iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 7 **Issue:** V **Month of publication:** May 2019

DOI: https://doi.org/10.22214/ijraset.2019.5346

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.177
Volume 7 Issue V, May 2019- Available at www.ijraset.com

Digital Mall Navigation

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Abstract: ***The shopping malls provide a large directory to their product sections, which are time taken and don't provide a interactive feature to promote customers for shopping. The main idea behind proposed system is to give interactive features to the mobile network based digital mall. Now-a-days smart phones have been most popular, we have developed an application that needs real-time, faster and reliable information processing in a step aimed toward promoting shopping strategies and make people life easier. For that we developed an application that contains navigation system. The navigation to search the desired product is done using Dijkstra's algorithm. In Dijkstra's algorithm it shows the shortest path to the desired location. Automatically bill will be generated of the chosen products. additionally, serving to the users to seek out shops efficiently and effectively, were able to create awareness in using smart mobile devices for flexibility in nearly every task among the shopping.***
Keywords: Navigation, directory, interactivity,

I. INTRODUCTION

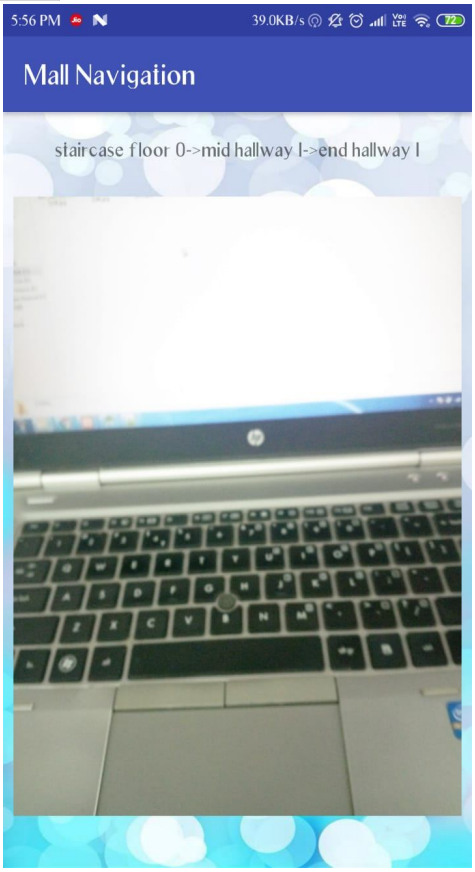
Manual Shopping is the customary method for shopping where the clients pick their wished item and convey the items alongside them. Customary shopping is a monotonous and tedious occupation. In conventional shopping, the client needs to hold up in long lines at the money counter. This devours part of time and vitality of both the customer just as a clerk. To beat this law, the customer himself can scan the barcode using his mobile while making a purchase, retrieve essential details of all products from shops database and generate bill himself. This bill can be sent to the client's portable through internet banking administration along these lines the client can make the fast installment and leave the shop early. The Barcode of the item is filtered by the client and move to the list of things to get on the off chance that they are keen on a decision of thing by utilizing the proposed versatile application. So as to build up an Android Application that utilizes a standardized identification scanner for the buying and route of things for store that will act naturally checking and programmed installment exchange. Here come the term indoor route and scanner tag filtering. Indoor situating is as yet a testing issue since satellite-based methodology doesn't work legitimately inside buildings. Barcodes are universally used to distinguish items, products or conveyances. Gadgets to peruse standardized tags are all near, as pen type peruses, laser scanners, or LED scanners. Camera-based peruses, as another sort of standardized identification, peruse and have as of late increased much consideration. The enthusiasm for camera-based scanner tag acknowledgment is based on the way that various cell phones are now being used, which gives the ability to take pictures of reasonable quality. This portrays the equipment framework engineering for actualizing the standardized identification perusing framework in cell phones and its process. The camera gadget and application processors are essential equipment segments for the framework. The application processors are expected to actualize the camera interface, LCD controllers, DSP for picture handling, and application has in CPU for on-going calculations. The application processor works for showing the menu and see of the showcase and registering of code acknowledgment and unraveling progressively. With these frameworks, the client can control the situation of the camera or cell phone and chooses the catch timing of standardized identification.

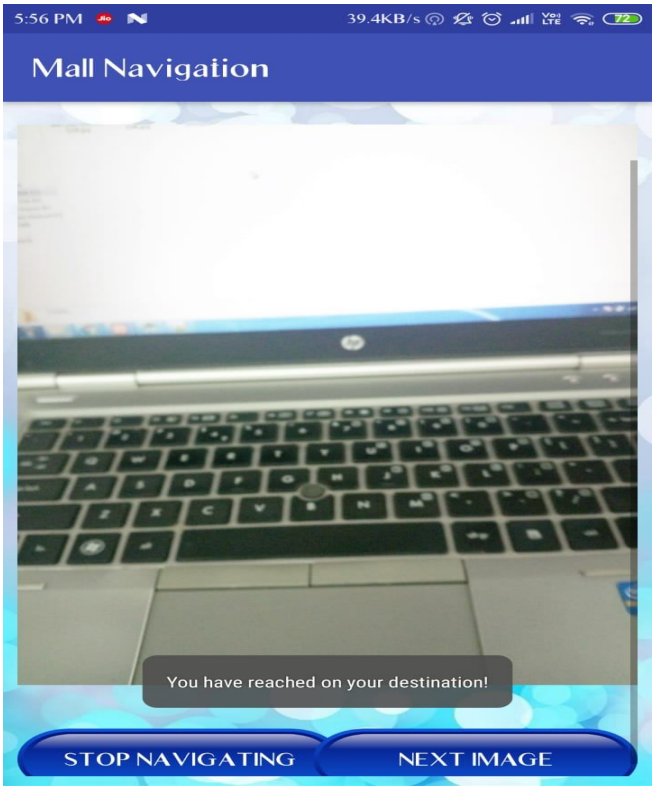
II. OVERVIEW

This android application is built for navigation in big malls and auditoriums. It shows navigation to the product searched by the customer. This application is specially designed to the customers who are new to the mall and to save the time of the customers and they can pay their bills online. Navigation is done by using Dijkstra's Algorithm

