iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 9 **Issue:** VI **Month of publication:** June 2021

DOI: https://doi.org/10.22214/ijraset.2021.35670

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 9 Issue VI Jun 2021- Available at www.ijraset.com

Automatic Vehicle Accident Detection System

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Abstract* — *The ascent of technology and infrastructure has created our lives easier. the appearance of technology has conjointly enhanced the traffic hazards and therefore the road accidents ensue ofttimes that causes immense loss of life and property owing to the poor emergency facilities. Our project can give AN optimum resolution to the present flinch. AN measuring device may be utilized in a automobile alarm application in order that dangerous driving may be detected. It may be used as a crash or change detector of the vehicle throughout and when crash. With signals from AN measuring device, a severe accident may be recognized. in step with this project once a vehicle meets with AN accident straight off vibration detector can notice the signal or if a automobile rolls over, and small electro system (MEMS) detector can notice the signal and sends it to ARM controller. Microcontroller sends the alert message through the GSM electronic equipment together with the situation to the police room or a rescue team. therefore the police will straight off trace the situation through GPS electronic equipment, when receiving the data. Then when orthodox the situation necessary action are going to be taken. If the person meets with a little accident or if there's no serious threat to any ones life, then the alert message may be terminated by the motive force by a switch provided so as to avoid wasting the dear time of the medical rescue team. This paper is helpful in police work the accident exactly by suggests that of each vibration detector and small electro system (MEMS) or measuring device. As there's a scope for future implementation we will add a wireless net cam for capturing the photographs which can facilitate in providing drivers help.

Keywords*— *GSM, GPS, Arduino, alcohol sensor, speed sensor.

I. INTRODUCTION

The main conception of the planned project work is establish the crashed vehicle position which vehicle range will be transmitted to near vehicle and at an equivalent time its geographical position is transmitted to a adequate distance. the most heart of the project work is microcontroller, is employed for interfacing to numerous hardware peripherals. The system is amid a GPS module, a GSM module, AN RF module, LCD and bumping circuit. The GPS module provides info regarding the geographical position of the module and so position of the vehicle and GSM electronic equipment is employed to send SMS message just in case of auto accident by providing the geographical position (Latitude and Longitude) of the vehicle from an overseas place. The bumping circuit is employed to boost the system with capability of acknowledge AN accident by triggering emergency scenario alarm mechanically. just in case of emergency, wireless info is transmitted via the RF module. The external used Antenna expands the vary of the transmitted signal to an alarm announcement vary. The GPS electronic equipment offers several parameters because the output, however solely information starting off is scan and displayed on to the LCD. an equivalent information is distributed to the mobile at the opposite finish from wherever the position of the vehicle is demanded. The message is distributed through the GSM module and also the location of the accident is detected with the assistance of the GPS module. The accident will be detected exactly with the assistance of each small electro system (MEMS) detector and vibration detector. The Angle of the rolls over of the automotive also can be illustrious by the message through the MEMS detector. This application provides the optimum resolution to poor emergency facilities provided to the roads accidents within the most possible approach. The usage of motor vehicle mobiles has improved linearly over the past decade, that enlarged within the risk of human life. this can be as a result of thanks to the meager emergency facilities. Asian country had earned the dubious distinction of getting a lot of range of fatalities thanks to road accidents within the world. Road safety is rising as a serious social concern round the world particularly in Asian country. Drinking and driving is already a heavy public pathological state, that is probably going to emerge joined of the foremost important issues within the close to future. each system whether or not it's a measuring instrument or the other it manually needs a personality's to require for looking at the vehicles passing by and to report if any vehicle breaks the law or over speeds. each system uses advancements in technology to grade the automation over human handled machines. So, the traffic watching system ought to even be created as automatic that is feasible in some ways. This paper is a concept of 1 of such system. The project is developed by keeping visible all the disadvantages mentioned on top of and is known as as Speed Check and over speed detector. this technique chiefly focuses on conniving the speed of approaching vehicle that over speeds.

