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Students Attendances System Using Face Recognition

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Abstract: ***Now a days we are living in this world where everything is automated and linked online. Internet are the things discover and it is used all over a world very beneficially.in human body face is the crucial factor for identifying each person. It can be identified by using different method like biometric for taking attendance. But in this method many more time are required to take attendance and also people are in contact with each other while marking their attendance in this pandemic situation we are introducing new technology student attendance system using face reorganization. Generally in a classroom the attendance was taken manually at ending or beginning of the class. The problem is that they required a lot of time to be taken and some manual and paper work will make a chance of mistake. To overcome from this problem we are introducing face recognition base attendance system. It is used in many application for identification of human face in a digital image or live video stream video. The proposed system make used of Haar classifier, KNN, CNN, SVM and global filters. After this recognition attendance report will be generated in excel format. The overall accuracy and complexity are calculated after testing this system it is cost efficient and need less installation time.***

Keywords: Face recognitions, Face detection, Haar classifier, CNN, KNN, SVM, LBPH, Automatic Attendances and image processing.

I. INTRODUCTION

Attendances is the part of daily life for educational intuition as well as management system.in previous year the attendance can be taken manually they required lot of pen and page with time . Or they pass sheet to sign one by one to maintain their record. But now a days many more technology are introduced to reduce time and work like this we given the student attendance system using face recognition, they taken attendance automatically to reduce the complexity and to prevent the chance of mistake. This are the advantage for educational as well as official sector. Face recognition is a methodology in which person or group of person can be identify from digital image or live stream video. They can identify a person from given dataset image and they compare extracted human facial feature from input image of human face and they recognize uniquely by investigating the texture pattern and shape of the person face through face reorganization which identify faces and save record in the form of excel sheet.

The face with stationary and moving image has been an active part of research and their demand is also increase day by day in the field of image processing and pattern recognition. We have collected different posture of image an individual with high accuracy and then the image train from input dataset it recognize the image for this we used adaboost algorithm, proposed algorithm,cnn,knn and face detection algorithm are used . The image recognized correctly then it mark the attendance in the form of excel sheet. [1, 5]

A. Main Module And Overview Of System

1) Student login
2) Face dataset training
3) Face extraction and detection
4) Mark the attendance in excel sheet

The goal of face recognition based attendance system is to detect face of student from image or video stream automatically in real time. It capture facial data and storing it into dataset the CNN and histogram of oriented gradient, haar cascade is the method used which increase the accuracy .recognized face data save in the form of excel sheet which mark the attendance.[2]

B. Technology Used

1) Python
2) OpenCv
3) Webcam
4) Tkinter

5) Html,css,js
6) Student Dataset and Algorithm
7) Haar classifier ,KNN,CNN,SVM

C. Purpose

The main purpose of this system to detect the student face and taken the attendance automatically, with saving time and also reduce the chance of mistake it save money also and pen as well as paper can save manual work can be reduced .

II. METHODOLOGY

The various stage can be occur in it they are as follows which help to build project.

A. Data Entry

The first step is that we are collecting the student image with different posture and they are stored in the form of dataset. The name and roll number, branch can be written in the login page we have log all the student with their name, roll no, branch and this data are stored in dataset. When the student come in front of live video stream their face is detect and the attendance can be taken and this attendance stored in excel sheet.
Photos……..> enter name and roll no, branch to the photos.
Enter this photo set in the folder and save image with their id and name.
Sign in to the system with roll no and their respective id, and branch.

B. Dataset Training

The given dataset are stored in a folder with their name, roll number and branch the Dataset are used as input when student are in live video stream they identify student with their name and roll no, attendance can be taken automatically within 2 sec and
Attendance stored in the form of excel sheet.
The given dataset are focus on how face recognized and detect the authorized student and Count at what time they are coming in and going out from classroom .and also record how many classes they attained .the system keep authorized record of each student in the Form of its attendance in excel sheet format when face recognition done the automatic it Mark the attendance and store in the form of excel sheet.

C. Face Recognition

The face detection is performed by using haar-cascade using openCV in python. Haar cascade algorithm train the image detect in webcam and extract their feature. After it show the window which recognized the face in webcam which is register in previous from dataset image and after running it the attendance record and show in the form of excel sheet.

