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# Software Based Tree Plantation and Live Tree Tracker

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***Abstract:*** ***In the 21St century everything is going online from ordering food to buying cloths for the function. So, in this modern era, its crucial to use these modern technologies to save our environment. In this project we have provided tree plantation service by using web development technology with charismatic user interface. Everyone wants system to be as transparent as possible that's why we have provided 'Track Your tree' option in our web application which adds beauty of this application. Because of these features user will feel best involved in tree plantation process. By using this application anyone can contribute for the environment by planting trees with great user satisfaction. Our project is combination of software and hardware, in hardware part we have developed automatic plant watering system by using Arduino uno. The developed system is fully automatic without any human interaction, which supplies water to the plant in efficient manner. Automatic watering system starts working whenever there is requirement of water to the plant and stops working as soon as requirement fulfils.***

***Keywords: Software, Tree-Plantation, Tracking, Environment, Watering-System***

## I. INTRODUCTION

Human computer interaction is increased now a days. All age group peoples use internet and spends their most of the time by scrolling the various websites. Online solutions for the most of the problems they face now a days are gaining more popularity as compared to offline solutions. Because of this popularity we came with effective solution on one of the most danger problems called deforestation. Our project will help tree plantation program to increase number of trees. Many people want to contribute for environment but they have some limitations because of their work. So, our proposed work will help such contributors to take part in environmental activities such as tree plantation. In our project we have provided tree plantation service with minimum cost. We have provided 100% transparency by giving options like 'Track Your Tree'. Because of this option user can check growth status of the tree planted by him/her. If user wants actual photographs of the planted tree, then he/she can request for the same and we will provide actual photographs of the planted tree. This feature increases beauty of the web application. Some organizations and NGO's plants trees every year as part of their environmental activity but after the plantation they don't take care of the trees. And because of this, planted tree becomes dead in few weeks. So, our web application is best suited for such organizations and NGO's for planting a greater number of trees and proper caring. Our project will help to increase employment opportunity in rural areas where we plant trees. When plantation orders came in bulk quantities then we will give it to the workers in rural areas. The System is loaded with the hardware for the smart tree caring system which include the temperature, moisture, humidity and water motor on off with the home convenience to the tree plantation caring team which will definitely impact the system and make the three more sustainable in any weather condition.