II. LITERATURE SURVEY

At present criteria, we have a tendency to cannot find wherever the accident has occurred and thus no info associated with it, resulting in the death of a private. The analysis work goes on for trailing the position of the vehicle even in dark clumsy areas wherever there's no network for receiving the signals. during this project GPS is employed for trailing the position of the vehicle, GSM is employed for causing the message and ARM controller is employed for saving the mobile range within the EEPROM associate degreed sends the message to that once an accident has been detected. From the past event and also the existing approach the below downside been noted:

Manual system is adopted.

Tracking of accident could be a crucial method within the system.

Required medical attention can not be given to the required person.

Life loss and property loss weren't stopped in massive scale. Considering all the drawbacks into consideration we've got developed a projected system that covers all the on top of mentioned drawbacks.

The automatic system is employed once the accident happens

This system GSM can send the message to the additional Human life may be saved victimization this automatic system. Considering all the drawbacks into consideration we've got developed a projected system that covers all the on top of mentioned drawbacks.

A. Problem Definition

Accident realize on and vehicle messaging system victimization GSM equipment that helps to find accident by vibration detector. Vibration detector (Piezo elements) comes in handy once you've got to be compelled to search out vibration or a knock. can use these for regulator or knock sensors pretty just by reading the voltage on the output. Vibration detector helps to send the signal to Arudino controller. Arudino controllers send the alert message through GSM equipment with location. If the person very little accident, the driving force can inform attention is not required by terminating the message victimization switch. this may be to avoid wasting the time of the medical and police team. GSM equipment is reminiscent of movable with none show, input device and speakers. This accepts a SIM card, and operates over a subscription to a mobile operator.

III. PROPOSED SYSTEM

Now a days heap of accidents unit happening in highways attributable to increase in traffic and collectively attributable to rash driving of the drivers. And in many situation the relations or the automotive associate degreed police authorities cannot able to get information regarding to it accident in Associate in Nursing applicable time. This cause delaying the help that's loads of necessary to it one that suffer from that accident. Our project automatic accident vehicle detection and transmission system victim is GSM equipment is supposed to beat such downside and to prove facilitate for the one that met with accident and save their life too by passing message to rescue team in right time. throughout this project we tend to tend to unit accident detection unit that fitted the vibration device at intervals the vehicle. as an example, simply just in case of accident, happens if the automotive is hit to a different vehicle or academic degree object it manufacture some vibration in this case then the vibration device will observe the moving signal and it pass the message to the arduino. Arduino is used as a Central method Unit (CPU) of our project. once the arduino receives a proof from vibration device it instantly pass the message to GSM equipment then the GSM equipment then the GSM equipment will starts its methodology. during this project we tend to tend to used push use by the actuation if the accident is implausibly ancient as an example if the actuation hit the in shut some scenario like parking then the actuation can press the push this may inform the arduino to it system will not send SMS. but if the actuation is not throughout a situation to press the switch or if the accident is really a major accident then the actuation will not press the push then the system will send SMS. Here, we tend to tend to use GSM equipment to send SMS to the relations and so the rescue team. Buzzer is to boot accustomed indicate as a accident has been occurred that is ready to supply a beep sound. so the period of an individual administrative body met with academic degree accident has been known and save their life too.

