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Face Recognition Open CV Based ATM Security System

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Abstract: ***The real-time face detection and recognition has been made possible by using the method of Viola jones, Analysis work. The software first taking images of all persons and stores the information into database. Proposed work deals with automated system to detect person. The methodology comprised of three phases, first face Detection from image, second get all detail of face for the purpose of feature extraction. The most useful and unique features of the camera image are extracted in the feature extraction phase. Find out all facial details are visible. This feature vector forms an efficient representation of the face. In third phase and grab our feature extraction has been created to find the person how osculated face.***

Keywords: Haar cascade, Automatic Teller Machine, Annaconda (Jupyter IDE), Machine learning, CNN, Feature extraction

I. INTRODUCTION

The rise of technology bring into force loads of types of tools that aspire at more customer pleasure. ATM is a machine which made money transactions effortless for customers. But it has both advantages and disadvantages. Current ATMs make use of naught more than an access card and PIN for uniqueness confirmation. This has ATM Using Face Recognition System demonstrate the way to a lot of fake attempt and mistreatment through card theft, PIN theft, stealing and hacking of customers account details and other part of security. Checking the Camera module based face are recognized with comparable performance are based on the similarity between features extracted from regions of the images and those from the query image. Face recognition system is an application that mechanically identifies a person from a digital image source. One of the behaviors to do this method is by matching chosen facial features from a facial database and the image.

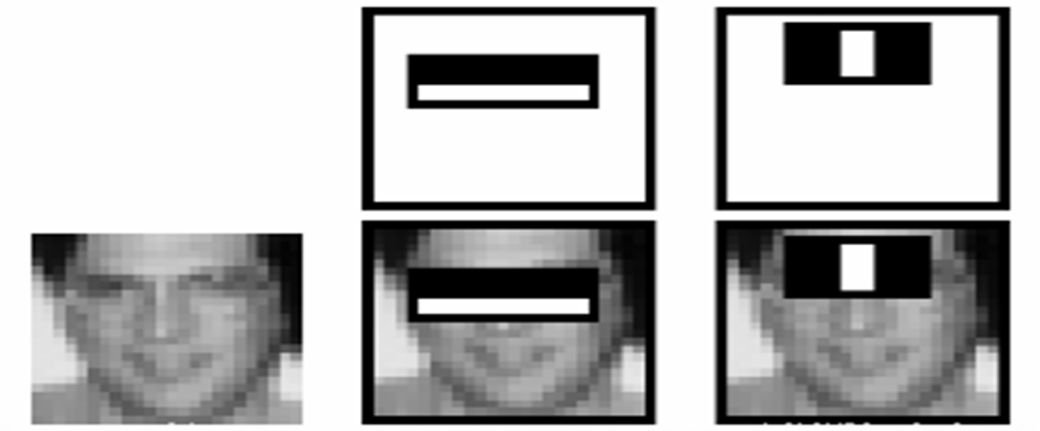

Figure: Haar Cascade

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II. LITERATURE SURVEY

A. Study of Research Paper (IEEE Format)

1) Paper Name: 1. An Introduction to the Good, the Bad, and the Ugly Face Recognition Challenge Problem

Author:P. Jonathon Phillips, J. Ross Beveridge, Bruce A. Draper, Geof Givens, Alice J. OToole, David S. Bolme, Joseph Dunlop, Yui Man Lui, Hassan Sahibzada, and Samuel Weimer

Abstract : This paper introduces the Good, the Bad, and the Ugly Challenge Problem. The main goal of the challenge is to encourage the development of algorithms that are robust to recognizing frontal faces taken outside of studio style image collections. The three partitions in the GBU Challenge Problem emphasize the range of performance that is possible when comparing faces photographed under these conditions. This structure allows for researchers to concentrate on the hard aspects of the problem while not compromising performance on the easier aspects.