A. Navigation

Navigation is shown using Dijkstra's Algorithm, which uses images to show the path to the searched product. It shows the path from the current location to the destination .it firstly shows the images of the location near to the current location and then when we click on next image it shows the next location to go by messages on the top with an arrowhead.





III. LITERATURE SURVEY

A. *Accurate And Reliable Real-Time Indoor Positioning On Commercial Smartphones*

1) Author: Gennady Berkovich

This paper figure out the software system navigation engine which was developed by SPIRIT Navigation for indoor positioning on industrial smartphones. Measurements such as 3D measuring device (Gyroscope), magnetic field force device (Magnetometer), WLAN, BLE modules are used for positioning within the navigation engine. Technologies such as PDR (Pedestrian Dead Reckoning), Wi-Fi process, Geomagnetism and map matching. When the dissimilar particle is found a then such particles are grouped to form a particular task. Initially, when the navigation starts the location is automatically updated by GPS/GNSS. Then the tracking mode provides real-time navigation for the indoor either on the ground or on the Google Indoor Map. The automatic tracking allows continuing tracking. The tracking can be done through failure particles whose problems are known when accidentally all the particles are discarded. Navigation engine is the form of SDK which can be used to build an application in android as well as in iOS. This navigation can be used in a big mall and auditorium with the accuracy of 1-2 m.

B. *Methods and Tools to Construct a Global Indoor Positioning System*

1) Author: Suk-Hoon Jung; Gunwoo Lee; Dongsoo Han This paper outlines a method and technique using WLAN fingerprinting to build GIPS. The fingerprints collected via crowdsourcing are used to construct radio maps which adopts an unsupervised learning, and a probabilistic indoor positioning algorithm is developed for the radio maps created with the crowdsourced fingerprints. Along with these techniques, grouping indoor and radio maps of buildings in villages and cities is important for a GIPS. This paper aims to gather indoor and radio maps from volunteers who have an interest in deploying indoor positioning systems for his or her buildings. The ways and tools for the volunteers are represented within the process of developing an indoor positioning system inside the larger GIPS. an experimental GIPS, named KAIST indoor locating system (KAILOS), was developed integrating the ways and tools. The large-scale indoor shopping center were developed on KAILOS, revealing the effectiveness of KAILOS in developing indoor positioning systems. The additional volunteers who participate in developing indoor positioning systems on KAILOS-like systems, the earlier GIPS are going to be realized.

C. *Interactive Android-Based Indoor Parking lot Vehicle locator Using QR-Code*

1) Author: Siti Fatimah Abdul Razak; Choon Lin Liew; Chin Poo Lee; Kian Ming Lim

The QR code has been used in many ways in shopping malls for marketing, promoting items to the customers. In this paper, they have developed an application which shows the location of the parked vehicle in the shopping mall. Use of inbuilt functions of the smartphones such as motion sensor, bar code scanner function and camera function. The route from customers location to the parked vehicle is shown in indoor navigation on the basis of route stored in the database. The current movement of the user is detected by steps calculation.

D. *Mitigating the Antenna Orientation effect on Indoor Wi-Fi Positioning of mobile Phones*

1) Author: Da Su; Zhenhui Situ; Ivan Wang-Hei Ho

As GPS has its limitations in indoor positioning, the interest in Wi-Fi hotspots and Wi-Fi positioning is increasing. This paper builds a system which uses fingerprinting and Kalman filter on mobile applications. It not only works on positioning but also on the effect of antenna orientation and signal fluctuation. Mapping is improved using the KNN algorithm to tackle the orientation effect. Large orientation effect is handled through the database established on orientation-based fingerprinting by studying the signal strengths patterns received from different directions. This system has the accuracy up to 1.2 meters in 90 percent of the time which can support various navigations and large-scale indoor environments.

E. *Concept For Building A MEMS Based Indoor Localization System*

1) Author: Thomas Willemsen; Friedrich Keller; Harald Sternberg

GNSS is very popular in smartphones for navigation. The places where no signal is found, GNSS can be useful. An example such as shopping malls, big offices, train stations, and museums. The main aim of GNSS is to navigate in shaded areas. MEMS sensors (Micro Electro Mechanical Systems) such as accelerometer, gyroscope, magnetometer and barometer installed in smartphones are used to navigate in shaded areas. As these sensors are of low quality, position estimation is needed. In this, a concept based on low-quality smartphone sensors is used to construct an indoor navigation system. The basis of position determination is formed from the available sensor data of the position estimate. MEMS sensors are used for position estimation so that a wide variety of supporting information can be processed.

