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A Review Paper on Intelligent Home Automation Using Goggle Assistant

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Abstract: ***We are living in a world that's fleetly evolving in terms of automation. Automation is the capability to record events for bias connected to a original network or the Internet through time- related or encouragement- started programs. Smart energy effective intelligent home automation system is proposed that can pierce and control home appliances from every corner of the world. In order to make the operation more stoner friendly, web grounded and android grounded technologies have gained their significance in this slice edge technology. Determining the operating time of home appliances requires tuning a number of parameters according to the available energy supplied to the smart home. The seeing of colorful variables outdoors is done using the NodeMCU-ESP8266 microcontroller board, which allows real time data seeing. Home automation is grounded on multimodal operation which can be operated using the stoner's voice recognition commands using Google Assistant or through web grounded operation and It's using MQTT is presented for transferring entering data from detectors. Wireless networks enable multiple electronics widgets to use the same network connection without physical contact. It enables mobile widgets similar as smart phones, laptops, iPods and tablets to mobile freely within the content space and still maintain connectivity to the network.***

Keywords: Home Automation, Node MCU (ESP8266), Internet of Things (IoT), Google Assistant, Voice Control, Smartphone.

I. INTRODUCTION

IoT or Internet of Things is forthcoming technology that allows us to control tackle bias via the Internet. Then we aspiration to use IoT to control home appliances, therefore automating ultramodern homes via the Internet. IoT bias can connect to pall networks over the Internet using regulators capitals and routers.

Hourly, it's indeed more delicate to imagine the technology demanded to make a home automation platform. Home automating is a process of managing home appliances using multiple control ways where a single device is used to control multiple effects in the home similar as turning on and off different appliances, temperature monitoring, Fire admonitions, TVs, garage doors, lights, washing machines, etc. Recent developments in technology that allow the use of wireless control surroundings similar as Bluetooth andWi-Fi have enabled different bias to have the capability to connect to each other.

To carry out the automation process, we used Node MCU, a popular open source IoT platform. Different factors of the system will use different transmission modes that will be enforced by the stoner to communicate control of the outfit to the factual outfit via the knot MCU. The main control system applies wireless technology to give remote access from the smart phone. We're using a pall grounded communication which will add to the practicality of the design by enabling unrestricted access of bias to the stoner irrespective of the distance factor. We handed the data transmission network to make a robust automation. The system aims to control electrical outfit and outfit with a fairly low- cost design, stoner-friendly interface and ease of installation. To increase the standard of living, the bias need to be completely automated without any stoner intervention in any form. Energy saving is one of the important benefits of automating home appliances.

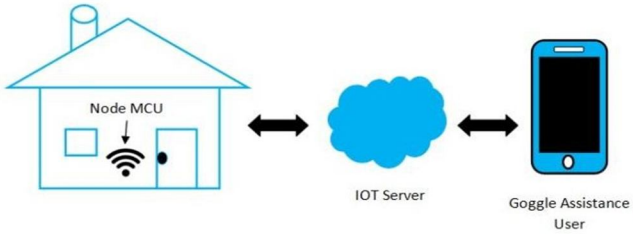


Fig 1. IoT based Monitoring System

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II. LITERATURE SURVEY

1) *Satyendra K. Vishwakarma, BabitaKumari, Prashant Upadhyaya and Arun Kumar Mishra "Smart Energy Efficient Home Automation System Using IoT".*

In this paper, it shows as an illustration the main control unit that we designed for the smart home. Originally, by using IoT connectivity, it can fluently cover and pierce our smart home from anywhere, which will surely prove to be energy effective. Secondly, this act is a helping hand for old age and else abled persons. He presented a step-by- step process of a Smart Home Automation Controller Unit. With the help of Design Control Unit, home appliances can be converted into smart and intelligent bias using IoT. Home automation using MQTT is presented for transferring entering data from detectors. For this the Raspberry Pi is used as the gateway to pierce the data from the detector which is used to measure the temperature and moisture of the room. Therefore, druggies can pierce and control their smart home using Google Assistant and a web grounded service using an IoT grounded operation that uses Adafruit and IFTTT to maintain the communication link. After successful connection, druggies will be suitable to pierce their smart home appliance using IFTTT statement command. It'll be penetrated through Adafruit to produce connectivity between Google Assistant and the NodeMcu which is the main control unit of smart home automation.

