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Klikit: Smart Face Beauty App Development

Divya M[1], Rashmi C[2], Jahnavi Samyuktha[3]
[1, 2, 3]*School of Computer Science and engineering, REVA University, Bangalore, India*

Abstract: ***Facial landmark detection and image processing techniques helps to implement customized filters that can be applied on the facial pictures while taking or after picture from Android cameras. In this paper, we proposed algorithms and image processing techniques to implemented customized filters by detecting facial land marks by using vision based algorithms and open cv to process the images by scale the RGB values to control the saturation ,brightness and contrast also to apply different image filters. Users can choose, input, build, modify, and combine various material, design characteristics, and application components, such as modules, on the platform, some of which take advantage of features and functionality associated with various mobile devices and mobile operating systems. The platform, in some embodiments, allows users to compile a mobile application and build a configuration file for it, which can then be distributed to end users for use on a range of mobile devices and operating systems. When the mobile application is mounted on, or executed by, the mobile computer, the configuration file may allow the retrieval of various data associated with the mobile application***

Keywords: Smart phone, photo editor,machine learning kit,open cv,stickerly,filter,image processing.

I. INTRODUCTION

Smart phones are also used to capture a large number of facial images. Users also retouch these photographs before publishing them, for example, on social media, in order to achieve the best results. Retouching apps, in particular, are popular tools that can be used to enhance one's facial appearance. Face recognition technologies may face a new challenge as a result of changes in facial geometry and texture caused by retouching algorithms. Towards deploying to-bust face recognition as well as enforcing anti- photo shop legislations, a robust and reliable detection of retouched face images is needed .In this work, the effects Provision of simple customized filters on smart Phones helps to customize the facial pictures instantly .Image operations like controlling Brightness, Saturation, Contrast and few image filters which can controlled with simple options on the Mobile help helps to customize the pictures taken. The mapping of simple stickers on the facial image helps masking face with various images. Traditional way of image manipulation on smart phones requires image manipulation manually using common options to edit pictures. However we came up with app that has in built filter developed using open cv that control the RGB on the pixels of the image and control the scaling .Traditional approach to map stickers to facial landmarks requires image manipulation however we use vision based algorithms to detect the facial land marks which helps to map the stickers on the face with no complex image manipulation. This includes:

II. LITERATURE SURVEY

Now, mobile apps will rework your phone or pill into your personal beauty consultant, directive you to the appearance, brands, and individualized regimens that area unit right for you. so as to retouch reference face pictures totally different freely obtainable apps from the Google Play Store were designated. it's necessary to stress that free apps area unit a lot of doubtless to be applied by users compared to expensive desktop applications that are utilized in connected works . More- over, the users' ratings of eligible apps and also the range of downloads area unit thought-about as choice criteria. it's assured that apps offer results of enough quality, i.e. apps that turn out doll-like trying faces area unit neglected. Finally, easy-to-use applications that give (all-in-one) machine-driven change of state area unit most popular as a result of they permit for the automated production of retouched pictures, as mentioned below. supported mentioned criteria the subsequent six apps were chosen for the info creation: 1) Air-Brush slightly enlarges the eyes, makes the face slightly slimmer and a lot of shiny, eliminates minor wrinkles and skin impurities, and reduces dark rings beneath the eyes 2) Beauty-Plus enlarges the eyes (and makes them a lot of shiny), makes the face a lot of shiny, eliminates minor wrinkles and skin impurities, and reduces dark rings beneath the eyes. 3) Bestie makes the face slightly slimmer and a lot of shiny, eliminates minor wrinkles and skin impurities, and reduces dark rings beneath the eyes. 4) You cam [DEC twenty, 2016]To offer your selfie its full potential, You-Cam offers digital makeovers with becoming filters, one-touch makeovers (from neutral to daring makeup). 5)Candy camera- Selfie, Beauty Camera, icon Editor[March twenty six,2020] candy camera is one in every of the most effective beauty and selfie icon editor apps on the play store for mechanical man users. obtainable filters is simply ascribable by slippery all-time low slider left to right. Filters for selfie's, beauty functions, a silent camera, stickers, and a collage area unit among the advanced beautifying options .Besides slimming and change of color effects, you'll be able to conjointly use lipstick, blush, eyeliner, and concealer for best results whereas mistreatment the Candy Camera icon editor app for mechanical man to edit your picture's

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1) Implementation

The criteria to select appropriate retouching apps are summarized as follows :

a) costs: only apps which provide a basic beautification functionality without any cost are considered
b) Usability: easy to use apps which allow for an (all in one) automatic beautification are favoured
c) Type of beautification : only apps modify the facial appearance are considered
d) Quality of beautification : the application of the app should result in realistic and natural appearance