F. GROPING Geomagnetism and crowdsensing Powered Indoor Navigation

1) Author: Chi Zhang; Kalyan P. Subbu; Jun Luo; Jianxin Wu

In spite of the particular incontrovertible fact that Wi-Fi procedure based totally indoor limitation frameworks are planned, our field involvement with Google Maps Indoor (GMI), the most framework accessible for open testing, demonstrates that it is a long technique from developing for an inside route. during this paper, we tend to first report our field worries with GMI, and in addition, analyse results planning to clarify our unacceptable GMI encounter. At that point propelled by the noninheritable experiences, we tend to propose in certain as Associate in Nursing freelance indoor route framework free of any infrastructural bolster. Grabbing depends on geomagnetic fingerprints that are unquestionably further steady than Wi-Fi fingerprints, and it misuses crowd sensing to form floor maps instead of anticipating that singular settings have to be compelled to offer digitized maps. the insight of our investigations with twenty members on utterly totally different floors of a serious store, in certain will convey Associate in Nursing adequate exactitude for restriction and during this approach offers sleek route involvement.

G. Indoor positioning of wheeled devices for Ambient Assisted Living: A case study

1) Author: Payam Nazem Zadeh; Daniele Fontanelli; David Macii; Luigi Palopoli

Indoor Navigation is a well-known research topic whose popularity is been increasing on a large scale in different public environments such as shopping malls, airports, stations, etc. Large crowded environments feel like intimidating to the people who are motion and cognitive impaired. In such condition, a smart walker wheeled able to safely guide the person to the wanted destination. This requires two kinds of applications such as low deployment cost and able to work un large and crowded areas. The tracking technique in this paper uses Extended Kalman Filter (EKF) which analyses through simulations in a minimum amount of sensors.

IV. COMPARISON OF EXISTING PREDICTION TECHNIQUES

A. Applications & their Prediction Techniques

1) SR. No :1

a) Prediction Techniques: Google Indoor Map for indoor navigation system

b) Application: To navigate the mall by GPS/GNSS so that it can provide real time indoor positioning

c) Purpose: SPIRIT Navigation for indoor positioning on commercial smartphones

d) Parameters used for measuring the Performance: IMU (3D accelerometer, gyroscope), a magnetic field sensor (magnetometer), WIFI and BLE modules

2) SR. No :2

a) Prediction Techniques: global indoor positioning system (GIPS) using WLAN fingerprinting

b) Application: KAIST indoor locating system (KAILOS) was made to navigate large places using GIPS.

c) Purpose: introduces methods and tools to construct a GIPS by using WLAN fingerprinting

d) Parameters used for measuring the Performance: crowdsourcing

3) SR. No :3

a) Prediction Techniques: Android QR based indoor parking

b) Application: navigation services to locate parked vehicles in an indoor parking space.

c) Purpose: a smart wheeled walker able to estimate its own position autonomously

d) Parameters used for measuring the Performance: Android app

4) SR. No :4

a) Prediction Techniques: the antenna orientation effect on indoor Wi-Fi positioning

b) Application: Using KNN algorithm and create fingerprint database

c) Purpose: To navigate large scale indoor navigation

d) Parameters used for measuring the Performance: the fingerprint method and Kalman filter on Android mobile devices

5) SR. No :5

a) Prediction Techniques: MEMS based indoor localization system

b) Application: GNSS can't position in shadow with the use of MEMS we can position in shadow region

c) Purpose: To navigate in shadow region using MEMS

d) Parameters used for measuring the Performance: Micro Electro Mechanical System, accelerometer, gyroscope, magnetic field sensor and barometer

6) SR. No :6

a) Prediction Techniques: Geomagnetism and crowdsensing Powered Indoor Navigation
b) Application: GROPING can deliver a sufficient accuracy for localization provides smooth navigation experience.
c) Purpose: GROPING is more efficient then WIFI using GMI
d) Parameters used for measuring the Performance: Geomagnetic fingerprints

V. EXISTING SYSTEM

Traditional shopping is a very tedious work in which the customer has to search products on its own then carry it in cart stand in a long queue. wait till the number arrives. and then pay the bill by cash or by card

VI. PROPOSED SYSTEM

In this proposed system when the user logins he or she can search the product. Then the application shows the location of the product so that the user can navigate to the product. The navigation is shown using images which shows shortest path to reach the product. We can scan the QR code printed on the product and add the product to the cart and pay the bills online.