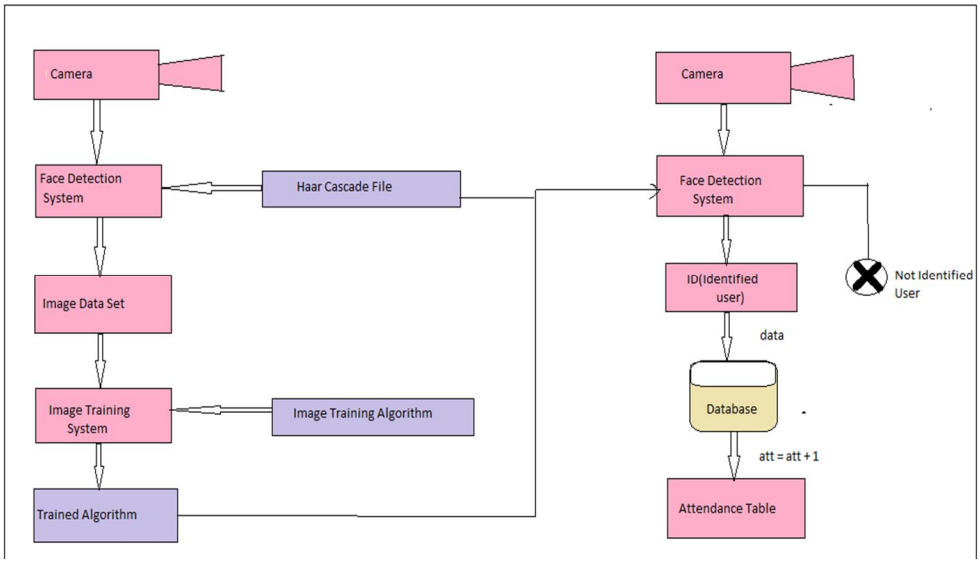
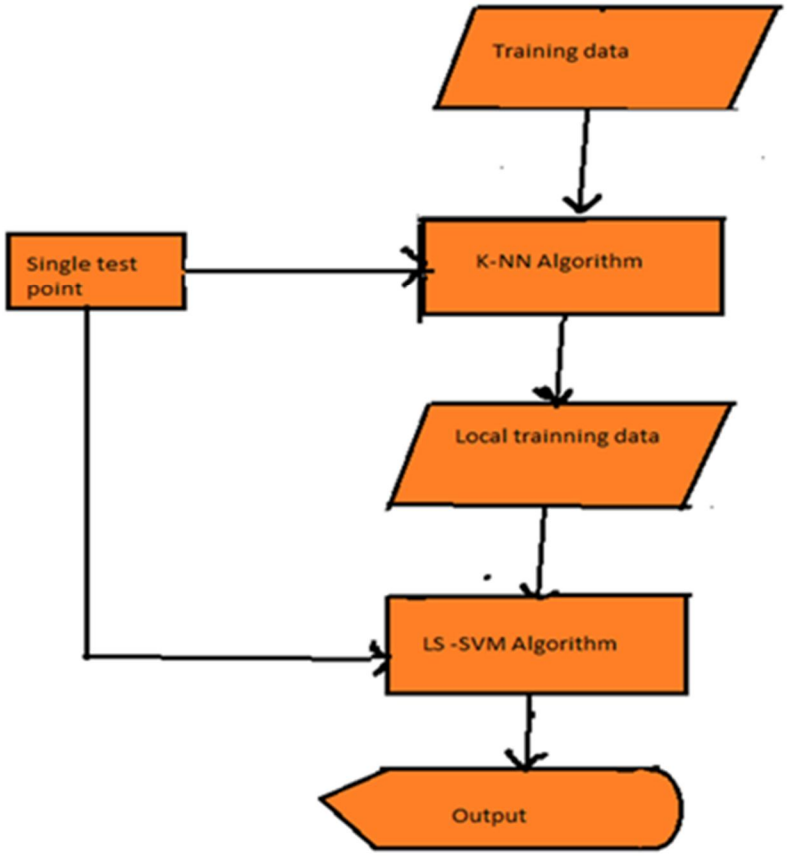


