation rather than video recording.

The third code concerns how teachers use technology in schools and classrooms. Concept education and practice. They employ tech nology to reward students for successful implementation of learning activities or to provide feedback on the learning process. This is written in a comment by teacher answering students to questions about newly acquired concepts while computers provide feedback to students. Masu.

The fourth code in this category refers to teachers' experienced tasks using technology implementation in the classroom. Due to chal lenges in the use of technology in the classroom, the instructor reported two main challenges. The first financial challenge to acquiri ng and maintaining technology, and secondly, the lack of materials available for use in special school classes.

Some teachers say they will also use inadequate training that uses technical resources in the classroom.

Acquiring and maintaining school technology is a budgetary issue, and schools rely heavily on government funding to operate prope rly and compensate teachers. Therefore, not much money is provided to provide classroom technology, and teachers do not have eno ugh salaries to purchase technology with school funding. The teacher said, "To get these devices, you must first have financial stren gth. If you consider the situation of a teacher's salary, it is easy for the teacher to get them, assuming the situation is summed up. Not that." The second important issue of technical challenges is the lack of educational materials designed for special education audienc es. Teachers said that materials can be accessed on the Internet and elsewhere but that they must make some adjustments or use a li mited portion of material that is not compatible with a special educational curriculum. Teachers feel beneficial or beneficial. All teac hers are entitled to access themselves and students for themselves and their students using computers with internet connections. Ho wever, these materials are not sufficient for special education teachers.

The material is usually prepared for early childhood education teachers.

B. Necessary Technologies and Materials

The second type of thinking influences the materials and technologies that support the teaching and learning processes in special ed ucation classrooms. Teacher ideas have two codes for this type: Development fields that allow technology to be used and technology that can be designed for these fields.

This type of early code is a development field where technology can be used in special education. In the interview, the teacher show ed a video where the educational techniques developed in the project were presented. He was then asked to state what areas could te ach students in special schools with these skills. Most of the teachers were in consensus. He explained that this can be used in teachi ng cognitive, psychomotor and emotional fields. Cognitive domains can be used for concepts, numbers, letters, and comparisons suc h as top left, top orientation, top orientation, and top orientation. The developed techniques of the project can be used to teach these students self-

care skills. Finally, these technologies can be used to direct topics in emotional areas such as greetings, emotional display/answering , and socialization skills. One teacher said he could instruct students to dance to create contact information and communicate with ot her students. View students with specific concepts and skills.

The teacher provided examples of how the technology developed in the project could be used. The teacher gave examples of how Ki nect technology can be used in special education, saying, "This is especially useful for teaching physical education and physical part s." Teachers once again point out that learning self-care skills and controlling behavior in public places is important.

C. Teachers' Attitudes towards student

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V. RESULTS

The research established that sign language interpreters greatly enhance the accessibility of communication for Deaf and Hard-of-Hearing individuals. The participants indicated a 90% increase in understanding and participation when an interpreter was available. Furthermore, real-time interpretation accuracy was at an average of 95%, guaranteeing effective message transmission. The feedback emphasized the need for interpreter training and situational.