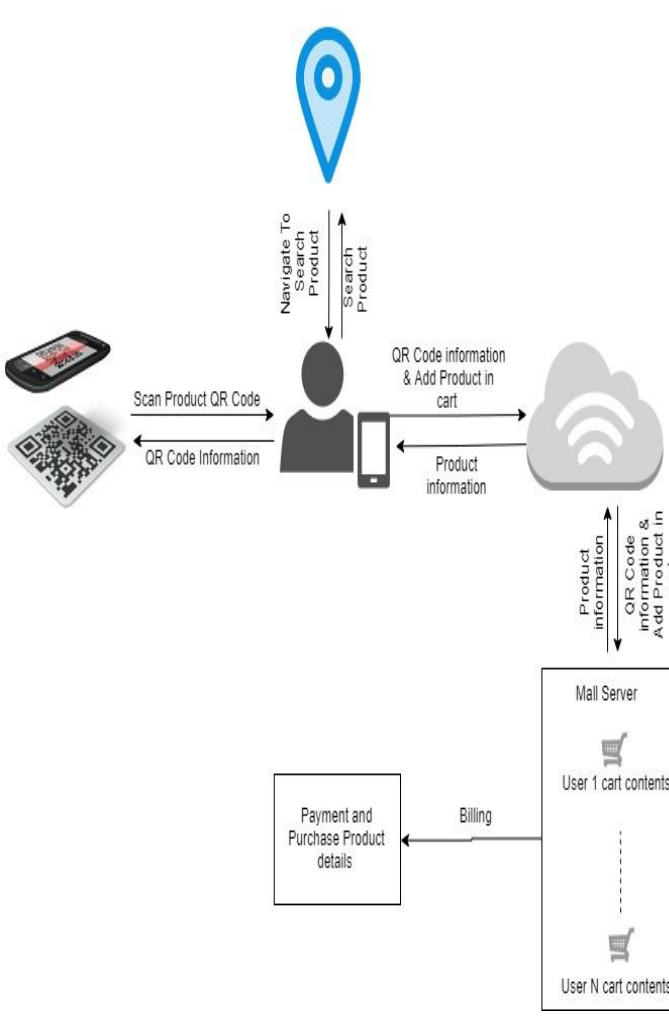


Fig:5.1 Proposed System

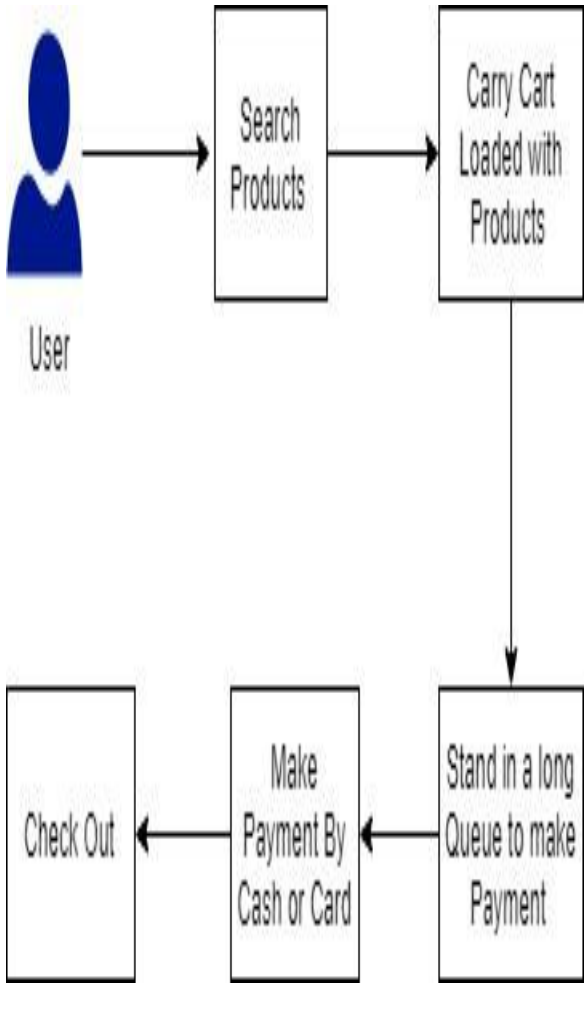


Fig: 4.1 Existing System

VII. CONCLUSION

In an effective step aimed carefully at promoting shopping methods and make people life easier; we are going building this mobile application that could play an important role in Indian society as a whole. The usage of Pocket PC mall navigator as a shopping mall navigator, in addition to helping the users to find shops efficiently and effectively, was able to create awareness in using smart mobile devices for flexibility in almost every task among the shopping's.

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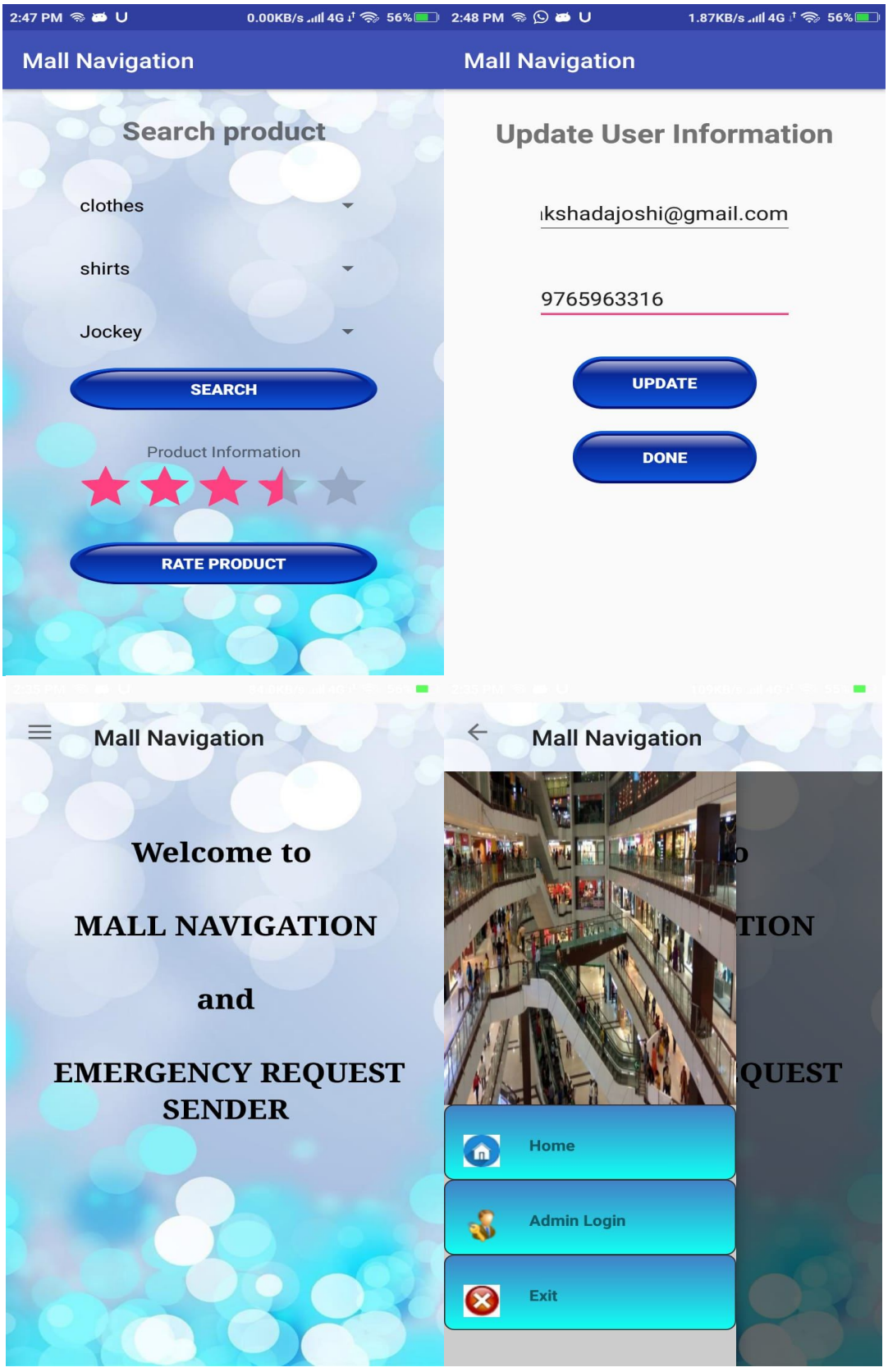
VIII. RESULTS



