

# CHECKING APPEARANCE OF THE HUMAN FACE VIRTUALLY BY APPLYING COSMETIC PRODUCTS

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## **Introduction:**

Makeup is one of the common applications used by people to beautify the appearance of their faces. Analyzing face beauty by computer is essential to aestheticians and computer scientists. For women it would be so exciting to know whether the type of makeup they have would propel to beauty standards or not. This research based project to apply and analyse makeup on virtual face by Image processing. The most appropriate makeup after application of cosmetics such as eye shadows, lipstick, blush are the targets of this study. Having a proper facial datasets that consists of the information related to skin complexion is necessary. The ML algorithms analyses data points around facial characteristics to map makeup on one's face. Image editing applications have downplayed the modification of digital photos. These applications allow for tampering the content of the image without leaving visible traces. In addition to this, the easiness of distributing information through the Internet has caused society to accept everything it sees as true .Facial features are detected and tracked using an RGBD camera and mapped to a normalized 2D facial mesh composed of 124 triangles. Finger touches on the face are also detected on the RGBD video stream. Corrects the color bias by lighting compensation technique. Detects skin region over entire image. Eyebrow correction, Eyelid correction, Facelift, Nose correction, Facial bones correction is aimed at augmenting the facial skeletal in order to rectify facial contour deformities. Identify user's personal color from the image by analyzing the color of pupils, hair, and skin, and then select cosmetic method and colors. Lastly, by looking up the predefined makeup database for foundation, blush, lipstick, eyeliner, and eyeshadow, we produce a virtual makeup on the user's face image. Facial detection is done through image processing and coordinates are stored. But application of makeup on them hasn't been effective yet.

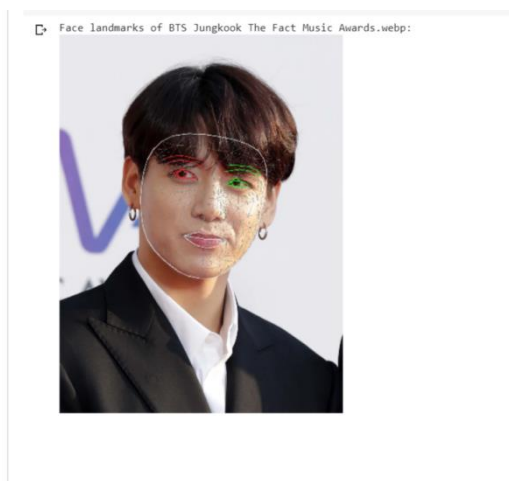
## Objectives:

- Desired combination of makeup on the virtual face which helps the customer in buying the right shade of cosmetic products.
- The appropriate type of makeup could be applied irrespective of variation in face characteristic from person to person.
- It helps people to determine the different shades of makeup to applied on their face at different events.
- To build an web page.
- Selecting lip or eye or blush feature
- Selection of one face from displayed faces or uploading a new face image
- Choosing one shade out of the given choices.
- A fixed reference of full makeup exists for which user needs to upload their uploaded face image .
- The makeup same as reference full makeup is applied on the uploaded image

