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Advance City Surveillance Using Data Analysis

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Abstract: ***Idea of smart cities is to provide data Driven solutions to Social problems Specific to urban area in the country. World Population keeps expanding; increase in urbanism brings population explosion in urban areas. Going forward Solution based on data with help of technology is a best Solution for the ease Governance. The Project reveals about Indian Government Initiatives on Smart cities, Secureness in Smart city and a Secured Smart city with a system.***
Keywords: Smart Cities, Secured System, Technology.

I. INTRODUCTION

The collected data stored in a DB which provides a detailed analysis using Modern data science techniques like analytics and dash board provides a better view of the problems which helps us to take decisions and provide solutions accordingly. The omplete system brings a transparency to the top level about the field situations in an automated way Safety and Security in smart city In a Smart City following are the action items are the key items to be considered for a Safer Environment and it could helps to build confidence about the City among the Residents and Tourists, visitors of the city,

Safeguarding Citizens for Crimes

- Reduction in crime rates
- Safety against Women, Children's, Adults
- Accidents Prevention• Accident recovery
- Emergency situations handling
- Natural Disaster
- Cyber Crimes
- Safety to the foreigners visiting India and Indian Cite

How India is safer globally? An analysis on, what are the cities having high Crime rates in India?• A Detailed analysis on how we make the higher crime city to be a safest City in• India? An Analysis on the smart cities on Globe like Daovo, Philippines, Kormoy, China• and Dubai who have problems on safety and security. Our Recommendations for the Indian Smart City.• We will see the detailed analysis on Crime rates and the Classification of the• Crimes in the India states. We have analysed the problems and solutions followed by the existing smart• cities globally. Our research is based on the Crime statistics from CBI (Central Bureau of• Investigation , India) We took a State which has higher Crime rates from te statistical Data.• According to Indian Government the plan of Implementation of smart cities, we• consider the city in the concern state which has higher crime rates. We proposed our solution.• Recommendation to make the city safer and secured down the line. Based on• the implementation and Results from the field further; we will recommend the solution for the smart cities across the Nation.

Urbanization is an important demographic mega-trend. With a pace of growth of urban population that is estimated to double until 2050, there is no doubt that "the future of the world's population is urban" [1]. In a rapidly urbanizing world, all the factors concerned/involved in bringing solutions for sustainable living in urban agglomerations shock hands, from academia, visionary companies to policy makers all over the world. Based on the advanced digital technologies and their implementation in the cities especially in the last decade, smart city (SC) became one of the most important concepts of the new economy and one of the most researched topics. In the history of ideas, smart city is a relative newcomer [2], and the interest for this research field has grown and publications have intensified after 2008, as reported in a recent systematic literature review The quoted analysis also states the fuzziness of the SC concept, while there is not a generally agreed definition in the literature; the SC concept is frequently described as many-sided, multidimensional, complex, widespread, or fuzzy, while being used in inconsistent ways [2,4–6]. Having all these different opinions, we have decided to combine the 'intelligent city' perspective with the multidimensional view of the smart city in our research. The multidimensional aspect is related to the idea that a smart city should perform well in areas such as economy, environment, living, mobility, as well as people and governance. In the last decade, among the technologies used to create smart applications for cities

II. LITERATURE REVIEW

Intelligent Surveillance Systems for Smart Cities: A Systematic Literature Review https://link.springer.com/chapter/10.1007/978-981-16-2877-1_14 jan 2022 this paper presents a systematic literature review of such a topic. The review revealed current research trends, challenges, and future directions in the area of intelligent surveillance systems. of such systems. Intelligent Multi-Camera Video Surveillance System for Smart City ApplicationsResearchgate.net/publication/331844217_Intelligent_MultiCamera_Video_Surveillance_System_for_Smart_City_Applicationsdetect and recognize a human target from videos taken from cameras mounted on the wall to cover a target area. The proposed approach consists of detection and tracking of any targets that might be a threat. The decision-making process then decides whether or not the person is a threat or not. Survey of Data Mining Implementation in Smart City approaches have been applied (Khan, Pervez, & Abbasi, 2017). This is an important area of smart cities is made even more important due to the recent spotlight on security and privacy in the IT domain overall. The introduction of General Data Protection Regulation (GDPR) is one result of such a focus. As a result, research in this area is ramping up. Anisetti et al. (2018) propose a system that uses model-based definitions of public policies to ensure compliance with the GDPR. Smart city technologies are being driven by major players such as IBM (Wedgwood & Howard, 2015), GSMA (2018), Deloitte (van Dijk & Teuben, 2015) and many more industrial and private players. Moreover, many open source projects have also emerged that address the challenges of smart cities.Smart city governance (Bolívar, 2015; Meijer & Bolívar, 2016) is a complex phenomenon. It requires stakeholder engagement for increased public-private partnerships; citizen participation in planning for co-designing cities; data collection from built.