IV. WORKING

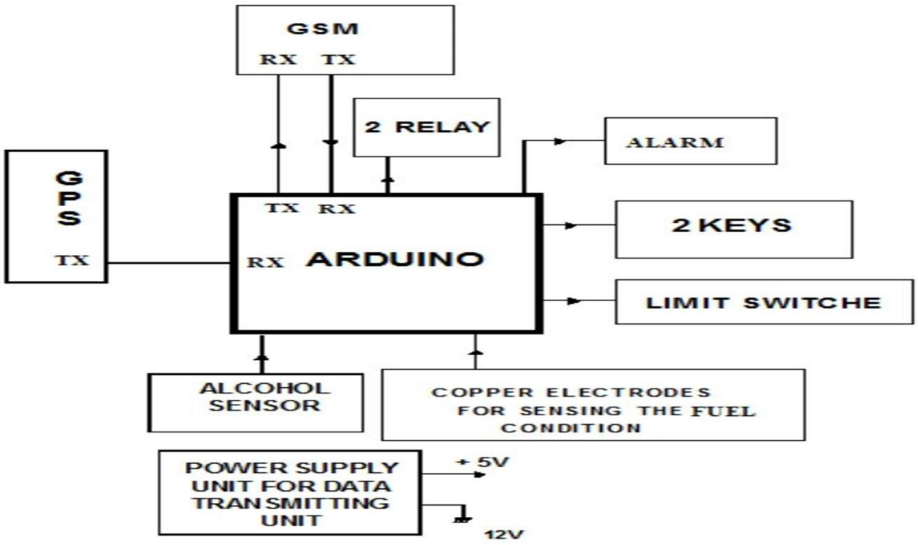


Fig.1 Block diagram

The main aim of this project is to map the collided vehicle. it's projected to style associate degree embedded system, that is employed for trailing and finding the position of the vehicle by exploitation world Positioning System (GPS). With this we will find the vehicle round the globe and exploitation world system for mobile communication (GSM), the vehicle position information i.e., within the style of latitude & meridian values area unit sent to the priority mobile, by that the position of that specific vehicle are often acknowledged. the automated perform of the projected project work supports mode of emergency operation. The alarm is activated, once a vehicle collided is detected by creating use of the bumping circuit. once the system enters this mode, associate degree SMS message is send per the predefined settings. GPS receives the info and GSM transmits and receives the info. therefore the GPS system can receive the meridian and Latitude values corresponding collided vehicle position through the satellites. GPS Lone-Star State pin is connected to microcontroller via junction transistor electronic transistor semiconductor device semiconductor unit semiconductor and GSM Lone-Star State and RX pins are connected to microcontroller via transistor switches. Microcontroller doesn't check for Rhode Island interrupts of GSM, directly sends information to the predefined variety with facilitate of AT command set. A Program has been developed that is employed to find the precise position of the collided vehicle and additionally to navigated track of the moving vehicle on Google Map. It provides you a Live trailing link for Google Earth or Google Maps. just in case you have got put in free software package from google known as Google Earth on your laptop, then simply click on the Google Earth Live trailing Link in your account and you'll be able to see the entire track of collided vehicle for nowadays together with fantastic Google earth satellite representational process. GSM may be a world system for mobile communication during this project acts as a SMS Receiver and SMS transmitter with a baud 9600 bits/sec. Contains 2 styles of power provide one is ac mode and another one is Battery mode. within the battery mode, power is equipped to elements like GSM, GPS and Microcontroller electronic equipment exploitation a12/3.2A battery. GPS and GSM modules area unit given 12v dc because the modules circuit boards area unit equipped with the regulators and derive the desired voltages for the elements to be operative within the board and microcontroller needs 5v, that springs with the assistance of 5v regulator. within the AC mode, a transformer is employed to convert 230V AC to 12V, 1Amp AC then goes to Bridge electronic equipment to convert that into DC signal. The signal is once more older filter to induce pure DC signal, that is then given to regulators and to the electronic equipment. we have a tendency to here propose associate degree alcohol sensing system that measures alcohol intake, displays proportion of alcohol associate degreed additionally sounds an alarm if it's on top of a selected threshold. Here we have a tendency to use associate degree alcohol detector circuit together display and a buzzer alarm. Our system 1st uses the alcohol detector so as to sight alcohol. The detector provides analog output. This analog output is currently provided to the microcontroller for additional process. supported the input the microcontroller calculates the proportion of alcohol associate degreed shows a similar on an LCD display. It additionally sounds associate degree alarm if the number of alcohol exceeds a selected amount. Our system