2) *HimanshuSingh , Vishal Pallagani, VedantKhandelwal and Venkanna U. "IoT based Smart Home Automation System using Sensor Node".*

The detector knot senses real- time changes in all the variables in the room using colorful detectors. The microcontroller assimilate the detector data and also triggers the relays associated with the bias, therefore automating them without any stoner intervention. A smart home integrates colorful electrical appliances in the home and automates them with or without minimum stoner intervention. It gives a significant change in mortal life which gives smart operation of home appliances. This inspired us to develop a new result that uses colorful detectors like LM35, IR Sensor, LDR Module, Node MCU ESP8266, and Arduino UNO for some home appliances like lighting, suckers, door chambers, energy consumption and gas Controls the position of the cylinder. All these detector bumps will be connected to the MCU ESP8266 or Arduino Uno which will reuse the readings entered by the detector and control the relays connected to the bias. CT detectors are regularly used to measure the energy consumed in the home and streamlined in the database. A cargo detector has also been added from the Arduino which monitors the quantum of LPG in the cylinder. The proposed result uses detectors and detects the presence or absence of a mortal object in the schoolwork.

3) *Majid Al-Kuwari, Abdulrhman Ramadan, Yousef Ismael, Laith Al-Sughair, Adel Gastli, Senior Member, IEEE, MohieddineBenammar, Senior Member, IEEE "Smart-Home Automation using IoT-based Sensing and Monitoring Platform".*

This paper presented a simple and flexible design for solar house monitoring and automation. Home automation systems using IoT correspond of two major corridor. The first part is the seeing and data accession part. This is done by placing detectors or bias, also called lacerations, at multiple locales throughout the home to measure and collect asked information similar as temperature, moisture, or lux.

The alternate part of the system is data processing. Detectors give data in raw form. These data are transferred to the processor through transmission, wired connection or wireless. Further functionality and smartness can also be added to the being system to allow the in house automation system to be developed, acclimated and developed on its own using advanced artificial intelligence. The proposed design of smart solar home is veritably flexible and can be fluently expanded and enforced in large structures by adding the number of detectors, measured parameters and control bias.

4) *M. EbrahimAbidi, Ani Liza Asnawi , N.FM.Azmin, A.Z.Jusoh, S. Noorjannah Ibrahim, Huda AdibahMohdRamli, Norun Abdul Malek "Development of Voice Control and Home Security for Smart Home Automation".*

This paper presents remote development of voice control and home security for a smart home automation system using Arduino mega, GSM SIM900A, bluetooth module and HC- SR04 ultrasonic detector. The system was intended to control four home appliances similar as Television, LED, Addict and CFL using voice and this has been achieved successfully. The delicacy of the HC-SR04 detector for object discovery was tested and anatomized 39 times and the readings were also recorded from the arduino periodical examiner.

Testing has shown delicacy for our voice recognition operation. The results showed that the Voice app wasn't suitable to fete all types of pronunciation with 100 delicacy. Testing has shown delicacy for our voice recognition operation.

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5) *Juan Celis ,Rodrillo Llanos , Sergio Castro , Sergio Sepúlveda , Byron Medina Department,Dinael Guevara, Luis Camargo, Jorge Gómez "Voice processing with Internet of Things for a home automation system".*

The recognition was based on a computational intelligence implemented in the Raspberry Pi,C+ embedded system, which is controlled by voice using the"Command Control" system from a mobile operation erected in Android Studio, which allows, in addition to entering and transferring commands. Allows to cover the real time status of connected bias through a database. The Raspberry Pi has installed FTP service that allows to admit voice commands transferred over the Internet from mobile operations via socket communication. When starting to execute the algorithm, the first thing that computational intelligence does is to change the format of the entered audio train, which due to toolkit conditions converts. Also the algorithm executes the voice recognizer, which compares characteristics similar as abecedarian frequence and spectral content, pronunciation, diction and tone of the audio signal with those of our aural and language models trained and erected.