Image Processing and face detection techniques has been used to implement different types of customized filters. Android CameraX is used to retrieve the images frames for processing which result the images in YUV format. The Images byte arrays are then fed to Open cv and ml kit for processing.

a) Google ML kit has been used for facial landmark detection that results positions (x, y coordinates)of eyes, ears ,nose mouth and cheeks as shown in Fig1 ,These facial points are user for graphic or image mapping to the face. These graphic image is scaled positioned with respect to landmark position on to overlay
b) Opencv has been used for image processing techniques such as Color spacing, Hough transform ,Histogram calculation and scaling techniques to control the Brightness, Saturation ,contrast and other filters.

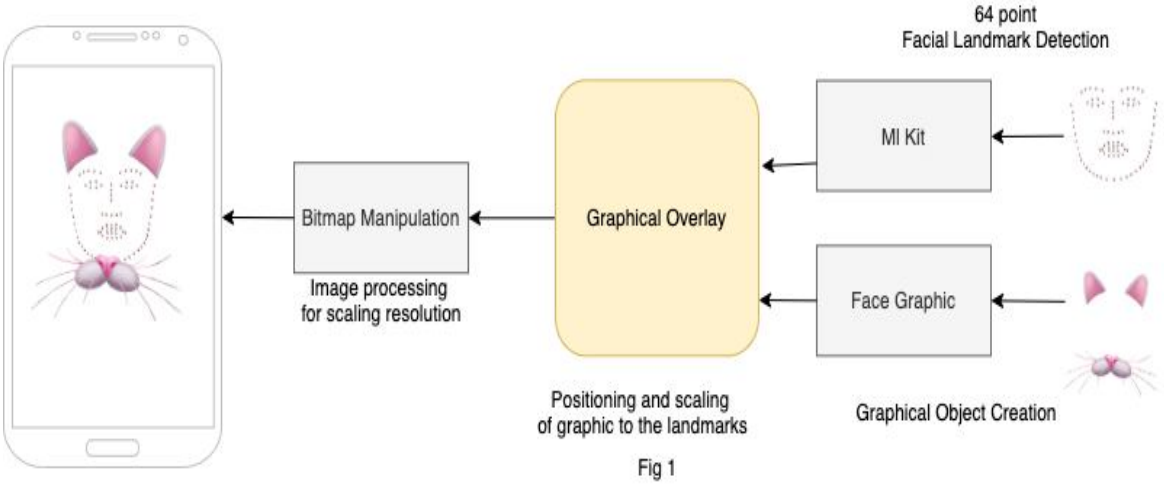

Fig 1

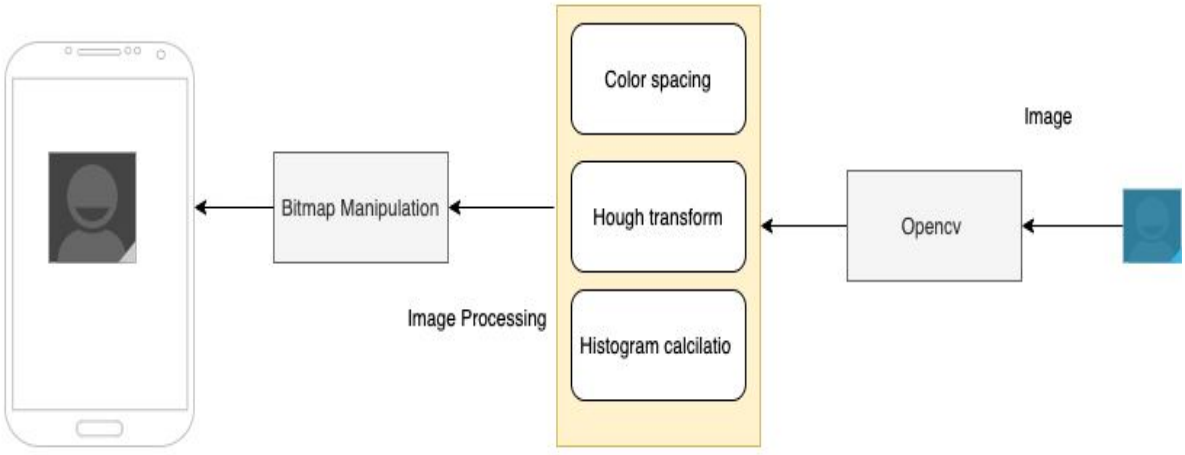

Fig 2

Fig 1: Block diagram

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A. Customized Filters Implementation

Our approach of implementation customized filters in Android App which has Dashboard screen uses Android's Jetpack support library CameraX which provides consistent and east to use API's. ML kit is integrated to application in order to detect the facial landmarks .A graphical overlay has been used with CameraX preview view to display the image mapped to facial coordinates. An open cv library has been integrated for image processing and manipulation to implement different filters. The resultant image from filters are then saved to Gallery using Media Store API's. Sqlite Database is used to save the customized filters. App is integrated with Facebook fresco library to convert the applied filtered images to stickers for sharing .