Environment, public agencies such as health, mobility, environment, security and socio-economic activities for analysis and decision making. In this respect, smart governance uses ICT tools for data collection, processing and analysis in order to better understand the state of city, improve communication, enhance public service provisioning and promote transparency by introducing evidence-based policies (Javed, Khan, & McClatchey, 2018; Khan et al., 2017). Since the focus on this survey paper is data analysis, we will only cover data and technology related aspects.

The above searched literature indicates that in the past few years there has been considerable increase in literature about smart city data analytics. Most noticeable articles which appeared in the above search criteria and highlighted smart city data, technology (e.g., IoT, sensors, cloud, fog, edge, GIS, AI, Big Data, data mining, machine learning, semantics, Human-Computer-Interaction, privacy and security) and system architectures applicable to variety of city applications are (PWC., ; Al Nuaimi, Al Neyadi, Mohamed, & Al-Jaroodi, 2015; Barns, 2018; Bawany & Shamsi, 2015; Bibri, 2018; Bibri & Krogstie, 2017; Bilal, Khalid, Erbad, & Khan, 2018; Chen et al., 2015; El Mendili, El Idrissi, & Hmina, 2016; Faieq, Saidi, Elghazi, & Rahmani, 2017; Habibzadeh et al., 2018; Hashem et al., 2016; Khan et al., 2015; Osman, Elragal, & Bergvall-Kåreborn, 2017; Saggi & Jain, 2018; Silva, Khan, & Han, 2018; Susmitha & Jayaprada, 2017; Yin et al., 2015; Zotano & Bersini, 2017). According to literature review, ICT is an essential component in smart city governance to gain necessary intelligence that provides basis for evidence-based decision-making. At the core of ICT based solutions are three main components: (i) data collection through sensors, Internet-of-Things, smart phones, remote sensing (e.g., satellite or in-situ) and city databases; (ii) data processing and/or pre-processing (e.g., filtering, data quality and format translations); (iii) data analysis using machine learning, data mining and other statistical algorithms to generate new knowledge in various cross-thematic applications such as mobility (Docherty, Marsden, & Anable, 2018; Peters-Anders et al., 2017; Rathore et al.,2018), energy (Antoni▪ c, Marjanovi▪ c, Pripuži▪ c, & Žarko, 2016; Carli, Albino, Dotoli, Mummolo, & Savino, 2015; Silva, Khan, & Han, 2017), health (Anisetti et al., 2018; Farahani et al., 2018), environment (Antoni▪ c et al., 2016), public services (Pérez-González & Díaz-Díaz, 2015; Zhang et al., 2016), economy (Chatfield & Reddick, 2018; Saggi & Jain, 2018; Zaman et al., 2017), waste management (Digiesi, Facchini, Mossa, Mummolo, & Verriello, 2015), social analysis (Kousiouris et al., 2018; Terroso-Saenz, GonzalezVidal, Cuenca-Jara, & Skarmeta, 2017), waste water management (Edmondson et al., 2018), urban planning (Eirinaki et al., 2018; Pettit et al., 2018; Rathore, Ahmad, Paul, & Rho, 2016), tourism and cultural heritage (Sun, Song, Jara, & Bie, 2016), buildings (Linder, Vionnet, Bacher, & Hennebert, 2017), agriculture (Kamilaris, Gao, Prenafeta-Boldu, & Ali, 2016), emergency response (Abu-Elkheir, Hassanein, & Oteafy, 2016), etc. The above three components—with some variations—are common among the most of smart city data analytics literature for example, Zhang et al. (2016); Khan et al. (2015); Rathore et al. (2016).

an et al. (2016) explore impact of big data in smart city intelligence for infrastructure support, urban governance, public services and economic and industrial development in China. Authors present an overview of urban big data with multidimensional hierarchy, integrity and correlation which require systems to adopt targeted methods for data lifecycle, that is, data acquisition (e.g., filtering), pre-processing (cleaning, filling, normalization, quality check, etc.), processing and analyzing (i.e., linear analysis, non-linear analysis, factor analysis, sequential analysis, variable curve analysis, bivariate statistics, linear regression, etc.), categorization and

inter-relation analysis (i.e., support vector machine, Naive Bayes, random forest, logistic regression, etc.), uncovering patterns, rules and knowledge (i.e., AI neural network, genetic algorithms, cross-media algorithm), and value generation (interactive and visual information) with automated routines. This suggests that data driven smart city analytics and governance have common steps where umerous techniques or approaches can be applied as part of the system architecture.