## II. BLOCK DIAGRAM

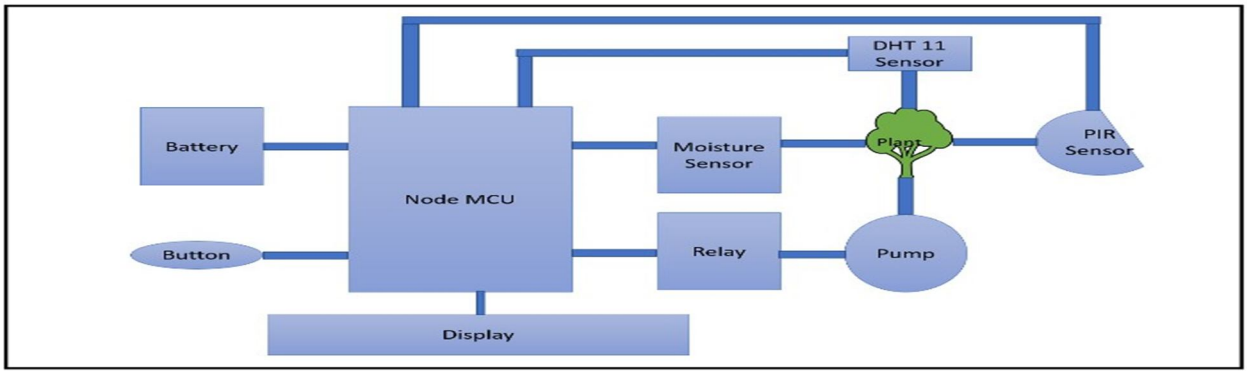



Fig.1: Block Diagram of Hardware System

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Automation is very much necessary, which plays important role. Because of automatic system we get lots of benefits such as 100% accuracy, reduction of human efforts, etc. While making such automatic system Arduino plays virtual role. Arduino has various features which responds various sensors at the same time and make system works according to the requirements. Sensors collects data and sends it to the Arduino. Arduino has various inputs and outputs which collects data from various devices and sends back to the sensors according to the conditions written in the code. Arduino has USB port which has dual purposes: programming and powering up the board. Due to various types of sensors it's possible to collect data from various physical things and convert it into digital data. Sensor controls every activity which is happening outside. Humans' life is closed surrounded by numerous types of such sensors and due to this their life becomes much more automatic. Moisture sensor connected close to planted tree which monitors moisture contents present in the soil and send data to the Arduino. Existence of machines also made humans life much better. In this project water pump is used to water up to the planted tree and the operation is controlled by Arduino. Data received from moisture sensor and conditions provided in code decides on/off time of the water pump. Relay module acts as a switching agent which make pump on/off according to output received from Arduino.

## III. USE CASE DIAGRAM

Use case diagram gives proper guidance how to use web application effectively. Without proper information user gets confused on new website because of online fraud. Misguide can create bad impression on user even if your service is best. So whenever new user visit to web application guidance plays its important role. If new user visits to website first of all he/she has to resister by entering valid information. On the website various packages are available user can select depending upon their requirements. For example, for normal user he/she can plant single tree but for NGO's or organizations can plant a greater number of trees by selecting other option available on website which gives discounts as well. After package selection they have to add it to the cart and proceed for the payment. Again, while making payment numerous options are provided for users convince. After successful payment user will get tracking id with the help of it, he/she can track the status of the planted tree. On the same page another option available which allows user to demand images. If user demands for images, then real images will be sent to the user.

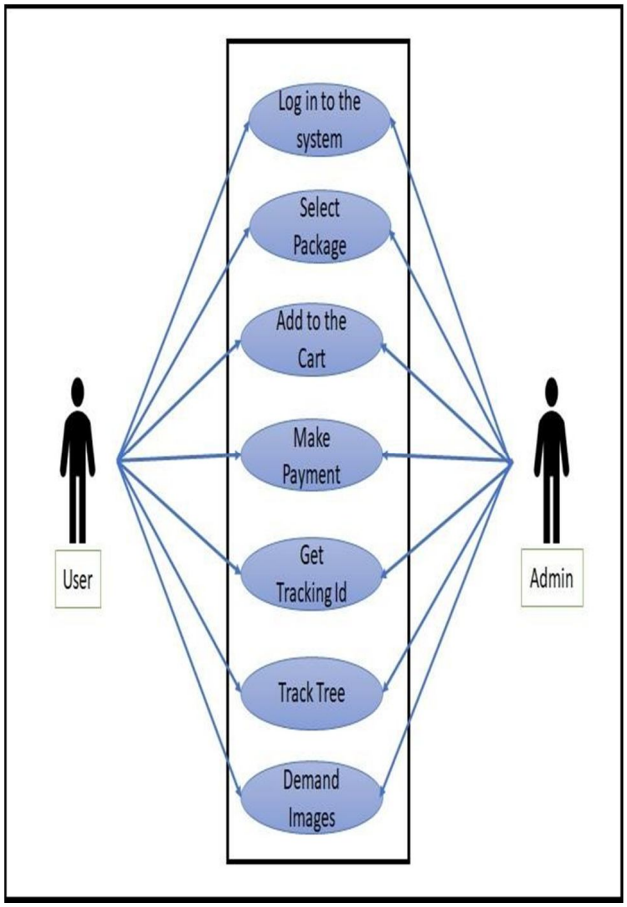



Fig.2: Block Diagram of Software System

## IV. MATERIALS AND METHODS

*A. Hardware Requirements*

*1)* MCU - Node MCU
*2)* Relay - 5v Relay Module
*3)* Pump - 9v Water Pump
*4)* Sensor - Moisture Sensor
*5)* Temperature Sensor
*6)* Processor - Intel 3rd Generation