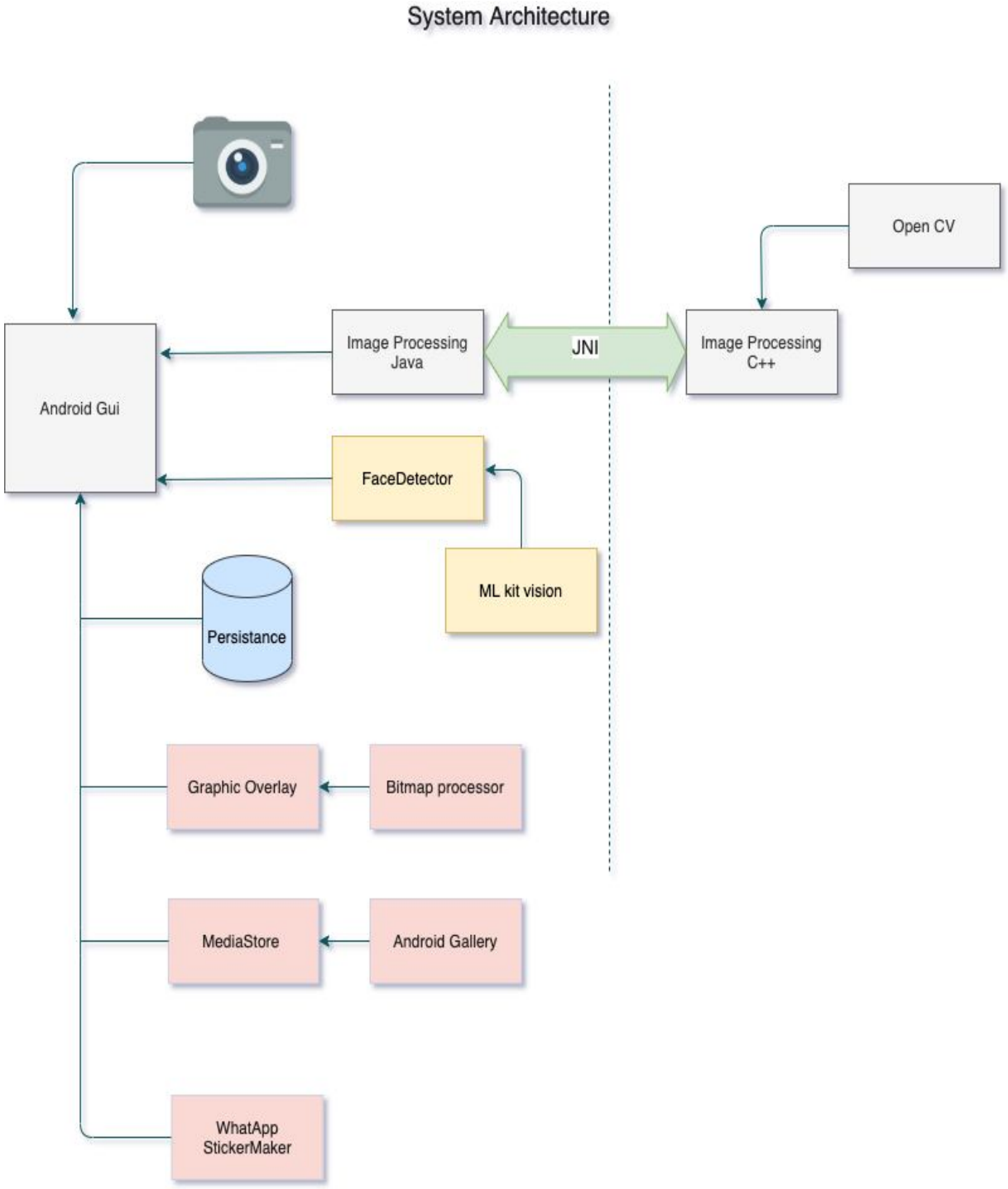

Fig 2: System Architecture

B. Filter Implementation on Image

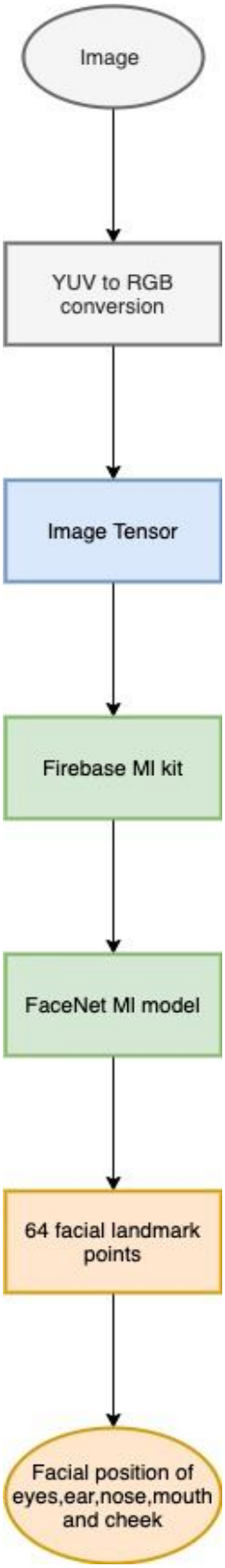

Fig 3: Flow Chart

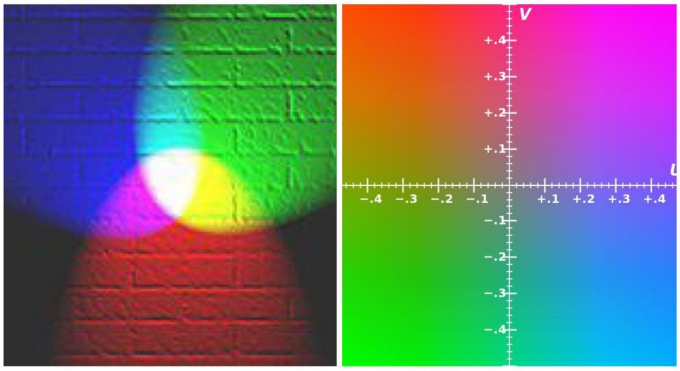

Fig 4: Rgb Fig 5:Example of U-V color plane, Y′ value = 0.5, represented within RGB color gamut

We can edit the already saved image through this application than the YUV is converted into RGB conversion.YUV is a color encoding system that is commonly used in color image pipelines. And RGB color model is an additive color model in which red, green and blue are added together in various ways to reproduce a broad array of colors and the image tensor is an open source library and enables the user to implement deep neural network for using task for image recognition and than the fire base machine learning kit detects the faces and the after the detection of the faces . than the face net that extracts high quality features from face and directly learns a mapping from face image to a compact Euclidean space where distance directly correspond to a measure of face similarity than the 64 bit facial land mark points are used to localize and represent salient features such as eyes, eyebrows, nose, mouth, jaw line, and finally the filters or stickers that we customized is applied on the facial positions of eyes , ears , cheeks , mouth, nose.

C. Pattern

Camera pattern, filters pattern, Ui pattern

1) *Camera Pattern:* Module implemented using Camerax is responsible for taking picture and apply facial filters on the camera feed while taking pictures.
2) *Filters Pattern:* This module is implemented using opencv which is responsible for image processing
3) *Ui Pattern:* This module is build with Android Views and components that are responsible for controlling UI elements like bottom navigation ,fragment navigation and controlling camera with buttons