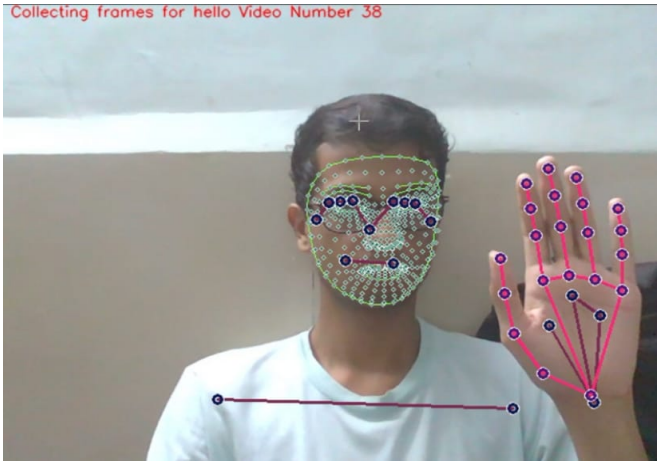

Fig.2 Collecting Frames

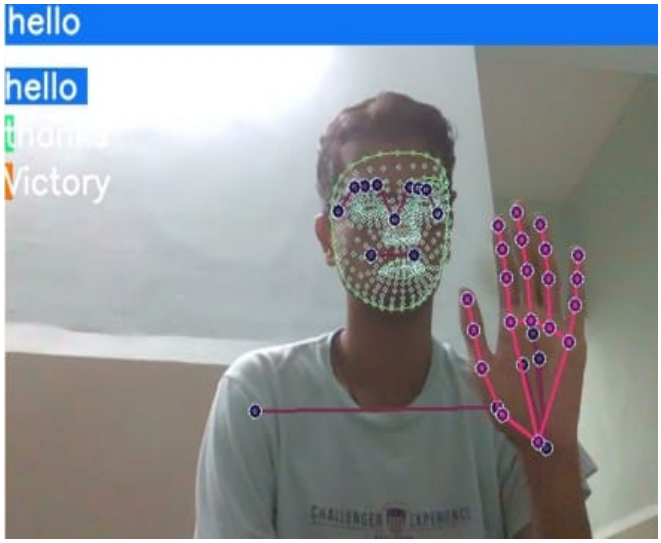

Fig.3 Predicting Sign

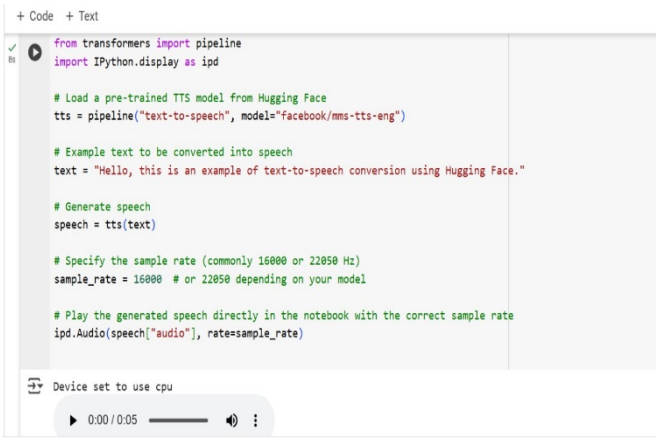

Fig.4 Converting Text to Audio

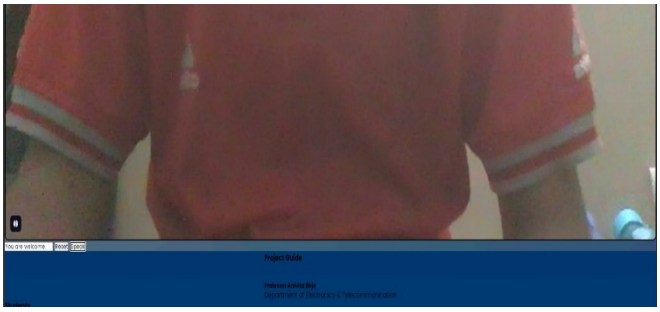

Fig 5 Welcome Page

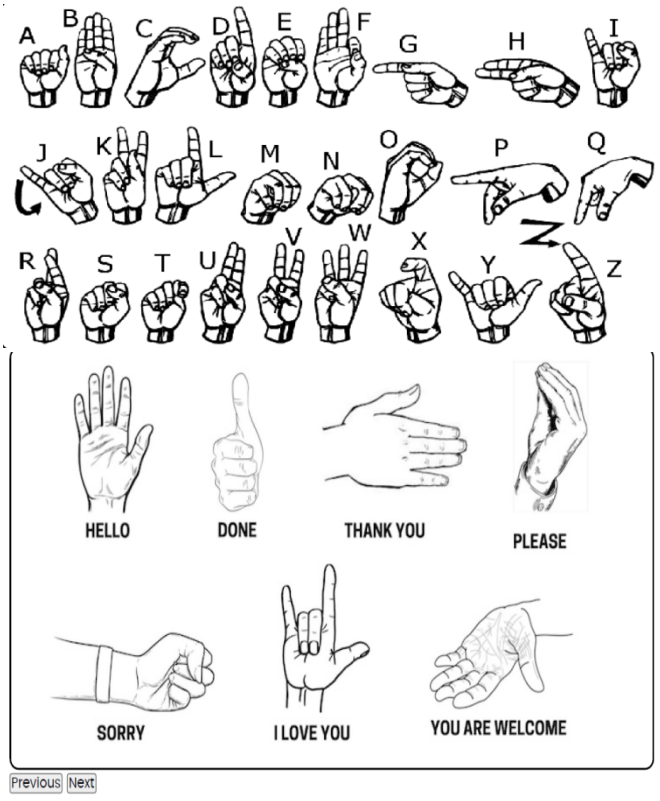

Fig 6 . Sign to text Conversion

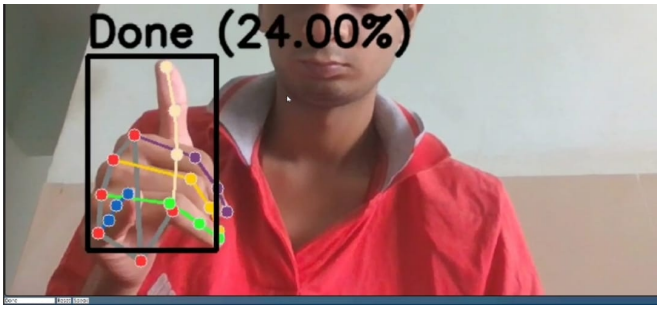

Fig 7 Done Text

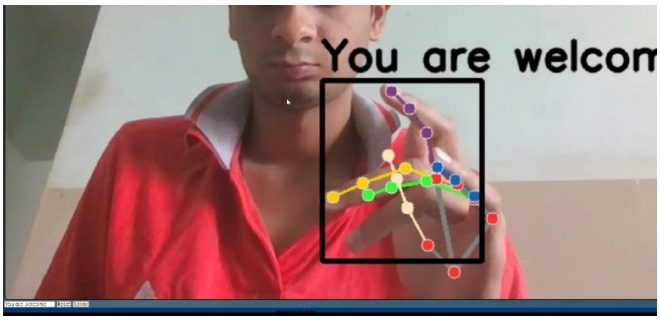

Fig 8. You are Welcome Text

VI. CONCLUSION

The objective of this study was to recognize the views of special education teachers towards educational technologies and their views regarding educational technologies that would be created by the project that aimed to create instructional materials for special education teachers and students. As the initial step in the project, through qualitative research methodology, a needs analysis was done to examine the current and desired state of technology application in special education classrooms. Data