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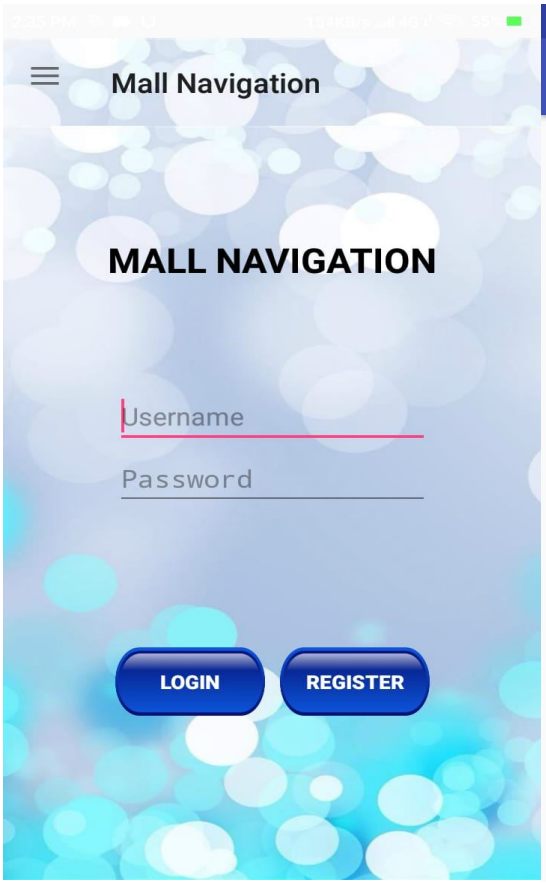

