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Real Time Industrial Monitoring & Automatic Controlling using HTTP Protocol

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***Abstract**: Automation is the current need of industries. There are number of technologies that are growing to achieve the good automation in the plant. One of the recently popular technologies is the automation using sensors and actuators. Here in this paper development of 8051 and based real-time industry automation system using GSM communication is presented. The proposed system is having centralized controller, sensors and relays. Centralized module is the main unit that collects the information from plant sensors and gives this information to the end user using GSM communication. Also whenever needed it control the production automatically by switching the relays and actuators. The 8051 is used as monitoring and controlling unit for different parameters. Some time more than processes need to be monitor and control in real-time. To control the process in real-time , needful files are dumped in to 8051 controller. 8051 controller is programmed using Embedded C language. Results obtained show the usefulness and effectiveness of the system as planned.*
Key Words: Automation, Sensors, Relays, GSM.

I. INTRODUCTION

Automation is need of any industry to control industrial machinery and processes, reducing the need for human interference. With technology growing at a fast rate, automated machine status tracking system of completely automated processes is today's need that will be used in a variety of ways to track and display machine information or status in Real-time on hand held devices with wireless technology like Zigbee/GSM/GPRS [1]

Currently available system are not fully automatic, these need to monitored time to time. Presently SCADA like systems are used for automation purpose but the problem is that such systems cannot be controlled from remote location. Also the shop floor data is not available to the

Higher authority persons like Manager, MD etc. In industry environment some process are completely automated for e.g. Sterlite industry is making the production of fiber optic cables, once the process started it runs continuously for months. In such processes some parameters like temperature, pressure, gas leakage, production achieved etc need to be controlled in real-time from remote location.

There are few skilled persons in the industry; they need to touch in every moment about the parameters such as temperature, pressure, gas leakage, production achieved etc. By assuming this a automation system is developed in a such a way that even if concern person is not present at field, he can become aware, update and control the status of that particular plant with the help of GSM communication .Different sensors are mounted to get the data from plant environment. Sensor signals are given to the 8051 controller for signal conditioning and according to the need controller is programmed and produces the control signals to control the operation .In this system two or more tasks need to be controlled and monitor at same time. In such system uC/OS-II RTOS is implemented to manage resource allocation to user in orderly and controlled manner by enabling the assignment of priority and priority conversion [2].

II. LITERATURE SURVEY

The writing identified with the exploration point has been assessed for most recent a quarter century request to discover work did by different scientists. There are numerous frameworks for remote observing and control planned as business items or test explore stages. It is seen that the majority of the explore completed has a place with the accompanying classes Internet based Monitoring using Servers, GPRS modems, etc. with different approaches. GSM-SMS protocols using GSM module individually or in combination with Internet technologies Monitoring using Wireless Sensor Networks. Wireless Monitoring using Bluetooth, Wi-Fi, Zigbee and RF(radio frequency).Applications have varied widely like Home Automation, Security Systems, Bio-medical applications, Agriculture, Environment, Reservoir, Bridge health monitoring, etc.

The better and powerful mechanical correspondence is portrayed by the way that collaboration and control must happen

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continuously, with hard time prerequisites [6]. By considering the above work and need of enterprises a modern application situated computerization framework is produced and actualized for supporting industry i.e."Yeshshree Press Comps Pvt. Ltd., Aurangabad" Upcoming difficulties and future extension are talked about toward the finish of paper.

III. PROPOSED METHOD

The proposed work incorporates the accumulation of information from various sensors like temperature sensor, inductive sensor, IRsensor and so forth are put in the creation working condition. Out of every one of a few sensors gives the simple information and a few gives computerized beats, simple signs experience flag molding to change over it to advanced. The controller utilized is 8051. Transfers are utilized for controlling and exchanging reason. Controller takes the sensor values and shows it on LCD and as likewise in the meantime send it at remote area to ready client through GSM as SMS .If sensor esteem surpasses than predefined then client can control the procedure by passing the charges the through SMS and activity can be controlled utilizing hand-off exchanging. All the activities that are happening in the industry is loaded in the web server using HTTP protocol. we can verify the parameters whenever we want.