*B. Software Requirements*

*1)* Operating System - Windows 7 or 7+
*2)* Programming Language - HTML5, CSS3, Java Script
*3)* IDE - VS Code
*4)* System – WORDPRESS
*5)* Plugins

## V. EXISTING SYSTEM

In the existing system use satisfaction is little bit concern. When someone is taking services by paying amount then its service providers responsibility to work on user satisfaction. If user wants to see photos of the planted tree, then he/she can demand for photos and real photos will be provided to the user which facility is missing in the existing system. If better services are available with advanced features and minimum cost then number of users involved in the environmental activities will increase. While making payment if various options are available which allows user to select payment option according to his/her convenience, in the existing system plenty of options are not available. In the existing system automation is missing which allows us to work on modern technologies and bring automation in the work.

Automatic watering system provide automation and reduces maintenance cost as well. Reduced maintenance cost allows us to provide service in low cost which is great advantage over existing system. Because of automatic watering system success rate also increases.

Water is life for every living thing and for plants it is everting and if plant get proportional amount of water, then it will convert into a big tree in less amount of time. Our project will surely help to increase number of trees.

## VI. DISADVANTAGES OF EXISING SYSTEM

*1)* Guidelines plays important role in any work which are not provided in the existing system.
*2)* Steps required to work done are not simple for non-educated peoples which separates them from environmental activities.
*3)* System needs to be more transparent for getting user satisfaction. • Automation reduces overall operating cost so it's necessary to bring it to the system

## VII. PROPOSED SYSTEM

The software-based tree plantation project wants to create a web-based application that allows users to digitally plant trees in order to aid in genuine reforestation efforts. The programme will have the powers and characteristics listed below: The characteristics of each project, such as its location, the species of trees being planted, the advantages to the environment and society, and the state of the planting at the time, may be examined by users. Those who pay for their trees online using a secure payment option receive a confirmation email with a certificate and unique tree code. Users who safely purchase trees online will receive an email confirmation along with a certificate and unique tree code. - Users get access to learning materials on planting trees, tackling climate change, preserving biodiversity, and being sustainable.

The front-end of the programme will be created using languages like HTML5, CSS3, JS. while the system is fully responsive and developed in the WordPress. To display a map of the locations of the trees, the software will utilise the Google Maps API, and to process payments. The architecture and design of the software will be modular, with distinct components for each functionality. To assure the software's quality, dependability, usability, and performance, it will be tested utilising unit testing, integration testing, system testing, and user acceptability testing techniques.