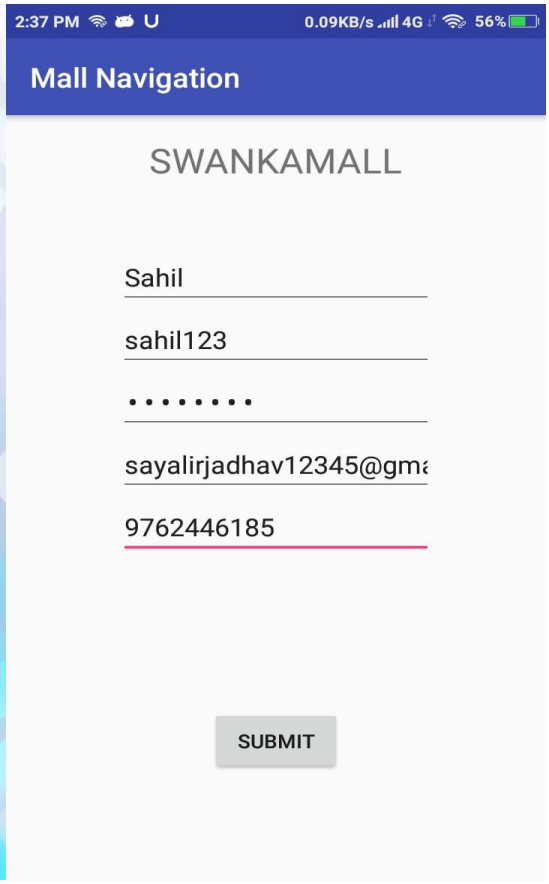

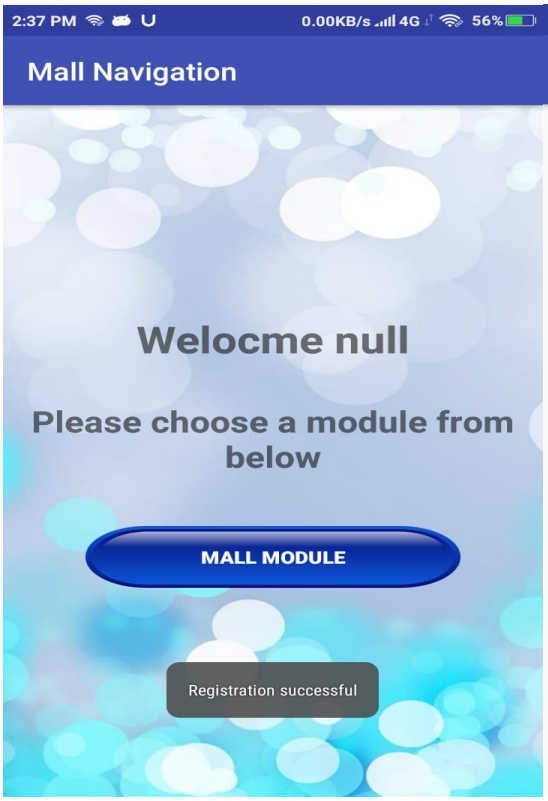

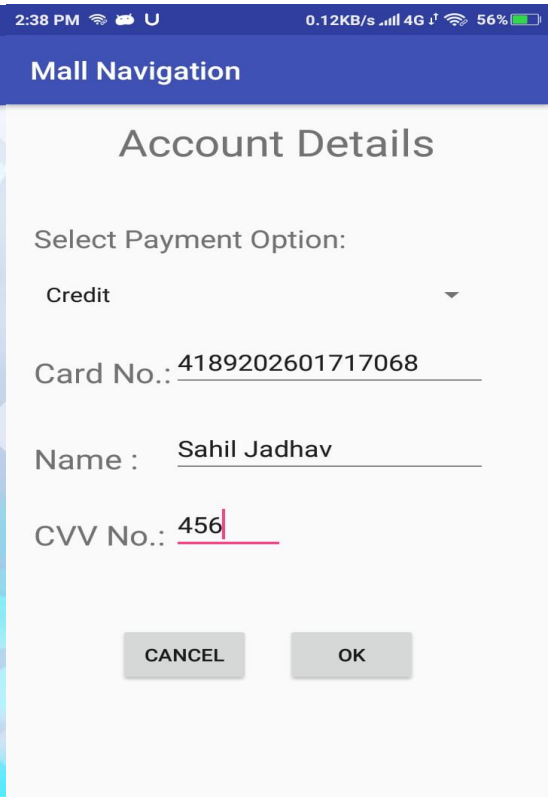

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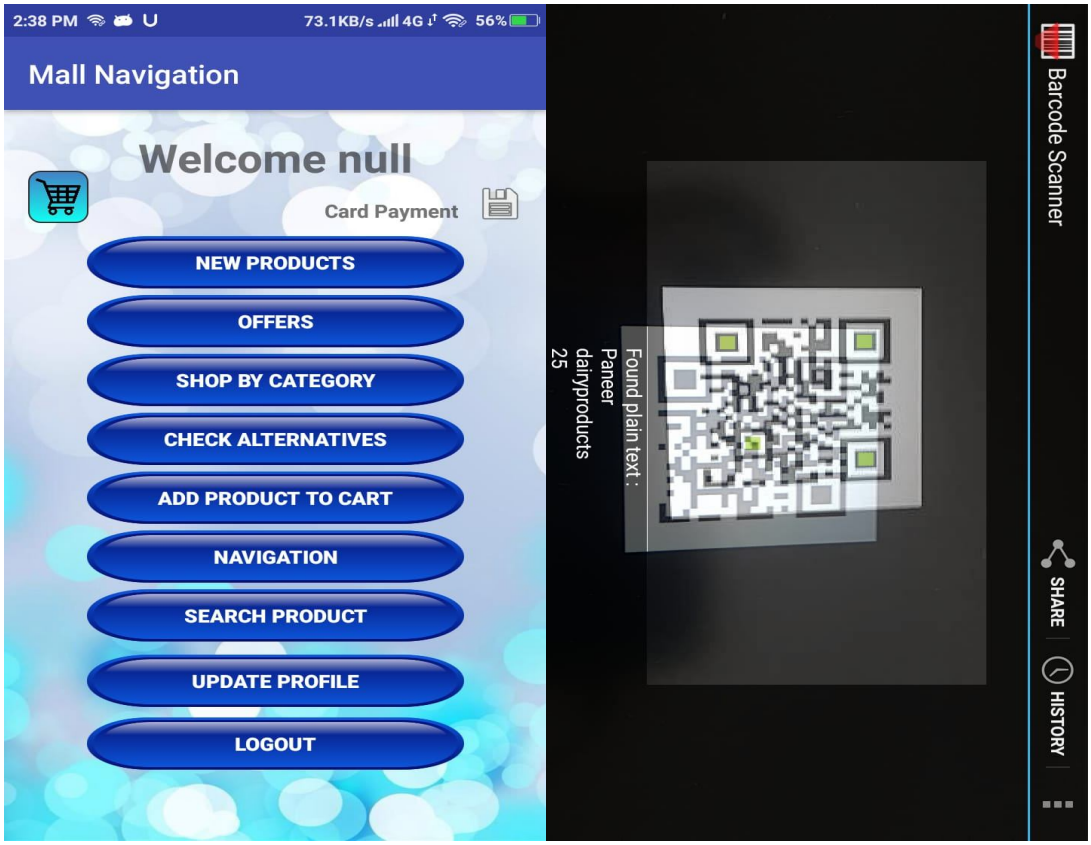