Fig.1:- Face Recognition

The above flowchart show how the face are recognized in the camera and training of the Register dataset show using train algorithm and by using haar cascade feature are extracted and in live webcam the face are detected if it identified then it record attendance and store in the form of excel sheet in database. If face is not recognized then it need to be signed in
In the system if it is done then in live webcam it recognized it and automatic attendance will be mark in excel sheet. [6, 9]

D. Algorithm Used

The given system used the proposed algorithm, CNN, algorithm, SVM, LBPS, face detection and face recognition algorithm are used in attendance system. The face detection algorithm are used to find out location and size of the faces in the form of image it detect the face first using face detection algorithm and after detecting the face in webcam it recognized the image.
Proposed algorithm it capture the image of each student in camera and then CNN (convolutional neural network) algorithm is applied and already recognized and capture image are used trained it in the network ,and greatly increase image recognition rate.
AdaBoost algorithm is used in OpenCV method and it detect the face it firstly extract the feature image into sample set by extracting the haar cascade feature in the image and then detect the image clearly and properly
Haar cascade detect the face with eye, nose and mouth with opencv and detect it more properly.
SVM (support vector machine) and LBPH (local binary patter histogram) are used to generate a decision surface separating the two classes. They re-interpret the decision matric between two facial images. This helps to construct face recognition algorithm. And LBPH is used to recognize the face of person it increase its performance and how it is able to recognize the face of person from both front face and side face in recognition process. [6, 10, 14]



When the data are trained using KNN and SVM algorithm it test the given image if image is match then it recognized and the output will display in the form of attendance data of student

In the excel sheet store in database.