6) *MURAD KHAN, JUNHO SEO, AND DONGKYUN KIM "Real-Time Scheduling of Operational Time for Smart Home Appliances Based on Reinforcement Learning".*

Offer for real- time scheduling of operating time of home appliances grounded on well- known value iterative underpinning learning called Quality Learning (RSOTHA- QL). Simulations and trials are done in a smart home script involving a single stoner and multiple bias. Smart homes of the future will include multiple detectors controlling colorful conditioning, from security to maintaining proper use of energy. Vaticination models of prognosticating unborn powers bear perceptive analysis of system vaticination delicacy. The demand for energy is adding every day and therefore its cost for one generation is adding. The results show that the Stackelberg game theorem optimizes the cargo among available followers while controlling for the leader's real- time price. The single smart home geography has been considerably studied during the last decade. In a single stoner smart home script with multiple bias, scheduling is primarily grounded on the time a device operates. The cue literacy model is used to optimize the power consumption of smart homes by modeling system state, conduct, and award criteria. In addition, the agent is programmed with these countries, functions and prices grounded on power standing and exertion time or operation time of outfit. A particular action can be performed in a state if its price is lesser than that of other conduct. In this exploration work, countries, tasks and prices are defined to model the problem of cue literacy in a single stoner smart home script. The power standing of the outfit running at a time t is represented with a double representation.

III. INTELLIGENT HOME AUTOMATION

A. *Intelligent Home Automation System*

Home automation has been on the rise in the last many times. With the ever- evolving technology, there have been smarter and more advanced results in the field of home automation. IoT grounded operation has also handed smash for aged people and person with any kind of disability. Wired detector systems are more delicate to handle and bear a lotof wiring to the detectors at different locales. In a developing country like India, where people have busy life schedules, effective energy savings and furnishing comfort at low prices and high effectiveness are of consummate significance. Each device can be connected and controlled ever by a defended channel using Wi-Fi or the Internet, through software operations, from outdoors or outdoors. The system is designed to be used for all orders of people and is especially used to give help and support for the requirements of the senior and those with physical disabilities. Voice and touch control home automation was conducted using Arduino Uno as the original regulator, bluetooth module connects the HC- 05 Arduino to the Android operation, using the relay as a switch to turn on/ off home appliances and servo and stepper motors are used to open and close curtains. Consummation of home appliances remote control system by mortal voice comes to people with special requirements especially the senior and impaired to move autonomously.

B. *System Design*

1) *NodeMCU (ESP8266):* NodeMCU (ESP8266) is an open source firmware that provides inflexibility to make IoT grounded operations. The easiest way to program a NodeMCU is through the Arduino IDE. It requires the Arduino IDE to be installed by installing the board support train for the NodeMCU. Detectors, videlicet Light Detector, IR Sensor and Temperature Sensor are connected to the NodeMCU ESP8266. Detectors admit data from home terrain variables and shoot the data to the NodeMCU. NodeMCU has gained its fashionability due to its low cost and Wi-Fi enabled features. The control system via IoT was also enforced and tested. The NodeMCU regulator periodically reads a numeric command value from one of the EmonCMS bumps. The biggest advantage of the NodeMCU over other options is the significantly lower price for a regulator that can connect directly to the Internet using Wi-Fi without the need for any fresh peripherals within the module. One issue is that the NodeMCU board has only one analog input, which limits its operations as a single data covering system. The collected data can be displayed, stored or reused and used to control bias in the home.