2) Paper Name: 2. DeepFace: Closing the Gap to Human-Level Performance in Face Verification

Author: Yaniv Taigman Ming Yang MarcAurelio Ranzato Face- book AI Research Menlo Park, CA, USA yaniv, mingyang, ranzato@fb.com Lior Wolf

Abstract: This paper,demonstrates that coupling a 3D model- based alignment with large capacity feedforward models can effectively learn from many examples to overcome the drawbacks and limitations of previous methods. The ability to present a marked improvement in face recognition, attests to the potential of such coupling to become significant in other vision domains as well.

3) Paper Name: Dynamic Image-to-Class Warping for Occluded Face Recognition

Author: Xingjie Wei, Chang-Tsun Li, Senior Member, IEEE, Zhen Lei, Member, IEEE, Dong Yi, and Stan Z. Li, Fellow, IEEE Description

Abstract: In this paper the author have addressed the problem of face recognition with occlusions in uncontrolled environments. Different from most of the current works, we consider the situation that occlusions exist in both gallery and probe sets. We proposed a novel approach, Dynamic Image-to-Class Warping (DICW), which considers the contextual order of facial components, for the recognition of occluded faces. We first represent a face image as an ordered sequence, then treat the image matching problem as the process of finding optimal alignment between a probe sequence and a set of gallery sequences. Finally, we employ the Dynamic Programming technique to compute the Image to-Class distance for classification. Extensive experiments on the FRGC, AR, TFWM and LFW face databases show that DICW achieves promising performance when handling various types of occlusions. In the most challenging cases where occlusions exist in both gallery and probe sets and only a limited number of gallery images are available for each subject.

4) Paper Name: Face Recognition Using Sparse Fingerprint Classification Algorithm

Author: Tomas Larrain, John Bernhard, Domingo Mery and Kevin Bowyer

Abstract: We have extensively evaluated SFCA and compared it with other state of-art methods. The approach to the evaluation ex- periments with SFCA, using the same datasets used in evaluating other state-of-the-art methods, is meant to ensure its robustness and demon- strate that SFCA achieves improved accuracy in face recognition under variations in ambient lighting, pose, expression, face size, occlusion and distance from the camera. The results demonstrate that when the size of the dataset is small or medium (i.e., the number of subjects is not greater than one hundred), SFCA is able to deal successfully with these condition.

5) Paper Name: Helmet presence classification with motorcycle detection and tracking

Author: J. Chiverton

Abstract: Helmets are essential for the safety of a motorcycle rider, however, the enforcement of helmet wearing is a time consuming labour intensive task. A system for the automatic classification and tracking of motorcycle riders with and without helmets is therefore described and tested. The system uses support vector machines trained on histograms derived from head region image data of motorcycle riders using both static photographs and individual image frames from video data. The trained classifier is incorporated into a tracking system where motorcycle riders are automatically segmented from video data using background subtraction. The heads of the riders are isolated and then classified using the trained classifier. Each motorcycle rider results in a sequence of regions in adjacent time frames called tracks. These tracks are then classified as a whole using a mean of the individual classifier results. Tests show that the classifier is able to accurately classify whether riders are wearing helmets or not on static photographs. Tests on the tracking system also demonstrate the validity and usefulness of the classification approach.