therefore permits to live quantity of alcohol then show proportion of alcohol measured. additionally a alarm is measured that indicates that measured alcohol is on top of a selected proportion. This project is one among the necessary detector primarily based project concepts. the most unit of this project is associate degree "Alcohol sensor". If the person within the automobile has consumed alcohol then it's alcohol detection is finished by the detector. The detector provides this signal to a comparator IC. The output of the comparator is connected to the microcontroller. The microcontroller is that the heart of this project. it's the mainframe of the entire circuit. The microcontroller provides a high pulse to the buzzer circuit and therefore the buzzer is turned on. At a similar time, a relay is turned off. thanks to this, the ignition of the automobile is deactivated. Alcohol Detection System with Buzzer Indication project is extended by adding associate degree key at the input and a DC motor at the output. The input key is given to the microcontroller. it's accustomed conclude that the automobile is started. Whenever a key's inserted into the restraint at that point the alcohol detection method is started.

V. CIRCUIT DIAGRAM

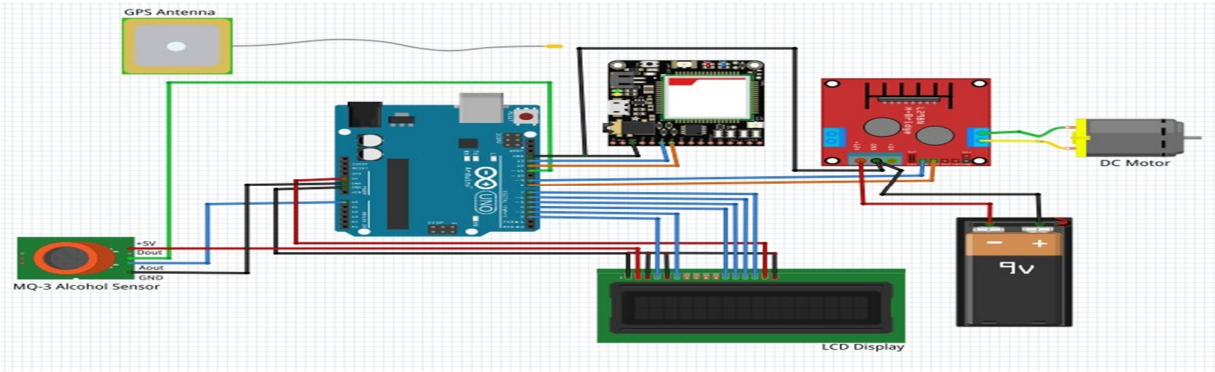
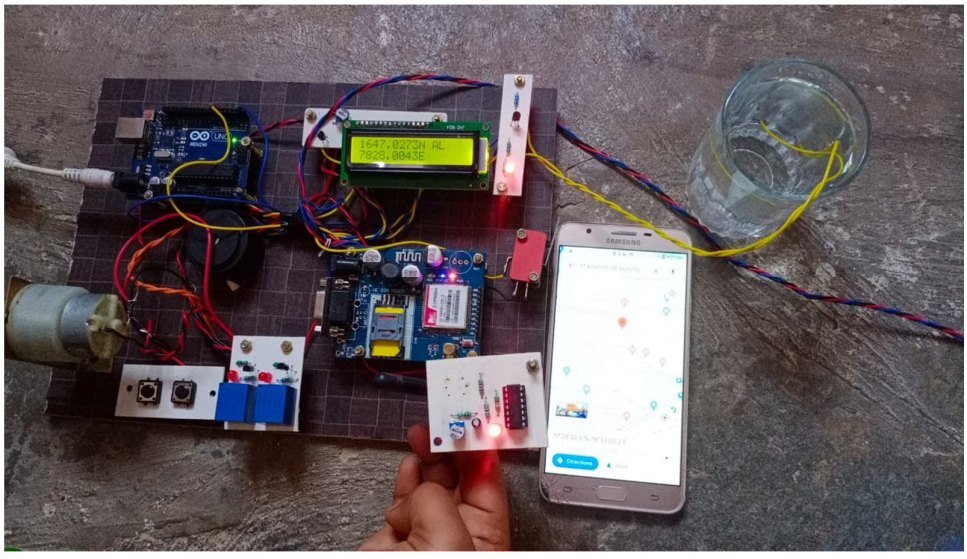
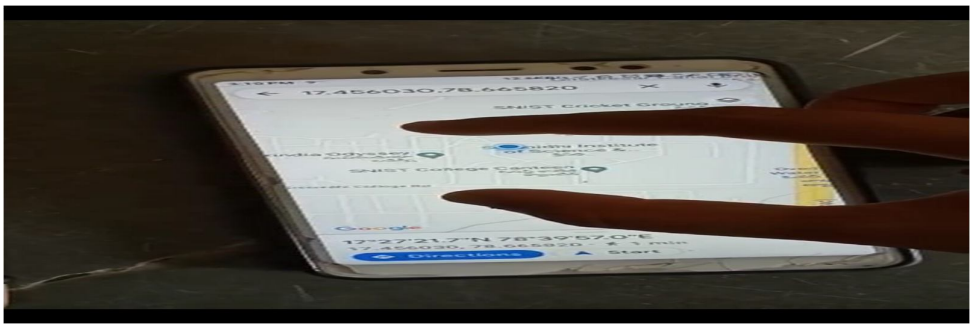