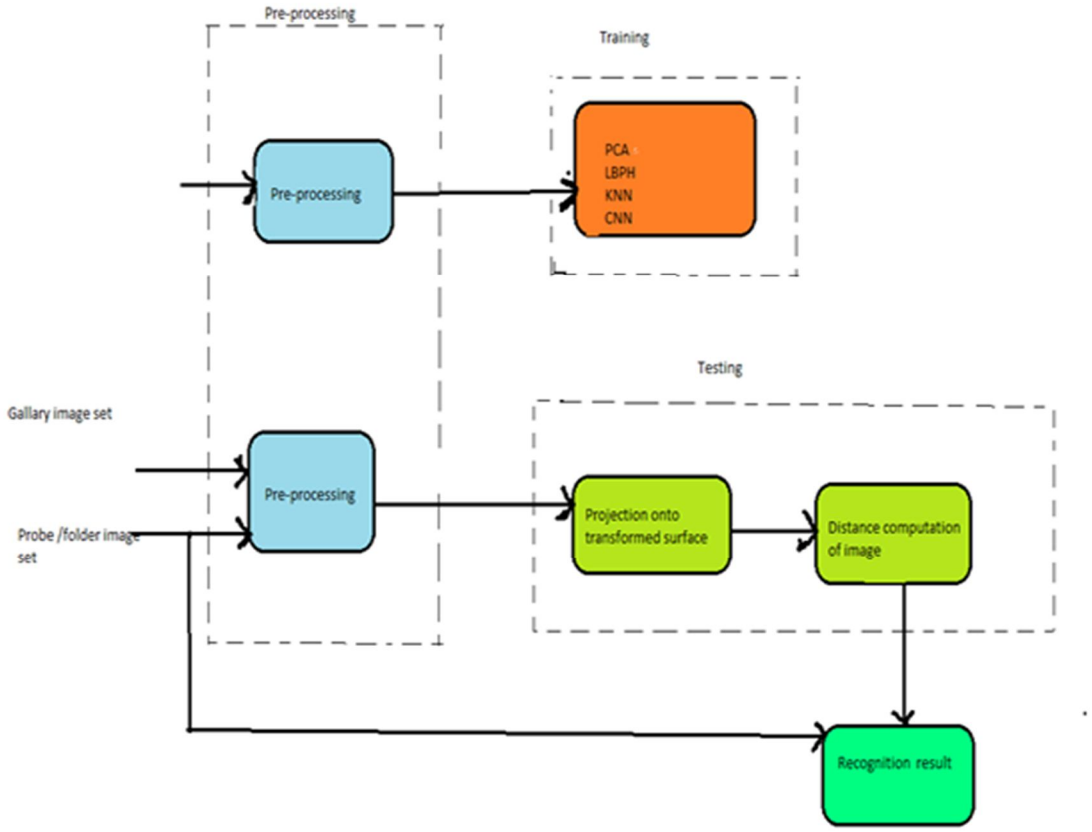
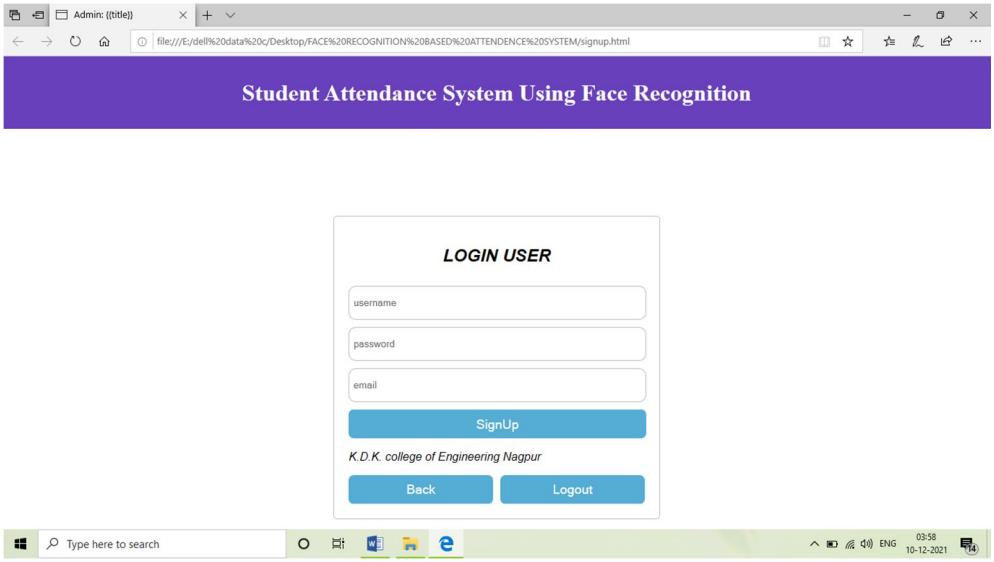
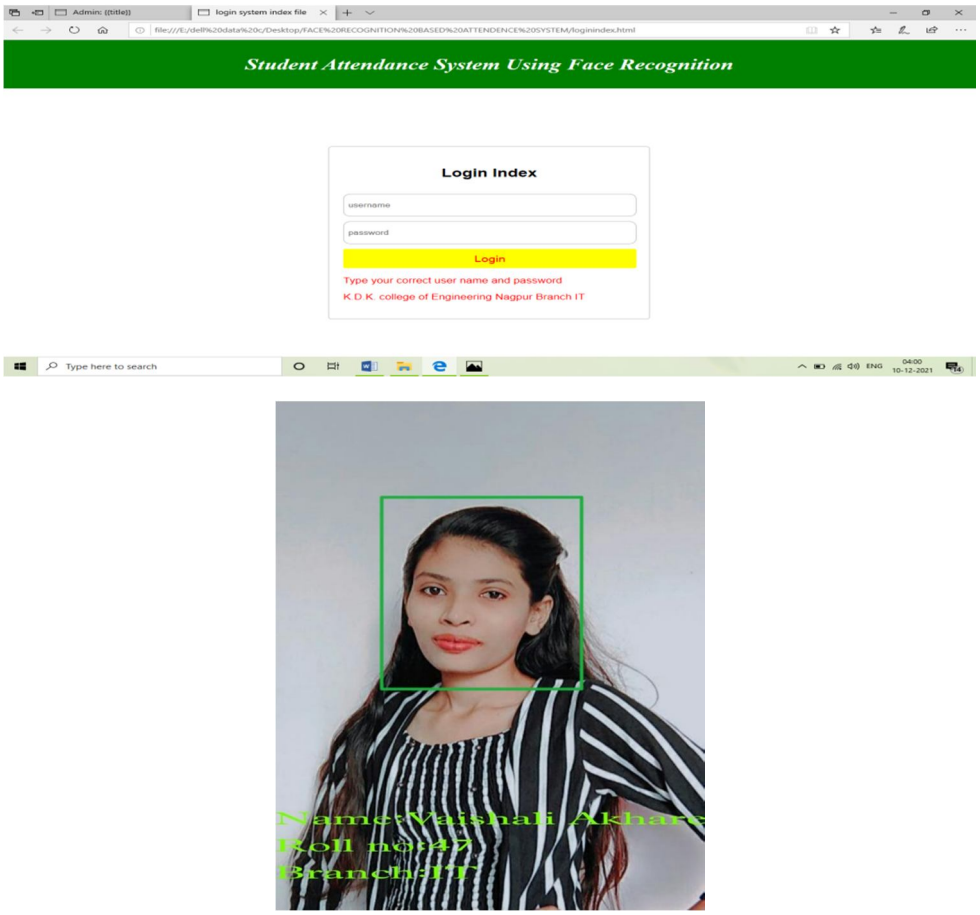