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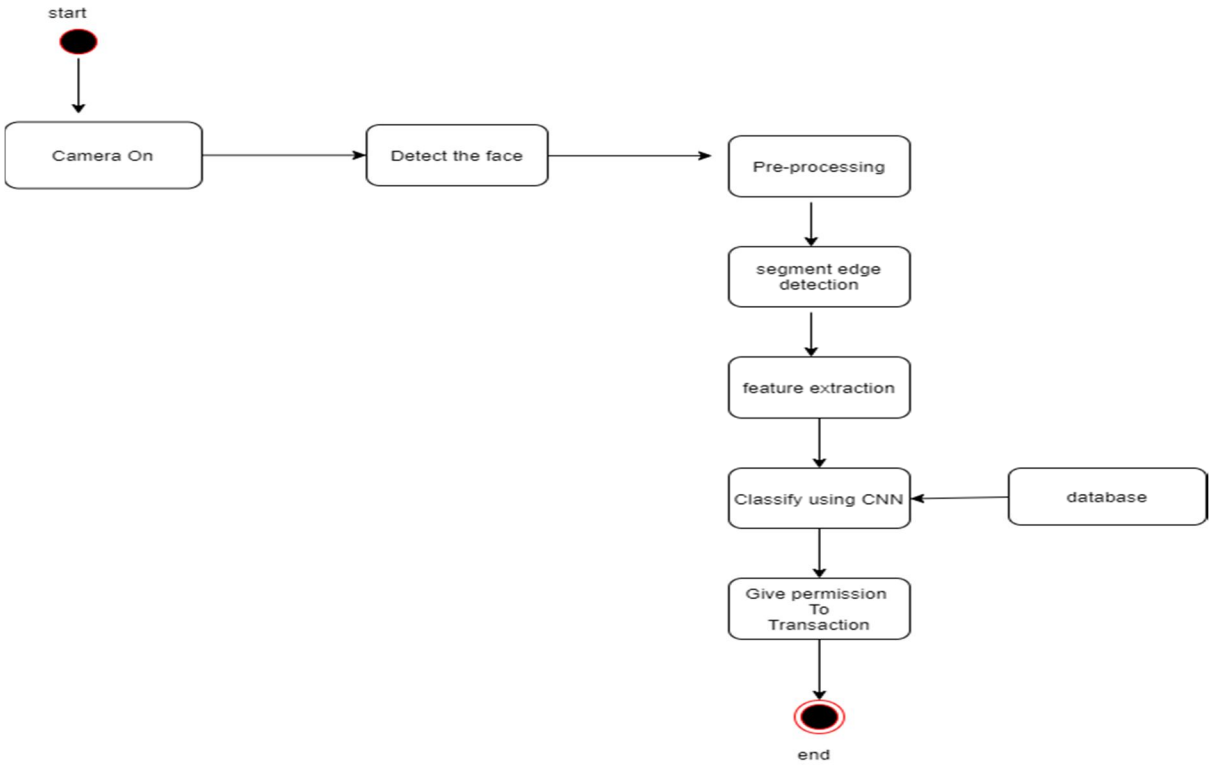
III. PROBLEM STATEMENT

Automated Teller Machines are widely used nowadays by people. But It's hard to carry their ATM card everywhere, people may forget to have their ATM card or forget their PIN number. The ATM card may get damaged and users can have a situation where they can't get access to their money. In our proposal, use of biometrics for authentication instead of PIN and ATM card is encouraged. Here, The Face ID is preferred to high priority, as the combination of these biometrics proved to be the best among the identification and verification techniques. The implementation of ATM machines comes with the issue of being accessed by illegitimate users with valid authentication code. The users are verified by comparing the image taken in front of the ATM machine, to the images which are present in the. If the user is legitimate the new image is used to train the model for further accuracy. This system uses openCV to process the image being obtained and Haar Cascade Classifier to detect the faces in the image.

IV. PROPOSED SYSTEM



A. *Module*

1) *Admin:* In this module, the Admin has to log in by using valid user name and password. After login successful he can do some operations such as login,Transaction, Then they proceed transaction with the help of OTP, and personalised pin With login credential provided by system.
2) *View and Authorize Users:* In this module, the admin can view the list of users who all registered. In this, the admin can view the user's details such as, user name, email, address and admin authorizes the users. • *View Charts Results* College Short Form Name, Department of Computer Engineering 2021 21 • View All Products Search Ratio, View All Keyword Search Results, View All Product Review Rank Results.
3) *Ecommerce User:* In this module, there are n numbers of users are present. User should register before doing any operations. Once user registers, their details will be stored to the database. After registration successful, he has to login by using authorized user name and password Once Login is successful user will do some operations like withdrawal, pin generation, Transaction.
4) *End User:* In this module, there are n numbers of users are present. User should register before doing any operations. Once user registers, their details will best or to the database. After registration successful, he has to login by using authorized user name and password. Once Login is successful user will do some operations like Manage Account, Transaction, View Your Search Transactions, View and modifiy.