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## VIII. WORKING

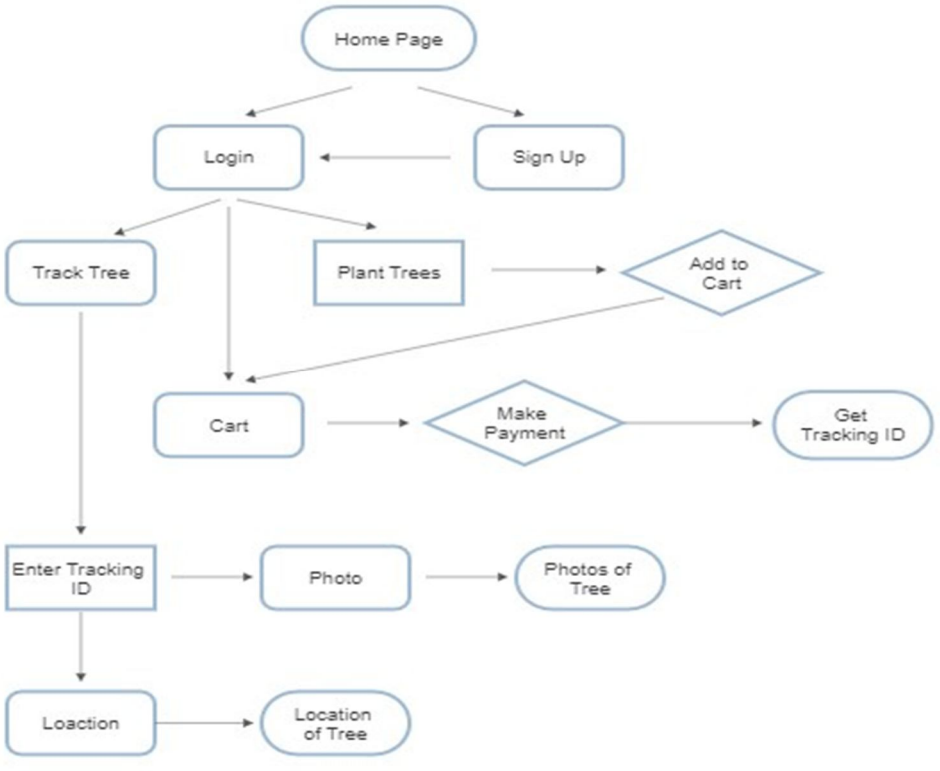



Fig.3: System Block Diagram

1) User will come on site with home page in front of him.
2) Then he/she can Log-In if already have an account or he/she can join the journey by clicking Sign up.
3) After Signing Up with necessary information he will be redirected to the Log in page.
4) After Logging in to the system he will get a page with plantation options.
5) Then he will select plant tree to come on board on journey to save earth.
6) Will be redacted to the payments gate way to contribute and make Payment and get a Tracking ID.
7) He can enter this tracing ID in Track Tree section.
8) After giving tracking ID, he will have two options afterwards.
9) First is track Location which will show location of a tree and other is See Photos where he can see Photos of Planted tree for better understanding.