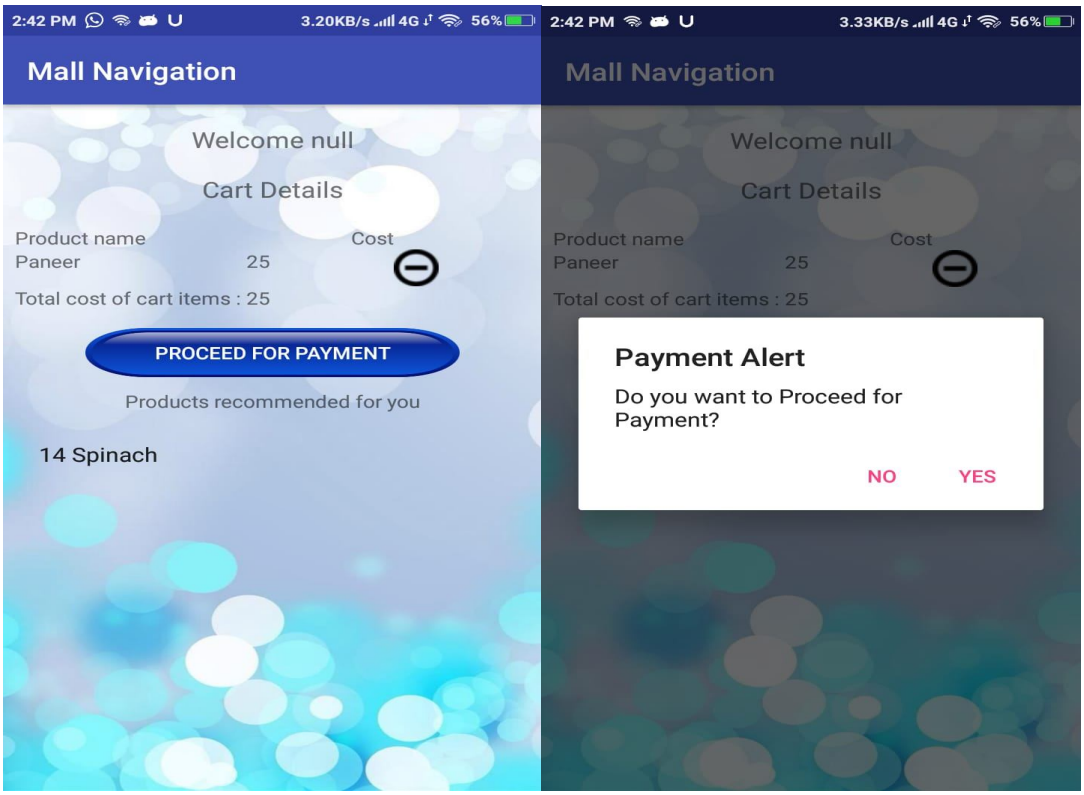

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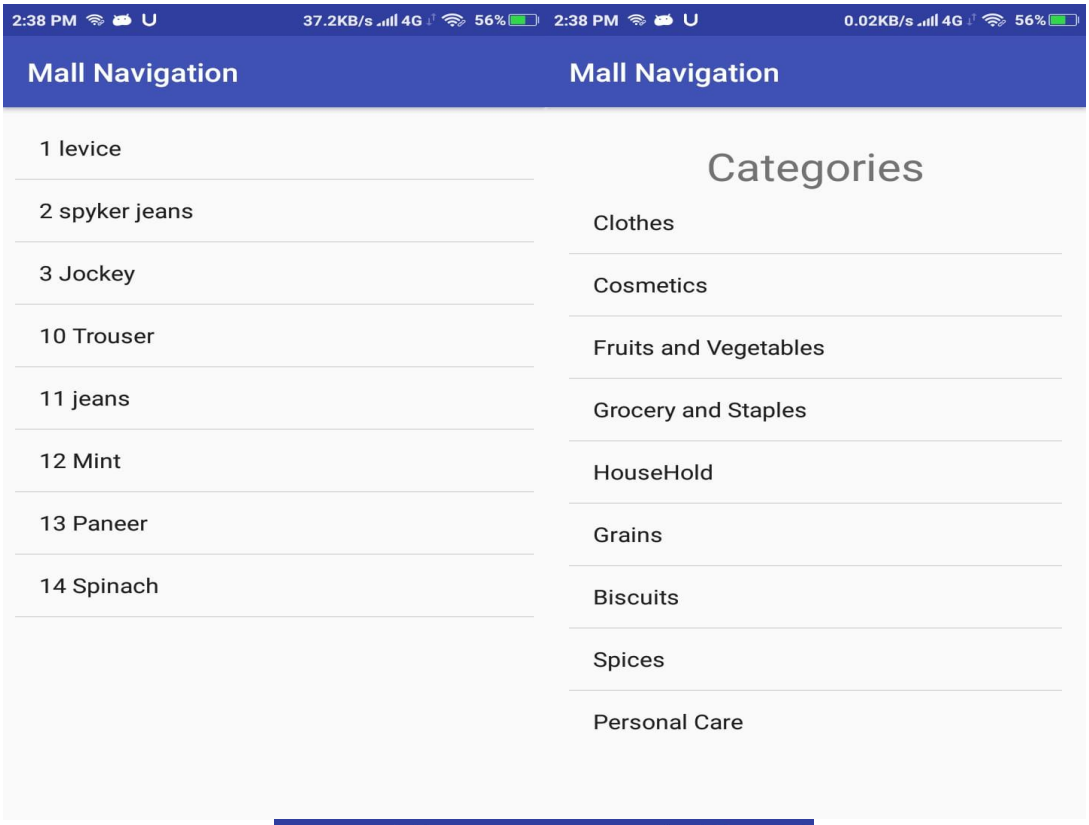