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B. Data Flow Diagram

In Data Flow Diagram, we Show that flow of data in our system in DFD0 we show that base DFD in which rectangle present input as well as output and circle show our system, In DFD1 we show actual input and actual output of system input of our system is text or image and output is rumor detected likewise in DFD 2 we present operation of user as well as admin.

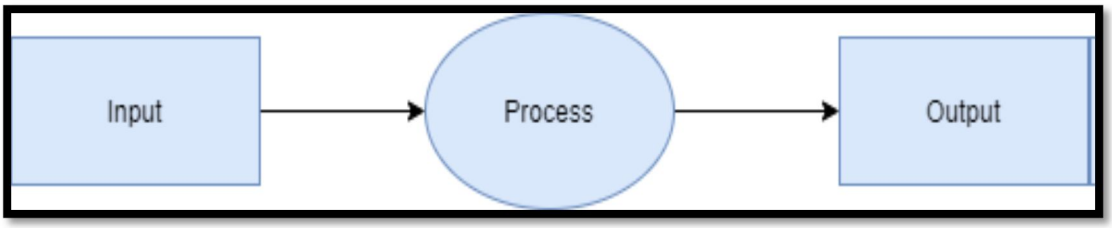

Figure 4.2: Data Flow (0) diagram

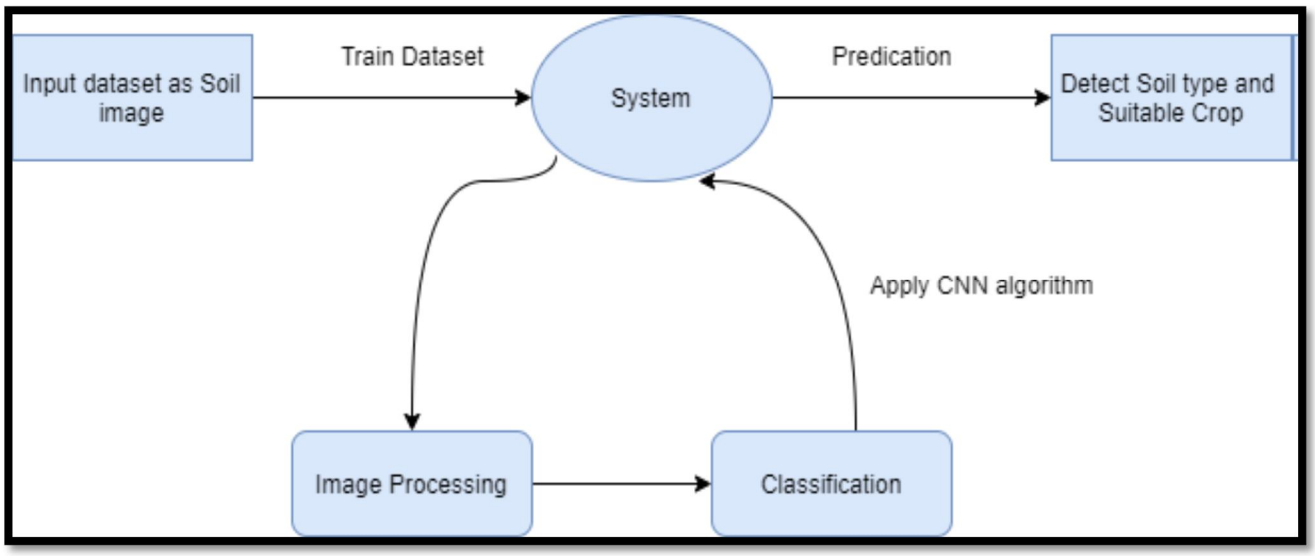

Figure 4.3: Data Flow (1) diagram

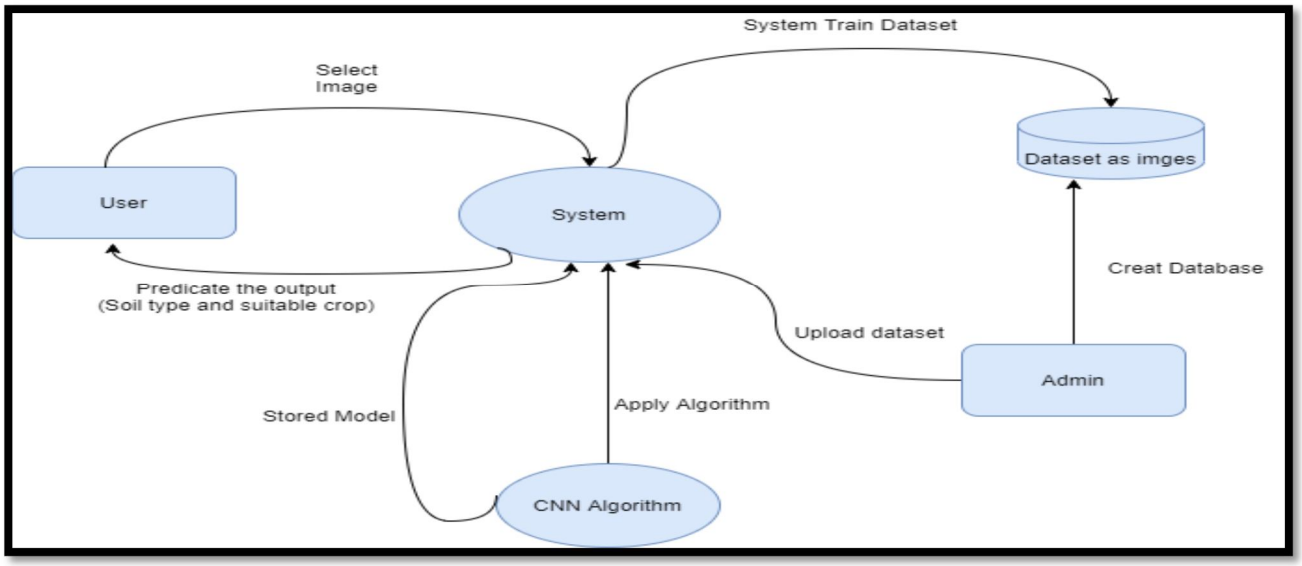

Figure 4.4: Data Flow (2) diagram

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V. SOFTWARE REQUIREMENT

Python is an interpreted, high-level and general-purpose programming language. Created by Guido van Rossum and first released in 1991, Python's design philosophy emphasizes code readability with its notable use of significant whitespace. Its language constructs and object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects. Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly, procedural), object-oriented, and functional programming. Python is often described as a "batteries included" language due to its comprehensive standard library. Python was created in the late 1980s as a successor to the ABC language. Python 2.0, released in 2000, introduced features like list comprehensions and a garbage collection system with reference counting. Python 3.0, released in 2008, was a major revision of the language that is not completely backward-compatible, and much Python 2 code does not run unmodified on Python 3. The Python 2 language was officially discontinued in 2020 (first planned for 2015), and "Python 2.7.18 is the last Python 2.7 release and therefore the last Python 2 release."[30] No more security patches or other improvements will be released for it. With Python 2's end-of-life, only Python 3.6.x and later are supported. Python interpreters are available for many operating systems. A global community of programmers develops and maintains CPython, a free and open-source reference implementation. A non-profit organization, the Python Software Foundation, manages and directs resources for Python and CPython development. Python was conceived in the late 1980s by Guido van Rossum at Centrum.

Wiskunde Informatica (CWI) in the Netherlands as a successor to the ABC language (itself inspired by SETL), capable of exception handling and interfacing with the Amoeba operating system. Its implementation began in December 1989. Van Rossum shouldered sole responsibility for the project, as the lead developer, until 12 July 2018, when he announced his "permanent vacation" from his responsibilities as Python's Benevolent Dictator For Life, a title the Python community bestowed

College Short Form Name, Department of Computer Engineering 2021 31 upon him to reflect his long-term commitment as the project's chief decision-maker. He now shares his leadership as a member of a five-person steering council. In January 2019, active Python core developers elected Brett Cannon, Nick Coghlan, Barry Warsaw, CarolWilling and Van Rossum to a five-member "Steering Council" to lead the project.