III. CONCLUSION

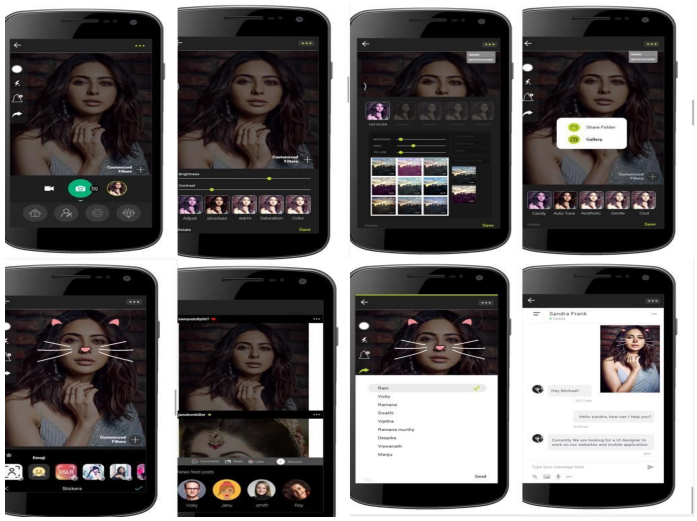

Fig 6: Output

In this study we have proposed a image processing technique based on beauty app's. The model proposed here can be effectively be applied to edit pictures and customize filters After clicking picture with camera, we can edit it with many filters we can choose how our skin and face should be displayed. If we are not satisfied, we can adjust to further with several feature's. After clicking a picture with app filter or customized filter we can save that picture and for further changes we can edit our pictures and save it in the folder . We can upload it in our profile and we can even share it to our friends through other platforms. And using this proposed model we are planning to develop a app in which the user can click picture and edit their own with built in filters and stickers, they can even customize their own filters and stickers to edit and control the brightness, saturation and contrast of the pictures and use it externally in other social media

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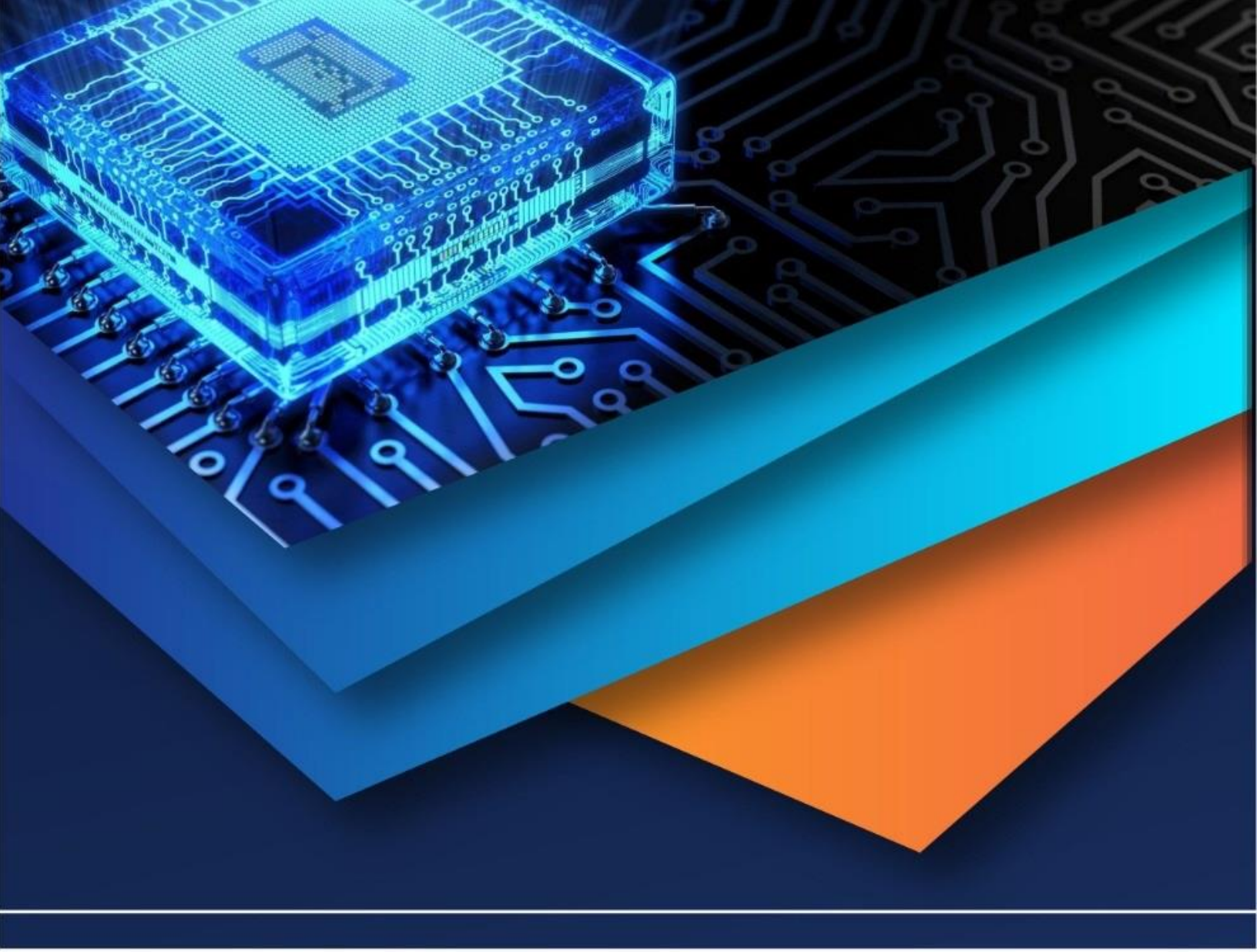

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