A. *Block Diargram Description*

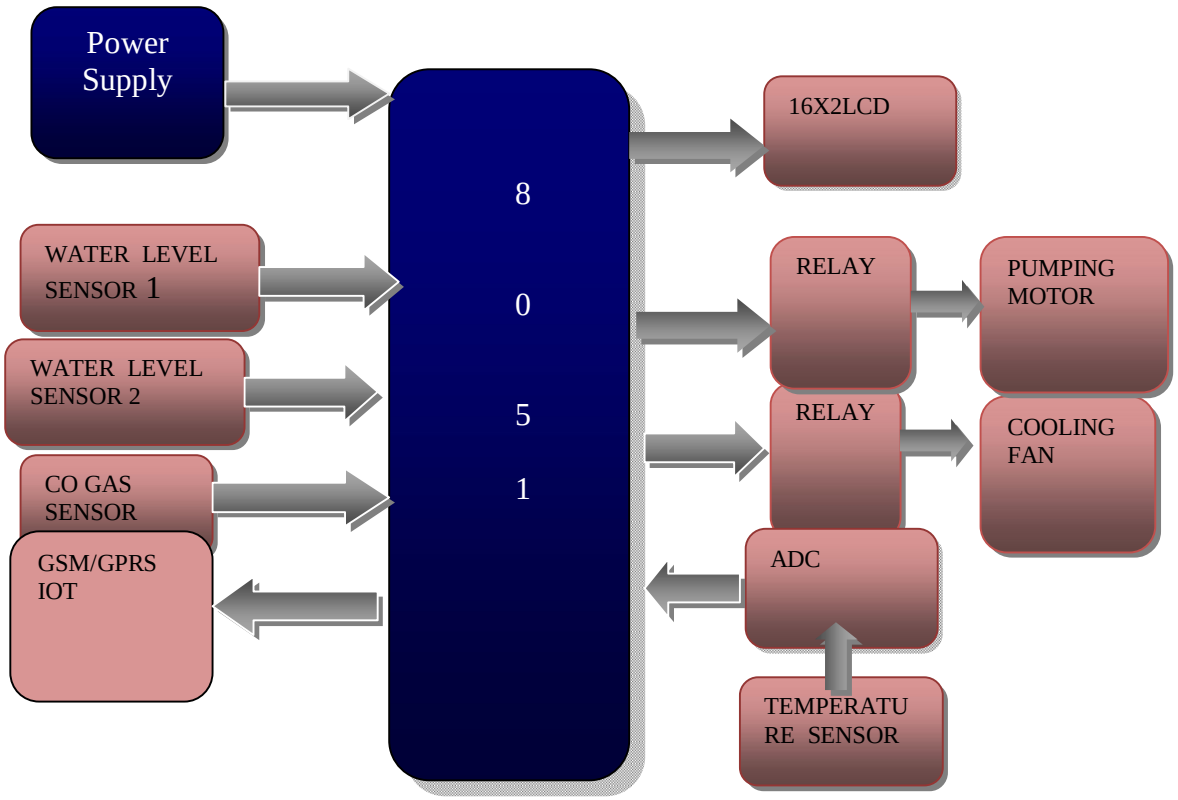

Fig : block diagram of project

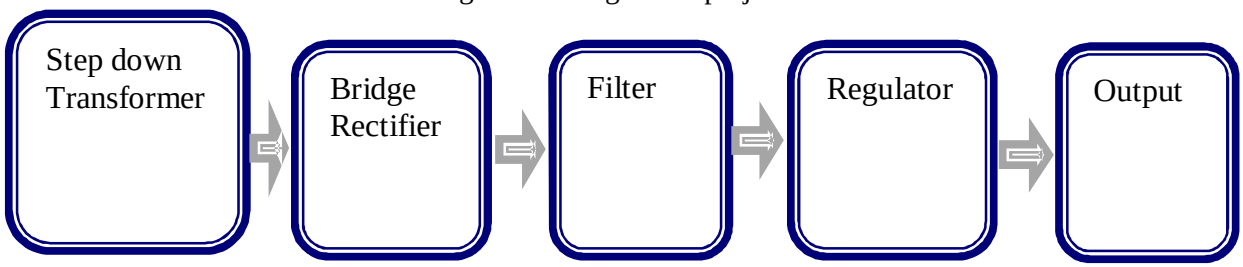

Fig : Power supply block diagram

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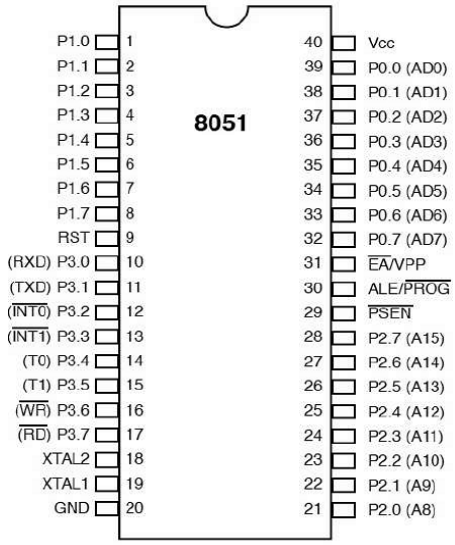
The proposed work is separated into two sections. Initial segment comprises of gathering of information from various sensors like LM35 temperature sensor, water level sensor and smoke sensor and so on. These sensors are mounted at various sought area in the plant to measures the parameters like temperature, metal water levels, distinctive Gasses identified, generation accomplished and so forth progressively and gives this information to 8051. In Second segment microcontroller gathers the all the sensor values and contrast it and predefined values in the program. In the event that the sensor values surpasses than predefined then it makes the essential move to control the parameters by exchanging the transfers i.e. ON/OFF. In the meantime controller send the SMS to caution the client who is at remote area. Client may send the control charge utilizing SMS to control the parameter if necessary. LCD is utilized to show the parameter subtle elements

B. Hardware Description

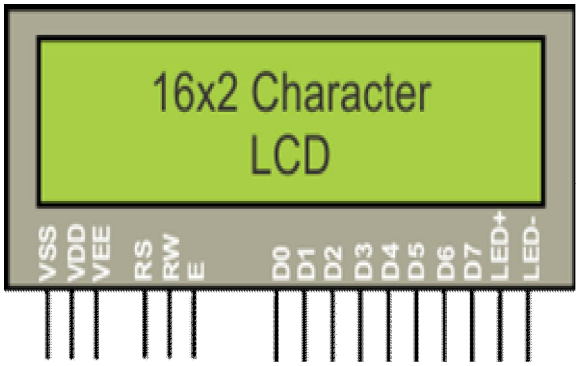
Proposed square graph of the framework is appeared in the figure 1 comprises of various sensors, 8051, GSM modem, documents, LCD show and power supply.

1) 8051 Microcontroller :



The Intel 8051 is Harvard design, single chip microcontroller (µC) which was produced by Intel in 1980 for use in inserted frameworks. It was mainstream in the 1980s and mid 1990s, yet today it has to a great extent been superseded by an immense scope of improved gadgets with 8051-good processor centers that are made by more than 20 autonomous makers including Atmel, Infineon Advancements and Adage Coordinated Items. 8051 is a 8-bit processor, implying that the CPU can take a shot at just 8 bits of information at once. Information bigger than 8 bits must be broken into 8-bit pieces to be handled by the CPU. 8051 is accessible in various memory sorts, for example, UV-EPROM, Blaze and NV-Slam.

*2) 2*16 LCD Show:*



LCD screen comprises of two lines with 16 characters each. Each character comprises of 5x7 dab grid. Differentiate in plain view relies on upon the power supply voltage and whether messages are shown in maybe a couple lines. Hence, factor voltage 0-Vdd is

connected on stick set apart as Vee. Trimmer potentiometer is generally utilized for that reason. A few forms of presentations have worked in backdrop illumination (blue or green diodes). At the point when utilized amid working, a resistor for current impediment ought to be utilized (like with any LE diode).