2) *Arduino Uno:* Arduino is a tool for making computers that can smell and control further of the physical world than your desktop computer platform grounded on a simple microcontroller board, and a development terrain for jotting software for the board. It's an open- source physical computing. Arduino Uno is a microcontroller board grounded on the ATmega328P microprocessor. It's a fairly compact and easy to handle the device with numerous processing capabilities. Arduino systems can be stand- alone, or they can communicate with software running on your computer. The Arduino can be programmed using the Arduino IDE which is grounded on the C programming language. Arduino is a tool for erecting computers that can understand and control the physical world further than your desktop computer platform grounded on a simple microcontroller board, and a development terrain for jotting software for the board. It's an open- source physical computing. Arduino Uno is a microcontroller board grounded on the ATmega328P microprocessor. It's fairly compact and easy to handle device with multiple processing capabilities. Arduino systems can be stand- alone, or they can communicate with software running on your computer. Only C programming language has been used in Arduino IDE.

C. Data Operating Standard or Protocol

With the development of smart phones and tablets and the development of colorful communication technologies similar as Wi-Fi, Bluetooth and ZigBee, we've truly gained the capability to connect to our home networks while down. These data communication technologies are popular due to their low power consumption and ease of perpetration.

1) *Wifi:* Presently, the most common Wi-Fi standard used in homes and numerous businesses is802.11 n, which provides a limit of hundreds of megabits per second, which is fine for train transfers but too high a power demand for numerous IoT operations. consumption may do. Low frequentness can travel further and pass through solid objects more fluently, but the trade-off is that they may not shoot as important data. Wi-Fi connectivity is one of the most popular IoT communication protocols, frequently an egregious choice for numerous inventors, especially given the vacuity of Wi-Fi in home surroundings within LANs. Internet of Effects (IoT) bias that use the WiFi protocol don't bear any fresh tackle to get started. Plug in the new device, launch a seller-supplied operation or web cybersurfer.
2) *Bluetooth:* The new Bluetooth Low-Energy (BLE) – or Bluetooth Smart, as it's now ingrained – is an important protocol for IoT operations. Importantly, while it offers the same range as Bluetooth, it's designed to offer significantly lower power consumption. Bluetooth grounded remote home automation frame can be executed with minimum cost and can be fluently installed at home. Bluetooth is a short range IoT communication protocol technology that's deeply bedded in numerous consumer product requests and computing. It's chosen as a wireless communication tool between mobile, microcontroller and Hidden Markov Model (HMM), which is used to fete mortal voices.

IV. METHOLOGY

A. Data Operating Standard or Protocol

Voice control smart home automation is enforced and tested. We can interact with the Google Assistant using voice and it can search the internet, schedule events, set admonitions, control operations. Tackle factors of this system include Android phone, Arduino Mega, HC-05 bluetooth module, four channel relay module and four different multicolored bulbs. Voice mode is used to control home appliances using voice commands.

Using the smartphone's inbuilt microphone, the operation creates an intent that fetches the speech data to a Google which responds with a string of data.

The string data is further anatomized and also reused. Selection of system factors, accession and recognition of voice commands, control algorithms for voice processing and perpetration of the system in the favored terrain. Factors were named for integration of voice processing and home automation systems with the Internet of Effects. Google Assistant is used to control/ cover our smart home and in case of noisy background home automation can be connected via web grounded service. For security purpose we've handed stoner access law which will be asked to be vindicated by Google Assistant which will help unauthorized smart home access.

Home Appliances can be turned on/ off with the help of Google Assistant grounded on stoner orders. It'll be penetrated through Adafruit to produce connectivity between Google Assistant and the NodeMcu which is the main control unit of smart home automation. The home appliance is connected to the main regulator unit with a set of relays. The function of these relays is to act as an on/ off switch on the main control unit.