Pei et al. (2018) propose the ATWDP framework that is used for analyzing solar cell welding data. It offers a number of services such as early warning, real-time monitoring and knowledge discovery. The framework has three layers; the enterprise layer, the sensor layer and the batch layer. Data is collected from solar cells using sensors embedded in them in the sensor layer. The enterprise layer is for interfacing with the users and is also used for data acquisition. The batch layer processes the collected data using MapReduce combined with an SVM-DS (Cortes & Vapnik, 1995). Tahat et al. (2018) present a cloud-based big data analytics framework to analyze environmental data. Data is collected through sensors and sent to a central cloud platform for storage. A MongoDB database stores the user authentication information while an InfluxDB is used to store the time series monitoring data. The Orange data mining framework is used to analyze the data. The framework also has an associated iOS mobile app to access and visualize the data. Molka-Danielsen et al. (2017) present two case studies to investigate how big data analytics can be used along with wireless sensor networks to monitor air quality in workplace environments. The data is collected from wireless sensors and stored in a MicroSD card for offline processing. Even though their aim was to study how big data analytics can be used to monitor air quality the nature of their data is such that it cannot be considered big data. Lu et al. (2011) propose a framework to perform distributed big data analytics on climate data using RapidMiner (Arimond, Kofler, & Shafait, 2010). The authors also implement a data conversion tool to convert the NetCDF (Rew & Davis, 1990) climate data into RapidMiner native format.

The regression technique can also be used to predict the future income of a person from his/her current financial statistics and the expected growth rate in the financial value of that person. There are different methodologies to compute the income of a person from his/her current financial statistics. The most common way of future value (of person) prediction is modeling and analysis of Earnings Dynamics relevant to the Consumption Dynamics and the environment uncertainty and change for a person. There are a lot of heterogeneity in these models but these models are producing good results. These dynamics can be analyzed by different regression techniques. Druedah and Munk-Nielsen (2018) provided a linked regression tree based algorithm to analyze income and liabilities dynamics. The analysis is done on a data of Danish males from the age of 30 to 60. The attributes for the analysis are income, assets and debts. The income is the yearly earning of that person and the assets are housing equity, financial assets including the bank account balance, stocks, bonds and funds, and the debts that he has to pay to any authority including bank loans. The Linked Regression Tree (LRT) algorithm is used to estimate the mean and the variance of the levels of log income over a life cycle of 30 years from the ages of 30 to 60. LRT algorithm converts the data into income groups and the problem of regression into the problem of classification. The income of a person at any age (in future) is dependent upon his current income and the growth rate in the income. The Markov model (a probability based model) is used to predict the income group of a person at any age with current income group as a current state and the growth in income as a transition.

Smart cities and sharing economy are the current topics of prototype development and research, where different issues are discussed such as trend of current urbanization, economically facing situation which people are facing for many years. Gori, Parcu, and Stasi (2015) have discussed about sharing economy and smart cities, their common features, similarities and differences. Authors have suggested some policies to Government for welfare of masses. Smart cities as defined by European Commission are a system where people use power, energy, resources to improve their living standards and smart communication means and information use help to achieve this goal. A smart city emerges when government participates for improving living standards by investing in people, transport, ICT, communication infrastructure, sustainable economic growth while managing natural resources. Both smart city and sharing economy depends upon improved utilization of resources that can be either money, assets, time or services. Data protection and security are also important terms. Camerer (2017) has expressed the idea of connecting Machine Learning with behavioral economics. They perform the experiments on the basis of evaluating bargaining and risk choice. The main theme is how artificial intelligence (AI) can be used to assemble preferences of predictions regarding the unfamiliar product.

As data is of key importance to perform analytic, Shukla and Champaneria (2017) present different ways to collect data in order to provide better transportation management. For counting the number of devices entering or exiting the road, different technologies are presented including pneumatic tubes, inductive loops and vehicle's detection via video. Pneumatic tubes are installed on the surface of the road to count the vehicles by the compressed burst of air by the air switch when a vehicle passes near to the tube. Inductive Loops count the passing vehicles by detecting the vehicle from the change in magnetic field. Besides these all, a modern video based technology is used now a days. The vehicles can be identified and counted by successfully identifying them in video by the intelligent software which can identify the different objects and separate vehicles from various background objects.