3) GSM Modem :

GSM (Global System for Mobile communication) is a digital mobile telephone system that is widely used in Europe and other parts of the world. GSM uses a variation of Time Division Multiple Access (TDMA) and is the most widely used of the three digital wireless telephone technologies (TDMA, GSM, and CDMA). GSM digitizes and compresses data, then sends it down a channel with two other streams of user data, each in its own time slot. It operates at either the 900 MHz or 1,800 MHz frequency band. It supports voice calls and data transfer speeds of up to 9.6 kbit/s, together with the transmission of SMS (Short Message Service).

4) LM35 Temperature Sensor : The LM35 arrangement are exactness coordinated circuit temperature gadgets with a yield voltage directly relative to the Centigrade temperature. The LM35 gadget does not require any outside adjustment or trimming to give run of the mill correctnesses at room temperature. The scope of LM35 is from less 55 Degree centigrade to in addition to 150 centigrade [7]. Yield of the LM35 is simple which is given to the inbuilt ADC 0.1. Subsequent to changing over the simple voltage, yield esteem is appeared on LCD show

*5) Water Level Sensor:*This is the circuit graph of a straightforward consumption free water level marker for home and industries. In truth the level of any conductive non destructive fluids can be measured utilizing this circuit. The circuit depends on 5 transistor switches. Each transistor is changed on to drive the comparing Drove , when its base is provided with flow through the water through the terminal tests. One anode test is (F) with 6V Air conditioning is set at the base of tank. Next tests are put well ordered over the base test. At the point when water is rising the base of every transistor gets electrical association with 6V Air conditioning through water and the relating probe. Which thus makes the transistors lead to shine Drove and demonstrate the level of water. The finishes of tests are associated with comparing focuses in the circuit as appeared in circuit diagram. Insulated Aluminum wires with end protection evacuated will accomplish for the probe. Arrange the tests all together on a PVC pipe as indicated by the profundity and submerge it in the tank.AC voltage is use to avert electrolysis at the probes. So this setup will last truly long. I ensure no less than a 2 years of upkeep free operation. That's what I got is as yet going.

6) Smoke Sensor: There are two principle sorts of smoke locators: ionization finders and photoelectric indicators. A smoke caution utilizes one or both techniques, now and again in addition to a warmth identifier, to caution of a fire. The gadgets might be controlled by a 9-volt battery, lithium battery, or 120-volt house wiring. Ionization locators have an ionization chamber and a wellspring of ionizing radiation. The wellspring of ionizing radiation is a moment amount of americium-241 (maybe 1/5000th of a gram), which is a wellspring of alpha particles (helium cores). The ionization chamber comprises of two plates isolated by about a centimeter. The battery applies a voltage to the plates, charging one plate positive and the other plate negative. Alpha particles always discharged by the americium thump electrons off of the iotas noticeable all around, ionizing the oxygen and nitrogen molecules in the load. The decidedly charged oxygen and nitrogen particles are pulled in to the negative plate and the electrons are pulled in to the positive plate, creating a little, ceaseless electric current. At the point when smoke enters the ionization chamber, the smoke particles connect to the particles and kill them, so they don't achieve the plate. The drop in current between the platesriggers the caution.

IV. PRINCIPLE OF OPERATION

Control supply of 230 volts is changed over into 12v utilizing venture down transformer. This changed over 12V AC voltage is given to the extension rectifier to change over it into throbbing DC. With a specific end goal to evacuate commotion parts throbbing DC is given as the contribution to the filter.the dc voltage is provided to the segments on the circuit board as per their voltage levels.