Fig: recognition process using above algorithm

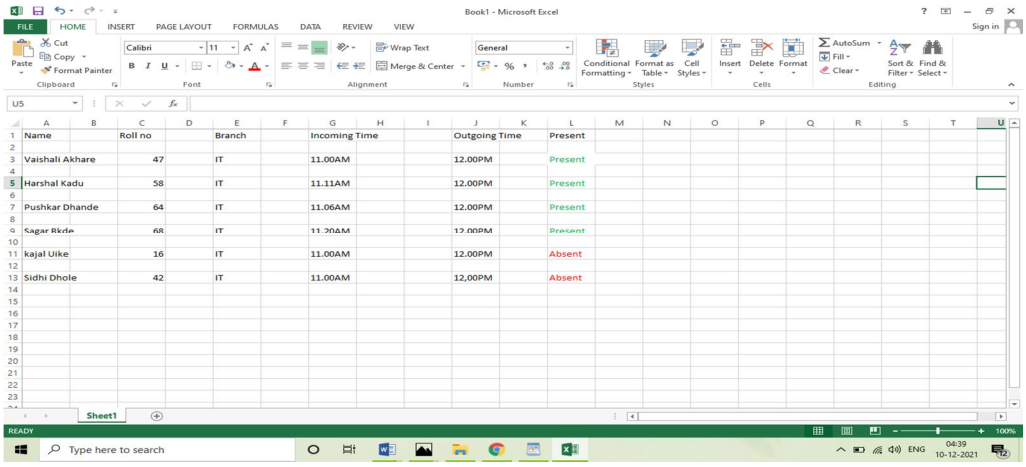
III. EXECUTION PROCESS

First the student of image is collected with different posture having high accuracy then the collected image are stored in the given database with their roll number, name and branch the separate folder are created for student image then student can registered or sign in in the form to stored their name and roll no, branch registered student can recognized while training of image take place in recognition phase unregistered student cant not recognized by system. The unauthorized person cannot access the detail. This is security to the system, the register student can recognized and attendance will be mark it store in the form of excel sheet. [3]





Face are recognized in the live video stream by detecting name of student, roll no and branch see in above picture and attendance can be mark in the form of excel sheet store in the dataset.



The Attendance can be mark after detecting a face in webcam and store in the database in the form of excel sheet detecting name and roll no and branch with incoming and outgoing time and mark the attendance in excel sheet.

A. Accuracy

While testing the accuracy of facial recognition algorithm its works perfectly and highest performance of the used algorithm. In idle condition recognition system can have perfect accuracy the algorithm have 99% accuracy while testing the face in live webcam cropping the face out whole image converting it to grayscale resize image and detect the face efficiently. The face are recognize in better way and having the accuracy 99% to 98%. Student face recognized in webcam in better way having highest result.

IV. FUTURE SCOPE

An automatic attendance system is an educational system that record the attendance of students in college or school. Attendance software enables the faculty to record, Store, and monitor students attendance history and manage the classroom properly. It saves lot of time, pen, paper and it avoid the chance of mistakes in attendance. Data are save private and no can do the changes in it hence it is more secure.

V. ADVANTAGES

1) It is Time saving process
2) It is easy to manage and more secure
3) It is cost effective
4) Attendance can mark automatically
5) Time and date also automatic track.