The paper also talks about collecting GPS based data from mobile phones or tracker fitted in the car to collect information about vehicle speed or traffic density. Different types of sensors are also presented in the paper to measure CO2 using Nondispersive Infrared Sensors (NIDR), visibility using Fog sensors, presence of vehicle in some specific lane using Ultrasonic sensors and Magnetometer sensor for vehicle classification, detection and speed estimation. To reduce the congestion and road accidents, a big data analytic based model is presented by Abberley, Gould, Crockett, and Cheng (2017) to capture the semantics of road accidents and congestion using ontology. The paper uses Big data quantitative information to provide qualitative information about traffic ontology using Machine learning techniques. The four steps model tries to formulate a conceptual model of congestion in step 1 to develop an ontology for congestion considering the impact of road accidents. In step 2, congestion causing dimensions due to accidents are identified such as journey time and traffic volume. In step 3, the Big data sources relevant to identified dimensions are identified to collect the data for analysis. At the end, in the step 4, the identified dimensions and data from identified data sources is analyzed to identify patterns which can lead to better decision makings to reduce congestion. Machine learning algorithm Clustering is used to analyze different traffic and congestion situations in different week days for different times of day to show the impact of schools and office travels.

Rizwan et al. (2016) propose a Smart Traffic Management System (STMS) to solve the problem of traffic management in India especially congestion. The low cost STMS aims to provide better service by traffic indicators which are updated instantly depending upon the traffic conditions. It suggests to deploy sensor in the middle of the road at every 500 m on highways to collect different types of data from the vehicles. The big data collected is analyzed for traffic density and predict the future condition for traffic considering the number of vehicles entering the road and capacity of the road. The traffic conditions information and possible alternative routes are sent to the drivers on a mobile phone application developed for the proposed system. The drivers can take alternative routes to avoid the congested areas. The overall literature review shows that data analytic techniques based on machine learning, Big data and artificial intelligence in general are trying to solve the long present issues of traffic management successfully. With this progress, it looks like that congestion, road accidents and traffic management problems will be solved in future smart cities using IoT and data analytic technologies to a greater extent.

Technologies important for enabling smart cities such as deep learning, machine learning and blockchains are currently at the peak of their inflated expectations (Panetta, 2018). In the coming years the AI technologies are expected to enter their trough of disillusionment. This will entail reduced interest in these technologies followed by deeper understanding of their potential and finally robust and wider adoption. Blockchain is still a relatively new phenomenon so it is not expected to mature until the next 5 to 10 years. Technologies like edge computing, IoT, etc. are still in the initial stages of their hype cycle and so are not expected to reach maturity for another 10 years or so. This indicates that these are the technologies of the future with the greatest potential for investment, research and innovation. These trends are also borne out by our survey, where research involving IoT, edge computing, augmented reality, etc. is still only just emerging. In addition to these new technologies such as Virtual Assistants, Digital Twin, Edge and Fog AI, etc. are new trends that have emerged in the past year that are important for smart city applications. AI, Data mining, machine learning are the core methods which enable all these technologies that have the potential to reshape the smart city landscape and open up new avenues for research and innovation in the coming years.

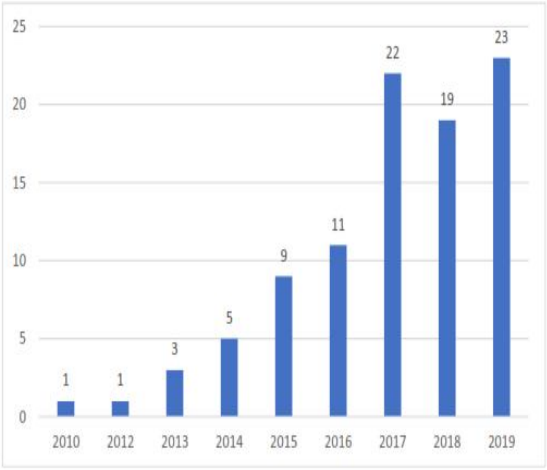
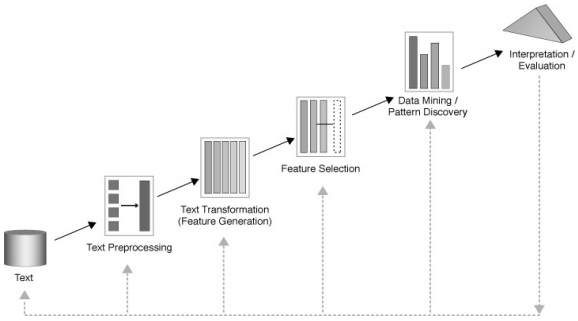


Fig. 1 Publications on privacy, security, and risks in smart cities:

III.PROPOSED METHODOLOGY



Collaboration of Data mining Techniques and Smart city will bring many benefits to all stake-holders. Data mining technique will provide computer based solution in searching hidden patterns from large amount of data and fragment the data into clusters which can give better result information technology for automation, maintaining the security, help in early diagnosis, help in predicting the trend and the analysis from various perspective. It further suggests the Classification and Regression, Association rule, Cluster analysis and text mining techniques for analysis of data.