## IX. CIRCUIT DIAGRAM

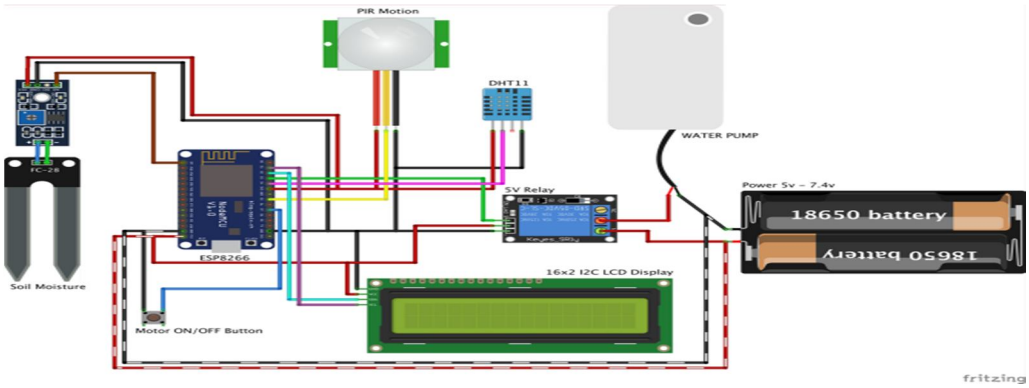



Fig.4: System Block Diagram

## X. RESULTS AND DISSCUSSIONS

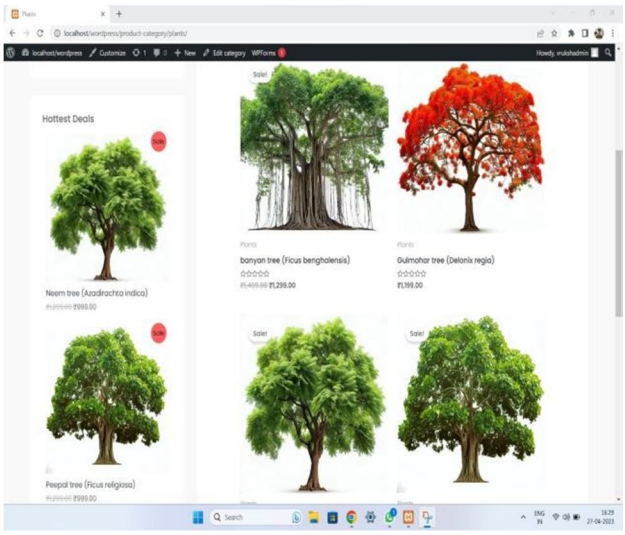



Fig.5: Cart Page

User will be able to select tree from the list of the trees available on the site. The pricing will be shared on the same page as shown in image.

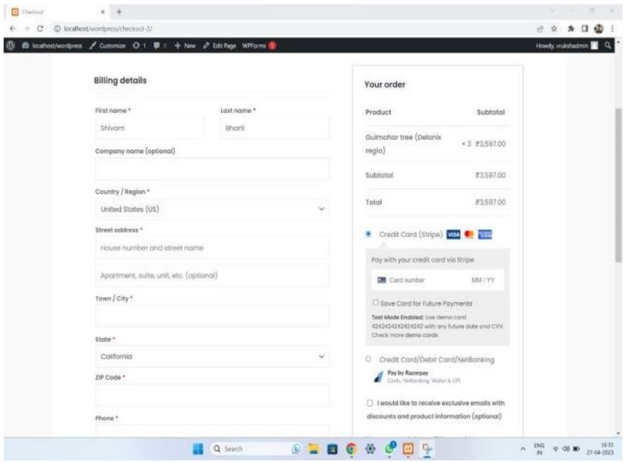
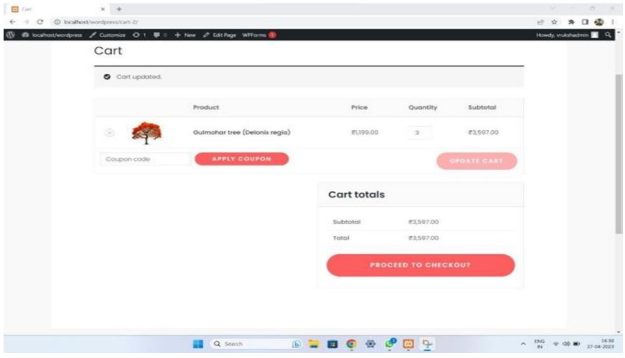



Fig.6: Payment Page

Billing detains will be collected on the portal and online payment is made available using the API. User has to fill the details for further contact and other credential required to make the payment successful.




After Clicking cart we will get the list of trees we added in the cart. User can pay for all the trees once or can pay one by one making it convenient

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## XI. ADVANTAGES

By utilising maps, data, and analytics, tree planting operations may become more effective and accurate.

*1)* Analysing the effects of tree planting on the environment and society may be done by measuring the height, health, and carbon emission reduction of trees over time.

*2)* Engaging and educating the general public and others about the advantages of trees, sea coral reefs and different carbon footprint reducing majors can help a lot to gain their support and involvement.

## XII. FUTURE SCOPE

*1)* An interactive dashboard that shows important things and indications of the project. Like effectiveness, including the total number of trees planted, the area covered by the plantation, the amount of contribution towards net zero emission, the amount of biodiversity restored, and the social benefits produced.

*2)* Users may share their experiences and recommendations with other users through a feedback system that enables them to score, review, and comment on the tree plantation projects and locations. This will increase the interaction between people and help build a better and aware community.

*3)* A system for learning that offers users educational materials like digital magazines and details on the significance of trees and tree planting, including films, essays, tests, and games.

## XIII. CONCLUSION

In conclusion, the software-based tree plantation and live tree tracking project is a valuable tool for individuals and communities looking to make a positive impact on the environment through tree plantation efforts. Future developments could include integration with social media platforms to reach a wider audience, as well as the use of data analytics to track the impact of the project overtime. Overall, the project has shown significant potential for making a meaningful impact on environmental sustainability and should be continued and expanded upon.