Anaconda: Anaconda is a free and open-source distribution of the Python and R programming languages for scientific computing (data science, machine learning applications, large-scale data processing, predictive analytics, etc.), that aims to simplify package management and deployment. The distribution includes data-science packages suitable for Windows, Linux, and macOS. It is developed and maintained by Anaconda, Inc., which was founded by Peter Wang and Travis Oliphant in 2012. As an Anaconda, Inc. product, it is also known as Anaconda Distribution or Anaconda Individual Edition, while other products from the company are Anaconda Team Edition and Anaconda Enterprise Edition, both of which are not free. Package versions in Anaconda are managed by the package management system conda. This package manager was spun out as a separate open-source package as it ended up being useful on its own and for other things than Python. There is also a small, bootstrap version of Anaconda called Miniconda, which includes only conda, Python, the packages they depend on, and a small number of other packages. Anaconda distribution comes with over 250 packages automatically installed, and over 7,500 additional open-source packages can be installed from PyPI as well as the conda package and virtual environment manager. It also includes a GUI, Anaconda Navigator, as a graphical alternative to the command line interface (CLI). The big difference between conda and the pip package manager is in how package dependencies are managed, which is a significant challenge for Python data science and the reason conda exists. When pip installs a package, it automatically installs any dependent Python packages without checking if these conflict with previously installed packages [citation needed]. It will install a package and any of its dependencies regardless of the state of the existing installation [citation needed]. Because of this, a user with a working installation of, for example, Google Tensorflow, can find that it stops working having used pip to install a different package that requires a different version of the dependent numpy library than the one used by Tensorflow. In some cases, the package may appear to work but produce different results in detail. In contrast, conda analyses the current environment including everything currently installed, and, together with any version limitations specified (e.g. the user College Short Form Name, Department of Computer Engineering 2021 33 may wish to have Tensorflow version 2,0 or higher), works out how to install a compatible set of dependencies, and shows a warning if this cannot be done. Open source packages can be individually installed from the Anaconda repository, Anaconda Cloud (anaconda.org), or the user's own private repository or mirror, using the conda install command. Anaconda, Inc. compiles and builds the packages available in the Anaconda repository itself, and provides binaries for Windows 32/64 bit, Linux 64 bit and MacOS 64-bit. Anything available on PyPI may be installed into a conda environment using pip, and conda will keep track of what it has installed itself and what pip has installed. Custom packages can be made using the conda build command, and can be shared with others by uploading them to Anaconda Cloud, PyPI or other repositories.

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The default installation of Anaconda2 includes Python 2.7 and Anaconda3 includes Python 3.7. However, it is possible to create new environments that include any version of Python packaged with conda.

VI. CONCLUSIONS

Facial recognition has proven to be one of the most secure methods of all biometric systems to a point for high level security and to avoid ATM robberies and provide security for ATM.It replaces the traditional ATM system. It has advantages such as saves manufacturing cost of cards and overcomes drawbacks of the traditional system like carrying the ATM card, losing of card, fraud calls related to ATM card, etc.With new improved techniques in the field of artificial Intelligence that help eliminate more disturbances and distortions, the rate of effectiveness of the systemcan be improved.

VII. FUTURE SCOPE

The real time security applications like in ATM security systems, military applications, high security companies. This can also be used in bank locker access. Lighting provided to the system is a key factor to be taken care of. Usage of high-speed computers can improve the efficiency.

VIII. ACKNOWLEDGMENT

After the completion of this work, words are not enough to express feelings about all those who helped us.
It is a great pleasure and moment of immense satisfaction for us to express our profound gratitude to our guide, whose constant encouragement enabled us to work enthusiastically. Her perpetual motivation, patience and excellent expertise in the discussion during progress of the project work have benefited us to an extent, which is beyond the expression. We would also like to give our sincere thanks to Dr. S.N Gujar, Head of Department, Prof. S.S Bhagat, Project Guide, for her guidance, encouragement and support during the project work. Last but not the least we would also like to thank all those who directly or indirectly helped us in completion of our work.