Fig.2 Circuit diagram

VI. RESULTS

An Automatic Accident Detection Associate in Nursingd Alert System For cars is employed for providing facilitate to the accident victims. The projected system is developed to rescue accident victims as quick as potential. This project presents vehicle accident detection and alert system with SMS to the user outlined mobile numbers. The projected Vehicle accident detection system will track geographical info mechanically Associate in Nursingd sends an alert SMS relating to accident. The result shows that higher sensitivity and accuracy is so achieved mistreatment this project. This created the project a lot of easy and reliable. The projected methodology is verified to be extremely helpful for the automotive trade. This style could be a system which might find accidents in considerably less time and sends the essential info to care centre at intervals a number of seconds covering geographical coordinates, the time and angle during which a vehicle accident had occurred.





VII. FUTURE SCOPE

A wireless digital camera are often else during this for capturing the photographs which is able to facilitate in providing driver`s help. this may even be bettered by protection all the brakes mechanically just in case of accident. principally in accidents, it becomes serious because the drivers lose management and fail to prevent the vehicle. In such cases, the vibration sensing element are triggered attributable to the vibrations received and conjointly processed by the processor. The processor should be connected to the devices which might lock the brakes once triggered. With this improvement, we will stop the vehicle and might weaken the impact of the accident. this method may also be used in fleet management, food services, traffic violation cases, rental vehicle services etc.,

VIII. CONCLUSION

Experimental analysis of the system showed that the alcohol sensing element was able to deliver quick response once alcohol is detected. Also, the power of the alcohol sensing element to control over a protracted time could be a feature of the projected system. this method provides the optimum answer to poor emergency facilities provided to victims in road accidents within the most possible approach. With the assistance of this technology immediate action are often taken once Associate in Nursing accident happens by alerting the several folks by causing a message. an efficient answer is provided to develop the bottom unit, by employing a hardware platform consisting of alcohol sensing element, speed sensing element the over speedometer in your automotive you'll take care that you just aren't going get yourself engaged for over rushing. The system incorporates a laptop that stores the speed limits of various areas. The GPS within the system feeds the precise location of the automotive to the pc that appearance up in its info to see the permissible speed for the realm and limits the automotive at intervals the allowable speed. This specific system has been designed to find the abrupt reduction in speed. So although there's no reduction in speed, manual detection switch are often wont to manually indicate the accident.

IX. ACKNOWLEDGEMENT

Firstly, we are grateful to the Sreenidhi Institute of Science and Technology for allowing us to work on this project. We are fortunate to have worked under the supervision of our guide Mrs. T Swapna, Assistant Professor ECE Dept. SNIST. Her guidance and ideas have made this project work. We are thankful to Dr. K. Sateesh Kumar, Assistant Professor ECE Dept. SNIST and Dr. Chattopadhyay, Professor ECEDept. SNIST for being in charge of this project and conducting reviews.
We are also thankful to the HOD of Electronics and Communication Engineering [ECE], Dr. S.P.V. Subba Rao for giving us access to all the resources that went into building this project.