VI. DISADVANTAGES

1) If it goes in wrong hand it will make a problem.
2) Data privacy breach
3) Low reliability
4) Lack of regulation in face recognition system

VII. CONCLUSION

The system provide the feature such as face detection, extraction of feature, detection of extracted feature and analysis of student's attendances. It recognized students face and detect their face attendance mark using name and id and store in the form of excel sheet.it helps to build effective class attendance using face recognition system.

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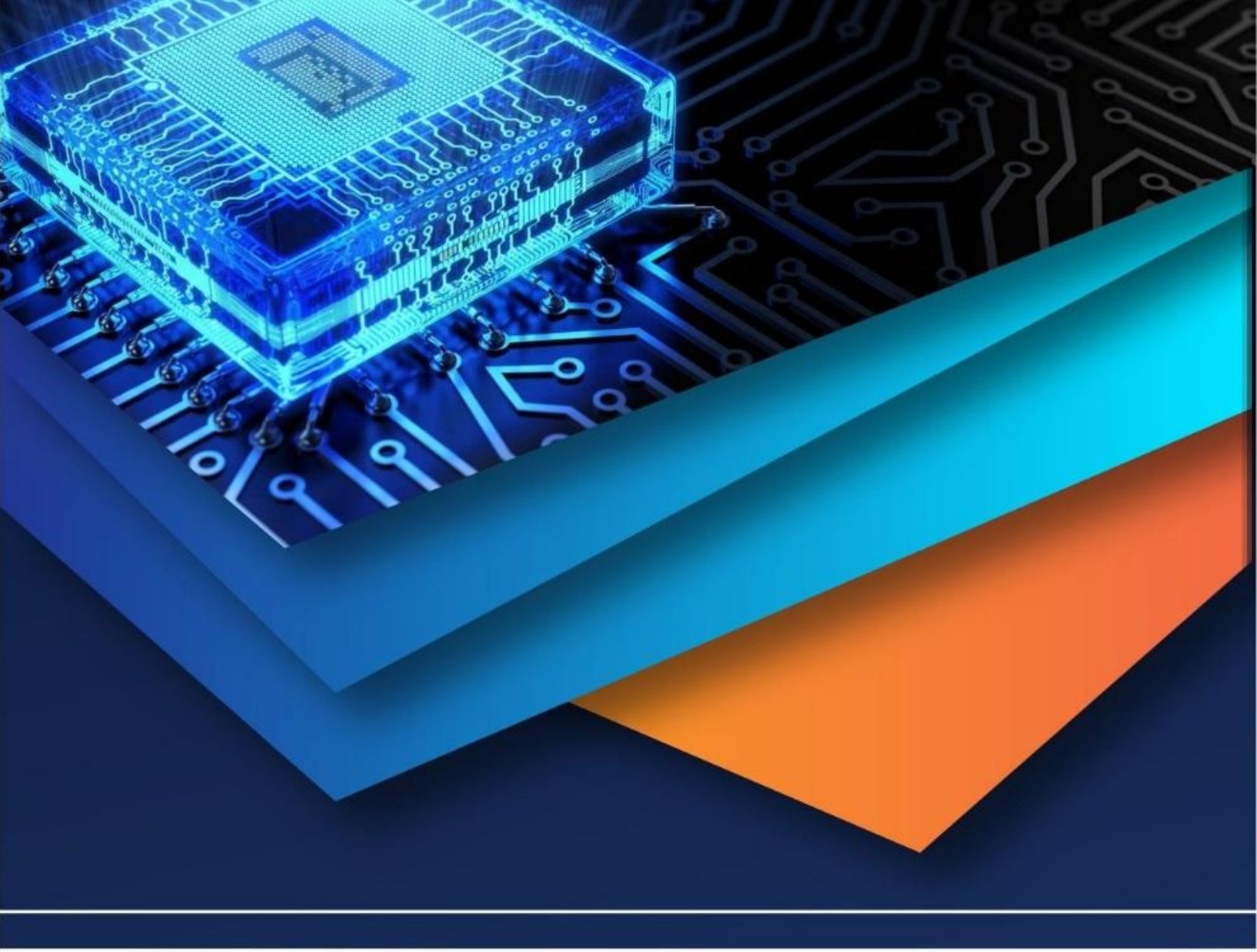

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