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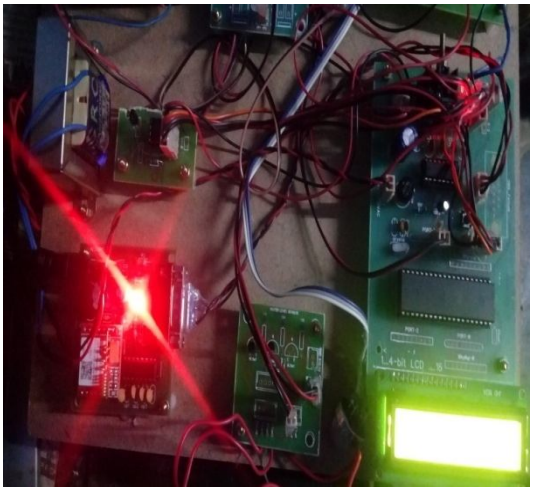
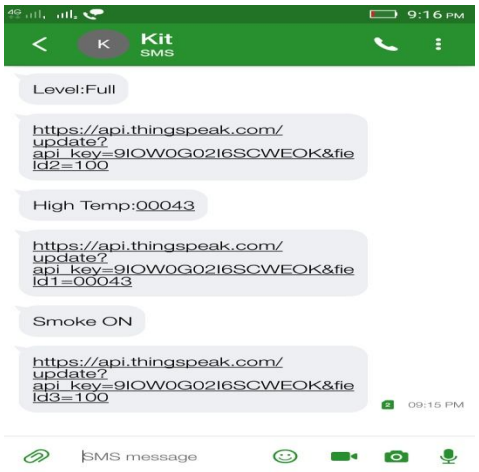
Sensors are set at the required position. At the point when the tank is void water level sensor will identify it and turns ON the engine . at the point when tank is full then the engine will naturally killed. In this procedure if the temperature of the engine surpasses the 40 degrees then cooling fan will turn ON. On the off chance that any Gas spillage happen in the business then smoke sensor will distinguish it . At that point took after move made by the utilizes.

V. RESULTS

In this work, the sensors are effectively executed and interfaced with the 8051. The information or qualities got from the sensors were shown on the 16X2 LCD show and furthermore controlling the comparing gadgets as per the plant operation on the premise of got information. The depictions and figures demonstrate the advanced outcomes. Figure indicates proposed framework setup made in the lab before actualizing in the plant.





VI. CONCLUSION AND FUTURE SCOPE

The sensor based computerization framework can gather sensor information brilliantly. It was outlined in view of 8051 and the use of remote correspondence. It is exceptionally reasonable for constant and successful prerequisites in information procurement framework in mechanical condition. Distinctive sorts of sensors can be utilized the length of they are associated with the framework. We can screen the plant condition through GSM. As the quantity of contribution to the 8051 controller is constrained, for industry reason we can utilize the PLC controller for higher information sources/yields. It is conceivable to create android application for computerization frameworks with the assistance of Web correspondence.

REFERENCES

[1] Pedro Cheong, Ka-Fai Chang and Kam- Weng Tam, “Zigbee Based Wireless Sensor Network node for ultra violet Detection of Flame”, IEEE Transactions on Industrial Electronics, VOL. 58, NO. 11, November 2011
[2] Srikanth.K, Narayanaraju Samunuri, “RTOS Based Priority Dynamic Scheduling for Power Applications through DMA Peripherals”, International Journal of Engineering Trends and Technology (IJETT) Volume- 4 Issue 8- August 2013
[3] Vehbi C. Gungor, Dilan Sahin, Taskin Kocak, Salih Ergut, Concettina Buccella, Carlo Cecati, And Gerhard P. Hancke, Members, IEEE “Smart Grid Technologies: Communication Technologies And Standards”,IEEE Transactions On Industrial Informatics, Vol. 7, No. 4, November -2011
[4] G.M. Sultan Mahmud Rana1, Abdullah Al Mamun Khan, Mohammad Nazmul Hoque, Abu Farzan Mitul ,“Design and Implementation Of A GSM Based Remote Home Security And Appliance Control System”, International Conference On Advances In
[5] Ajith Kumar S., Knut Ovsthus, and Lars M. Kristensen, “An Industrial Perspective on Wirelesss Sensor Networks –A Survey of Requirements, Protocols, and Challenges IEEE CommunicationsSurveys and Tutorials, Accepted For Publication
[6] X. Shen, Z. Wang, And Y. Sun, “Wireless Sensor Networks For Industrial Applications In 5th World Congress On Intelligent Control And Automation”
[7] B.Rahul Sandeep, Kumar.AmruthaVally, “An intelligent architecture for industrial automation using RTOS technology”, International Journal of Application or Innovation in Engineering and Management, Volume-3, Issue 10, October 2014
[8] S.Pandikumar, “A Model for GSM Based Intelligence PC Monitoring System”. International Journal of Advanced Computer Science and Technology, Volume 2, Number 2(2012),pp. 85-88.