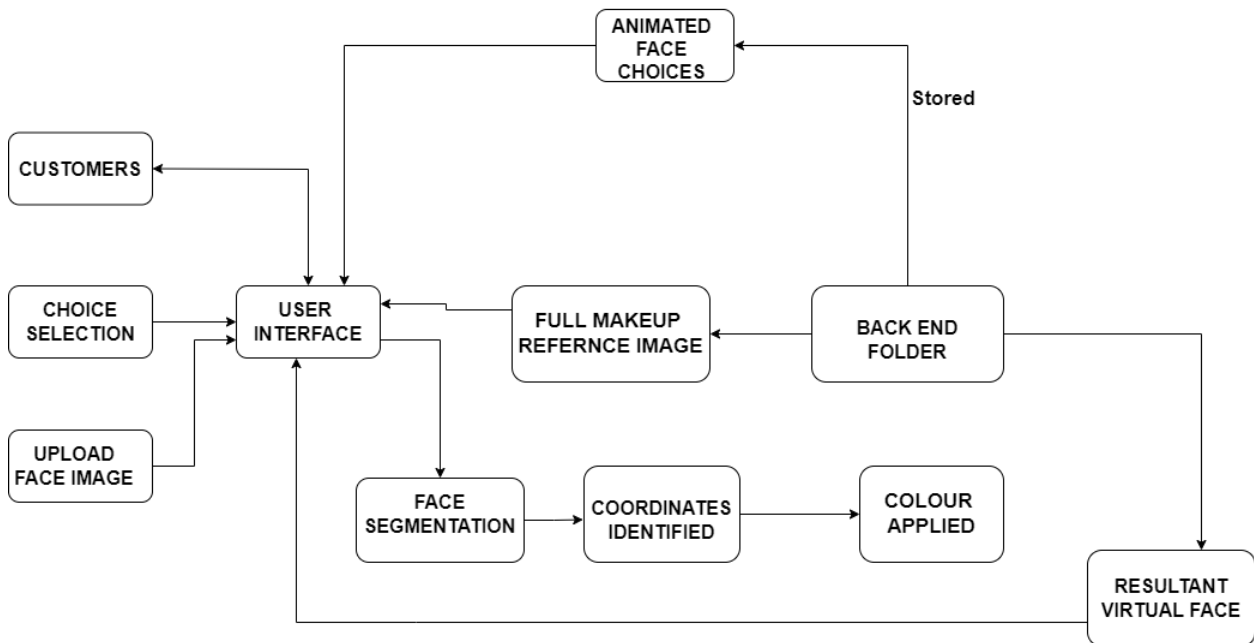
## Methodology:

This web page aims on application of cosmetic products on virtual face. When the colour from the cosmetic product is chosen along with its face and makeup applies it on face image. In order to achieve this, we have used machine learning algorithms, image processing techniques. We use face segmentation for detecting face area, colour segmentation or clustering and colour space transformation for better result. We use Django framework for the front end. The landmarks concept is used for the face segmentation and coordinate detection.

The algorithm identify the areas of iris(eyes), lips, whole face as shown below based on mesh framework

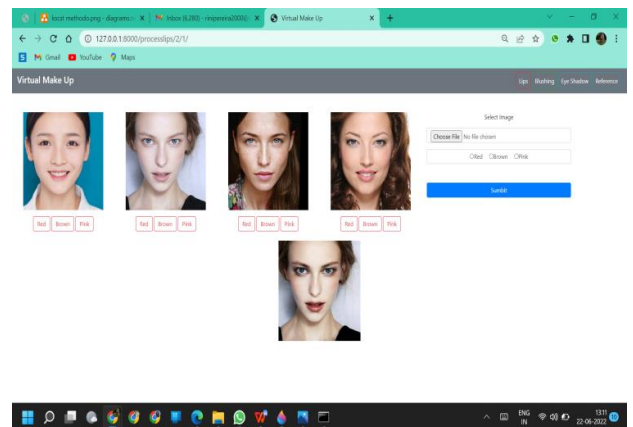
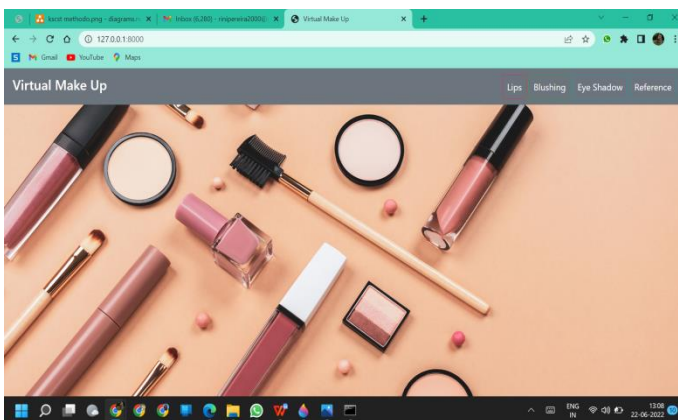