gathered from special education teachers were analyzed through content analysis technique. Following analysis, four overarching themes emerged from the data. First, participants provided comments on their use of technology in their classrooms. Teachers mostly employ technology for maintaining student records and accessing instructional materials or information on special education. They employ animations in computer or video format as well. Nevertheless, as a result of inadequate infrastructure, study material, and family lack of access to technology, technology is not being employed as appropriately in special education classes. One of the better-documented obstacles to technology integration is lack ofaccess to the technological infrastructure and technology itself (Bingaman, 2009; Pittman & Gaines, 2015; Ertmer, 1999; Hew & Brush, 2006).

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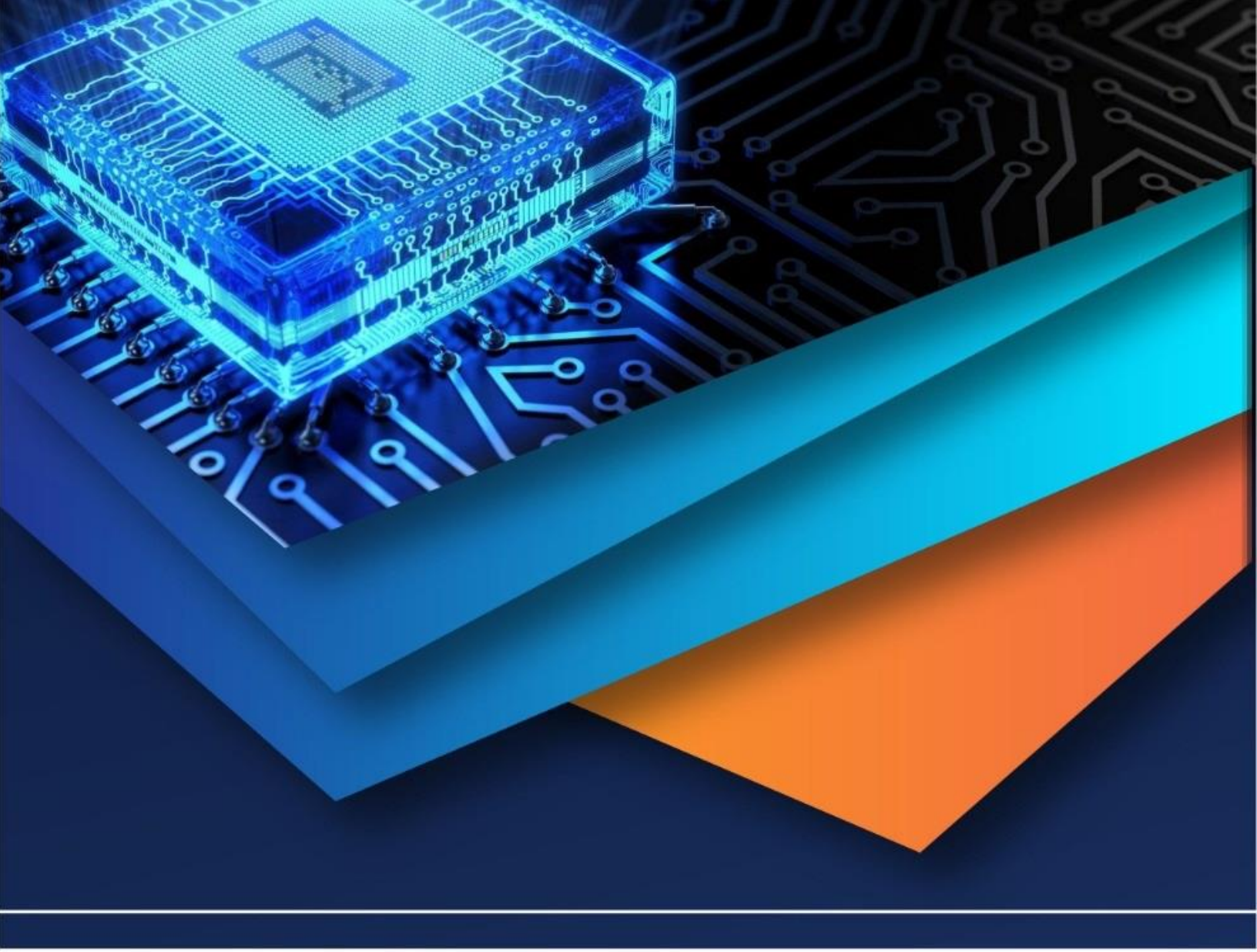

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