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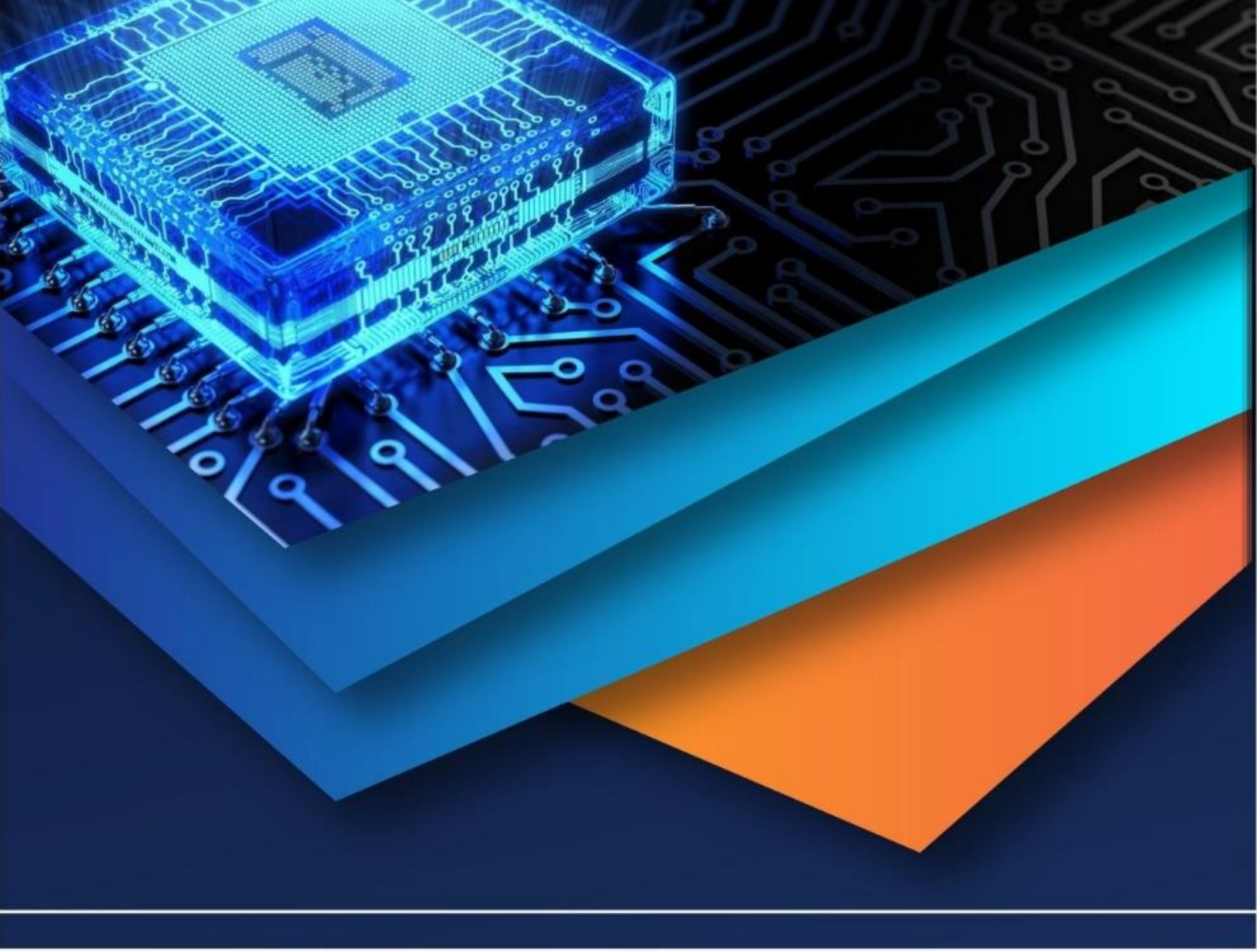

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