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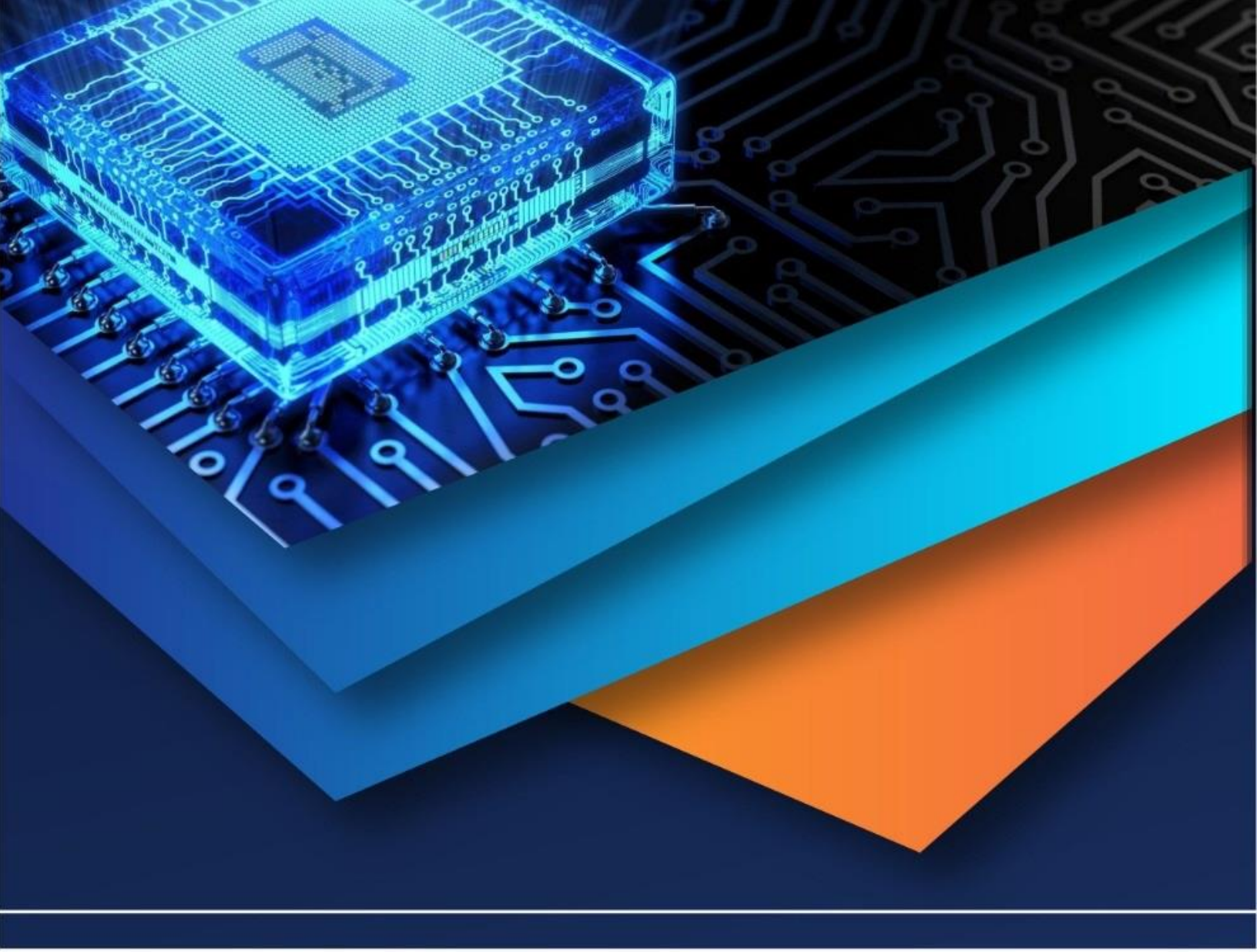

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