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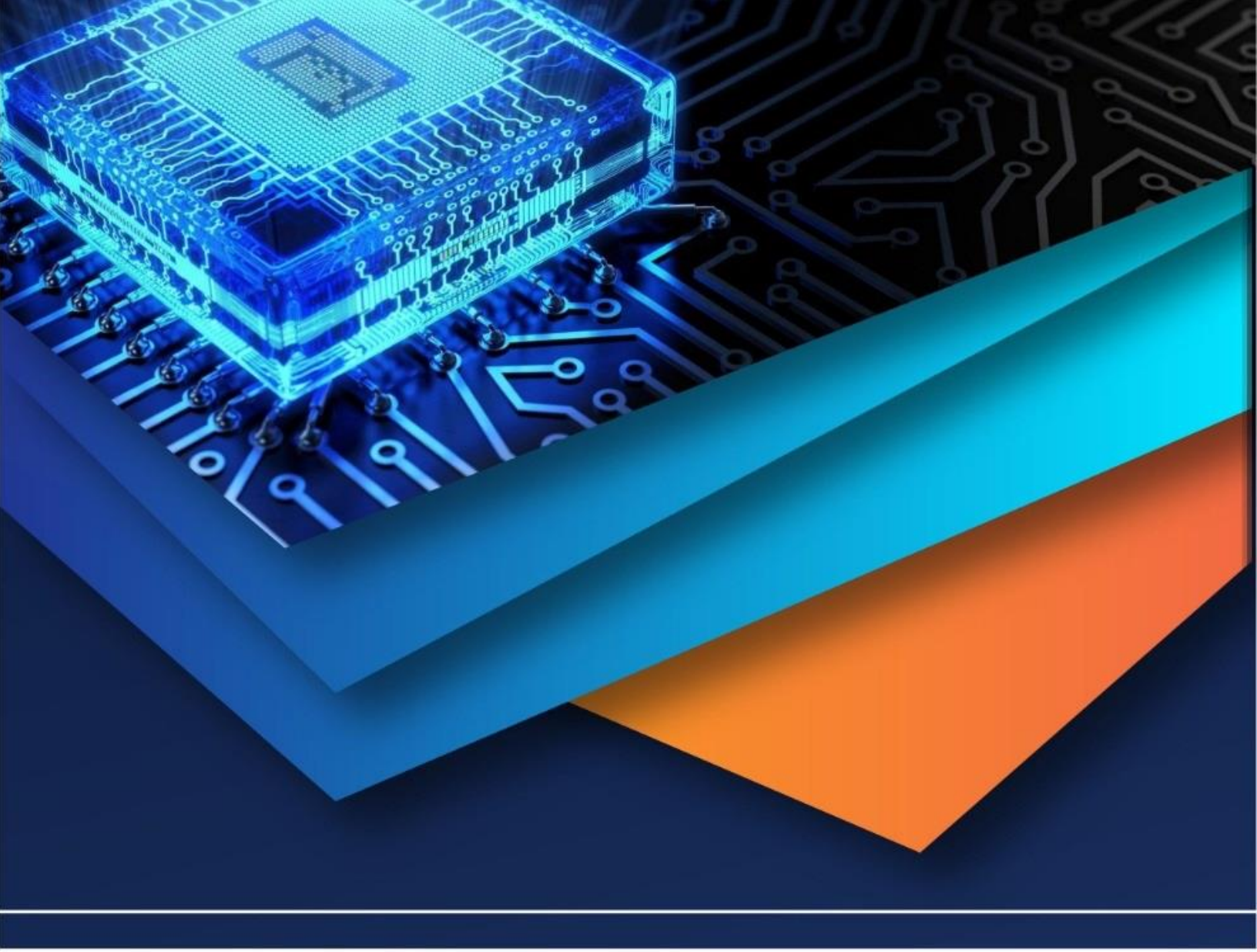
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