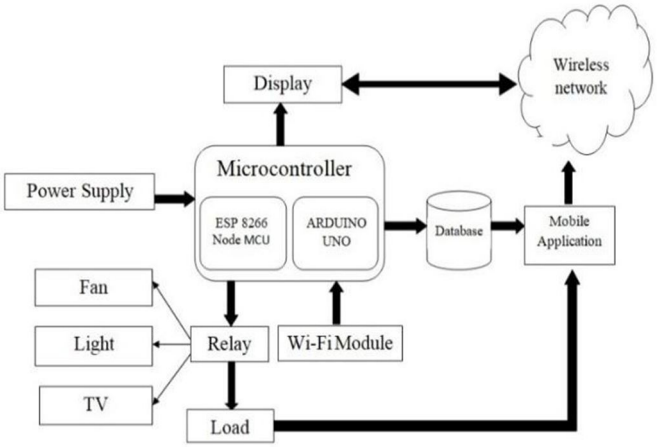


Fig 2. Structure of Intelligent Home Automation

Google Assistant needs voice commands in this design. A pall grounded Adafruit account, which is a free IoT web, used to produce virtual switches, is being linked to the IFTTT website, which is used to produce tentative statements. In which druggies can pierce and control their smart home using Google Assistant and a web grounded service using an IoT grounded operation that uses Adafruit and IFTTT to by using tentative statements. It has taken sequestration, security and home health to the coming position through a co-operation with IFTTT, a service that allows rule- grounded conduct and triggers between a range of bias and services.

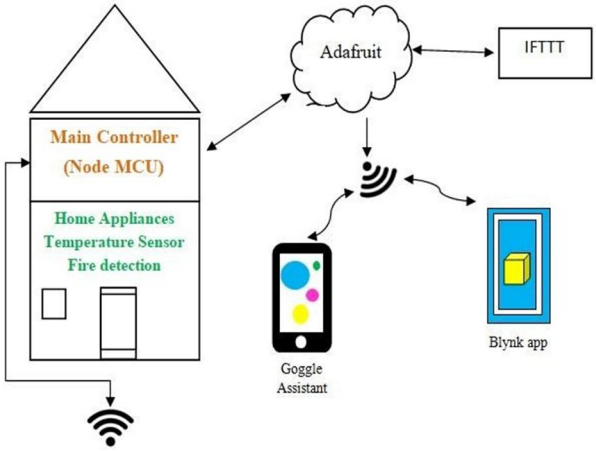


Fig 3. Typical configuration of aIntelligent automation system using the IoT platform

There are many breakout boards available for the ESP8266, but in this guide we are going to us e the Adafruit HUZZAH es8266 breakout, which is a very convenient ESP8266 breakout board. This makes it the perfect chip for the home automation sector.
Now create a account in IFFTT website by same using email id which have been used for Adafruit. Then enter a voice phrases which will be used as a command for goggle assistant.

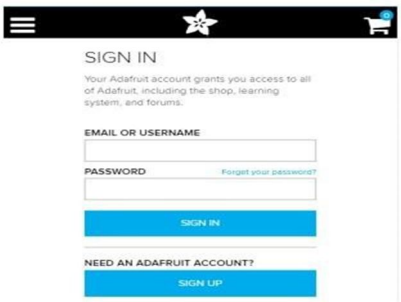


Fig 4.1Creating a dashboard at Adafruit

Creating a new dashboard at Adafruit, name to the dashboard and save it.

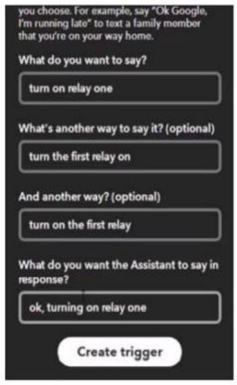


Fig 4.12IFTTT configured with actions and commands.

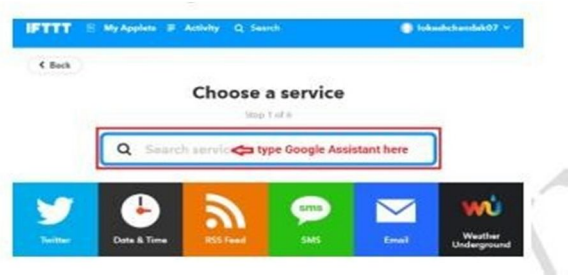


Fig 4.13. Searching Goggle assistant

V. CONCLUSION

The data collected in this paper presented can be displayed, stored or reused and used to control appliances in the home. The NodeMCU combined with the ESP2866 was used as the main processing unit that collects data from the detector, processes it and also uploads it. By considering the below features, we've developed and tested the prototype. We've achieved the development of smart home by using Internet of Effects technologies. From trial, it was plant that we can manage to make a low cost, flexible and energy effective smart home for a better and greener future. For unborn work we'd like to add further control units which can make our smart home more intelligent which can be stationed virtually in real time situation. IoT systems use our own aural and language models to cover, execute and control conditioning through voice processing.