IV.CONCLUSIONS

The Convergence of Government services Increase the security concerns in Indian system. GPS Enablement and location tracking system in system Deploying Security cameras in Key streets of Chennai Enabling video surveillance Enabling Drone patrols Creating NOC,SOC of Cities in Center like Kodambakkam ,Chennai Employing open sources and using the Engineering students for the deployment purposes.

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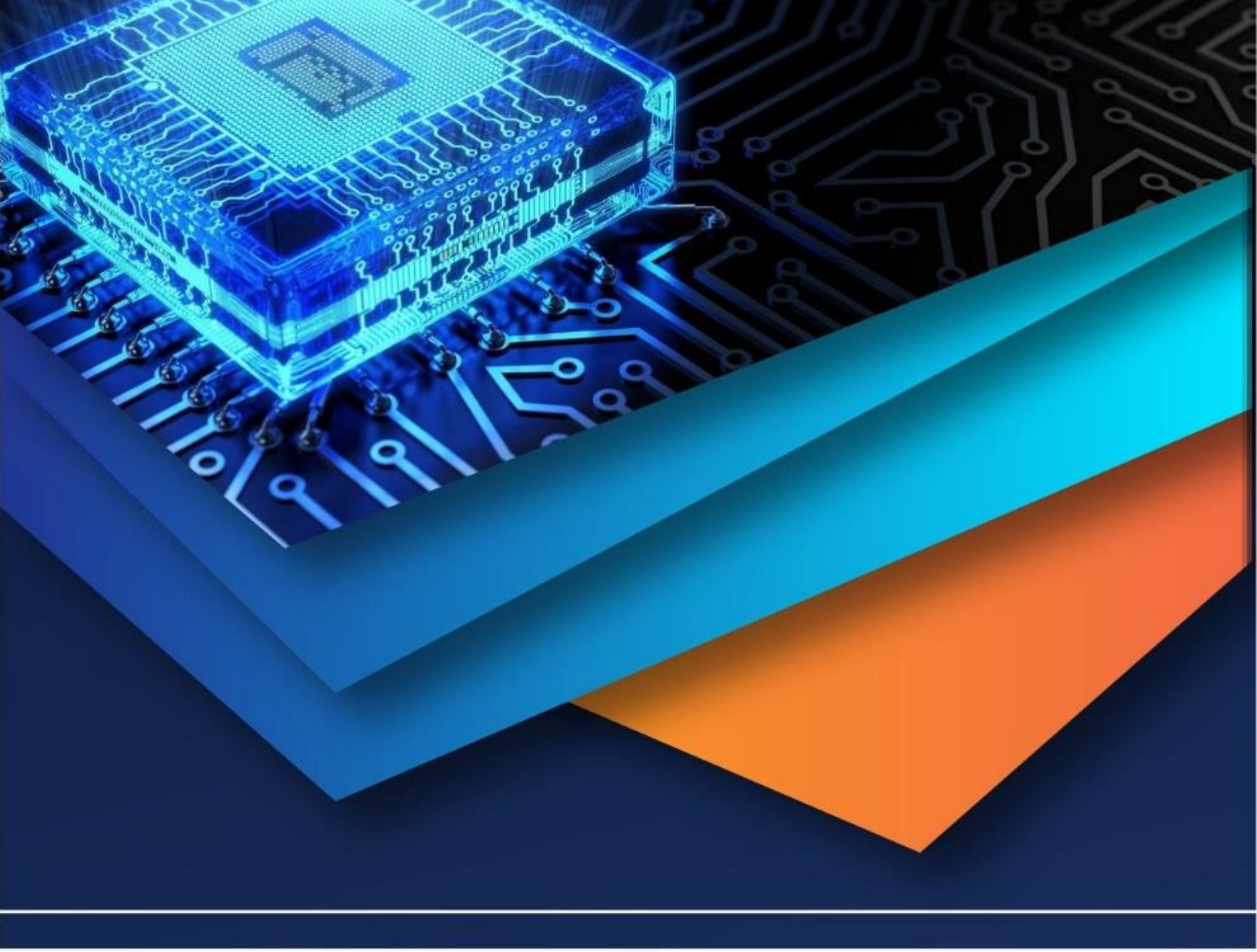

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