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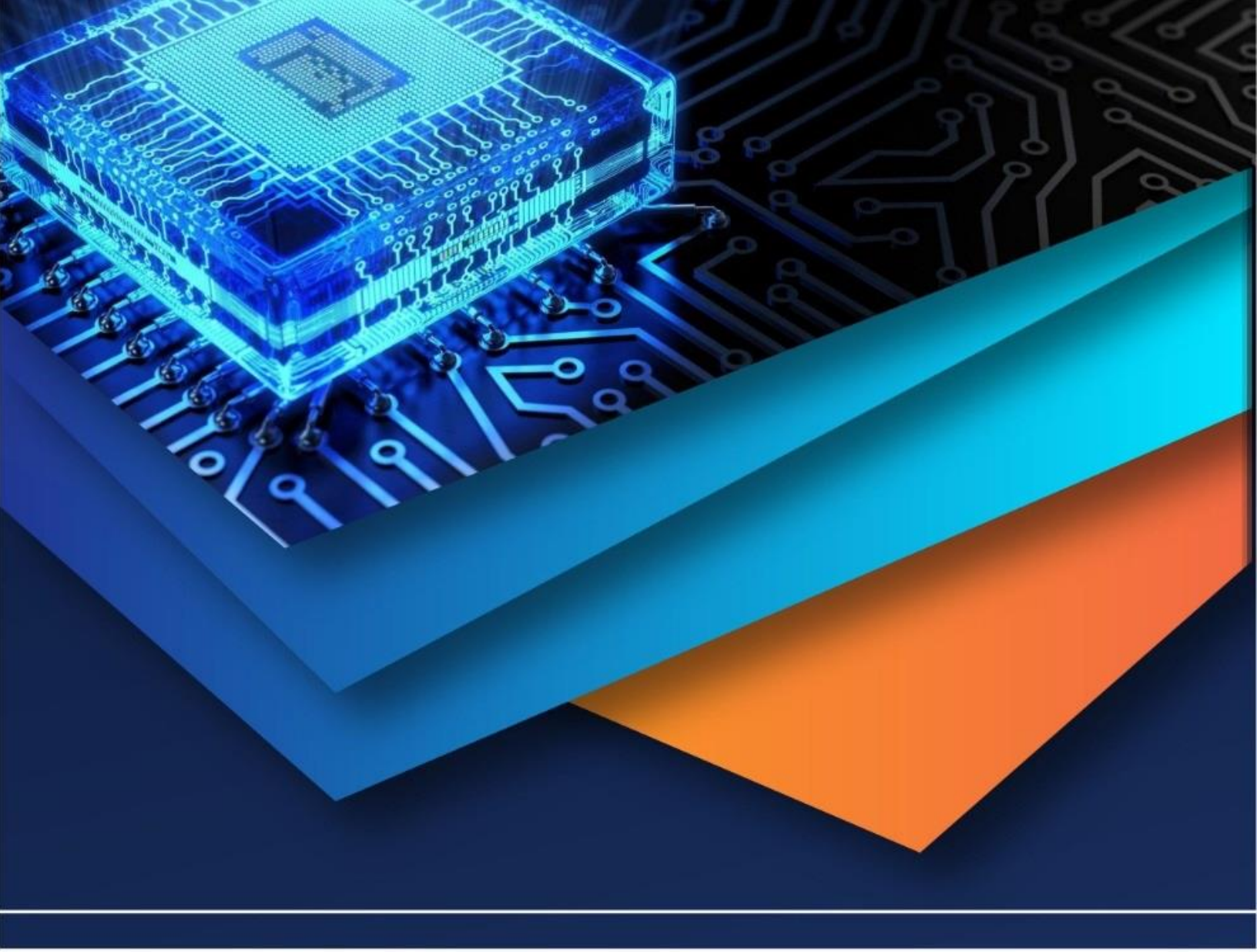
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