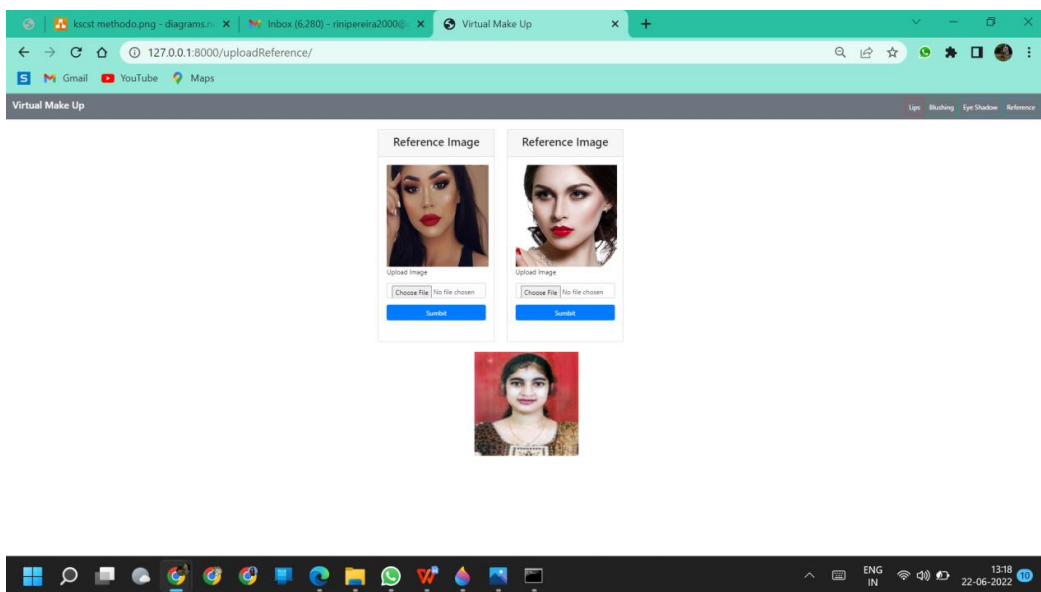
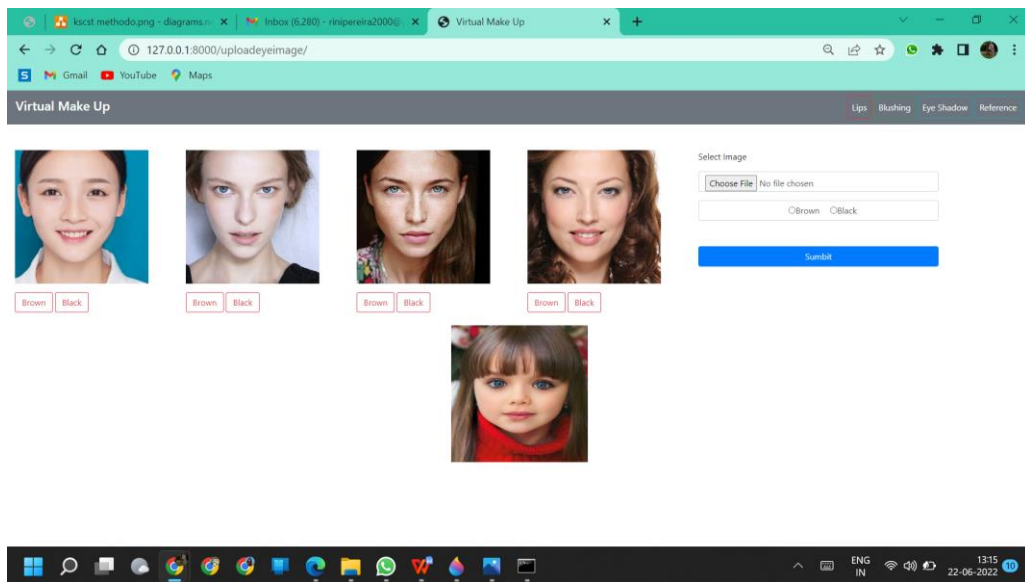
## Landmark detection



## RESULTS & CONCLUSION

This project is a web page that gives users to apply cosmetic products on virtual face. Facial skin tone and shape can be opted for virtual animated face. This project is an attempt to determine the right facial cosmetics shade using the data extracted and applied on virtual face with greater accuracy and reliability using machine learning techniques. The different colors and their respective shades can be chosen to be applied on virtual face. The resulting virtual face is a combination of either Lip makeup or eye shadow or blush. Here a upload image feature also exists.





## Scope for future work

During image upload due to uneven facial landmarks and presence of disturbing light intensity in the uploaded image can cause higher chance in makeup going out of bound. As the coordinates of image uploaded aren't stored in a document like of reference images. So there's a scope for finding a algorithm with higher accuracy.

As the makeup shades are restricted to fewer shades there's a chance to add the multiple cosmetic products with more shades under each category. This feature would be a boon to makeup brands. Merging of features i.e., all three makeups (eye, lip and blush) simultaneously visible on the chosen face.