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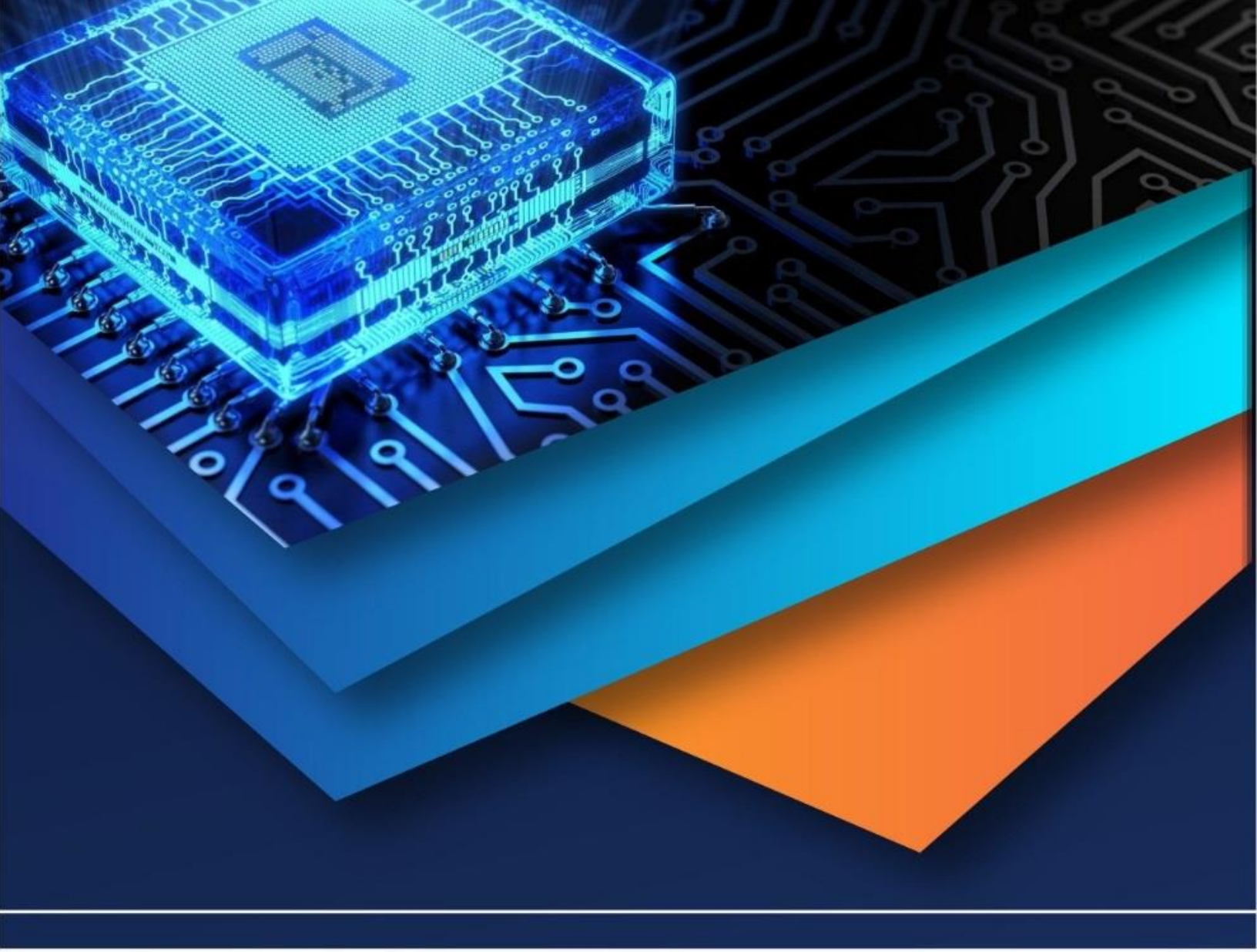
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