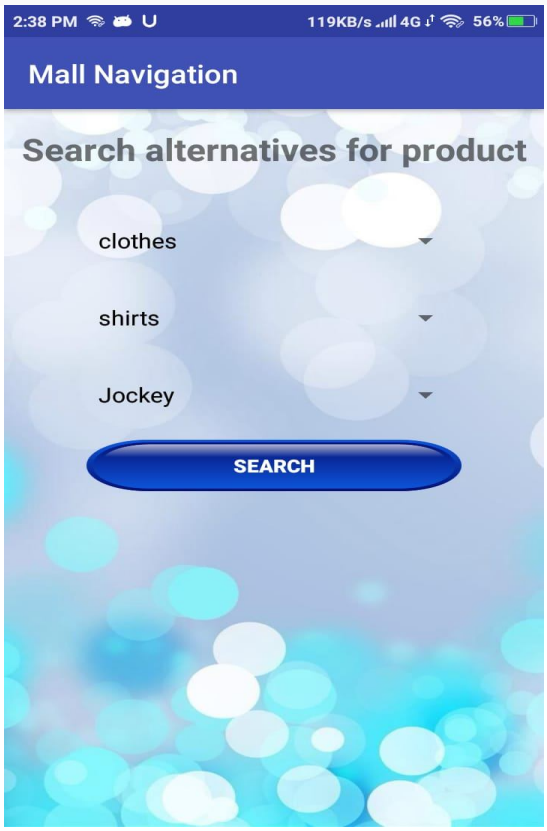

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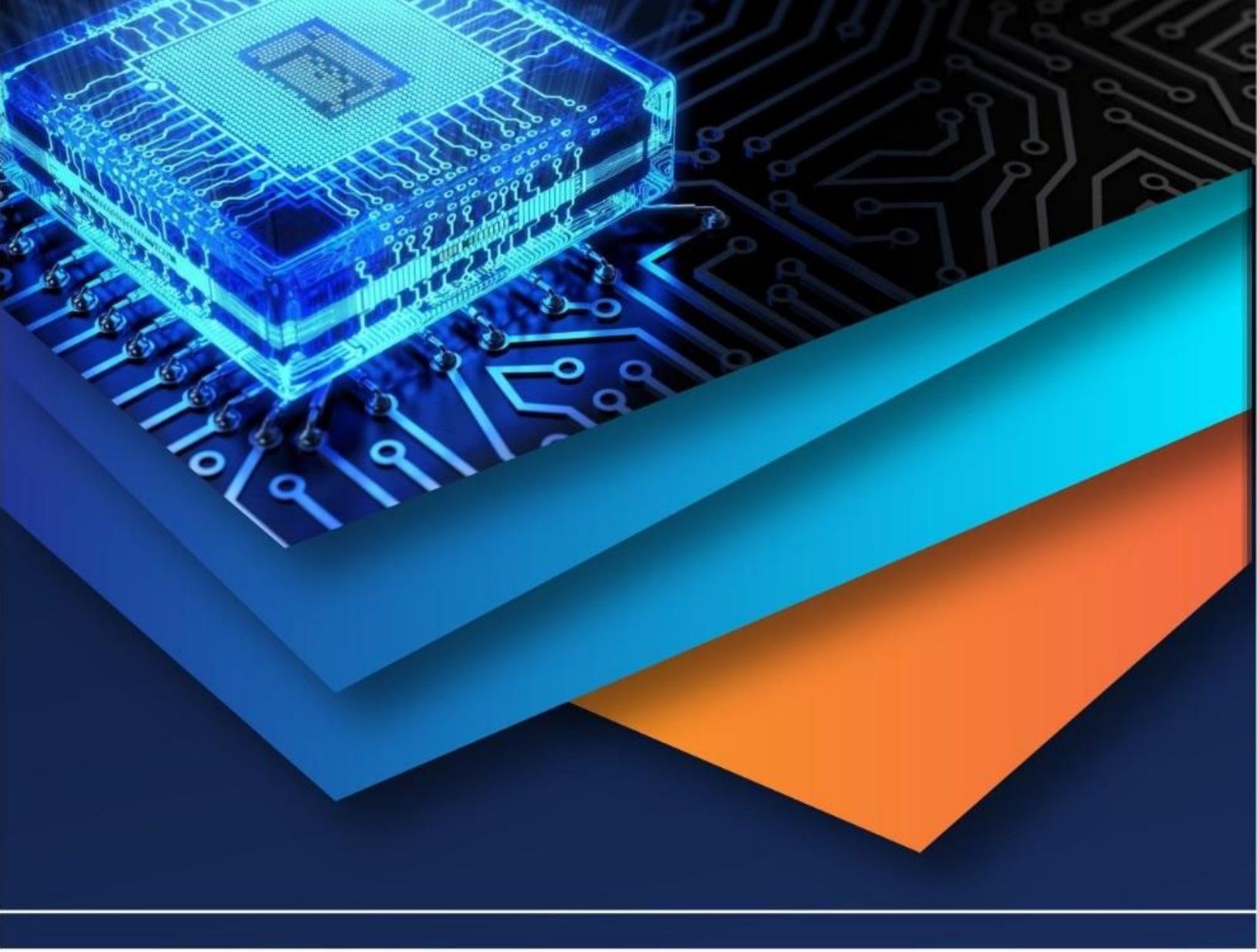

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