



Digital Foundation Recommender

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Introduction

This project addresses the widespread challenge of finding makeup shades that match various skin tones, especially those with darker complexions. This research aims to provide personalized recommendations, reducing guesswork and saving time for users of all skin types. By offering accessible and inclusive solutions, this project contributes to broader efforts in the beauty industry to promote representation, accessibility, and empowerment for all individuals.

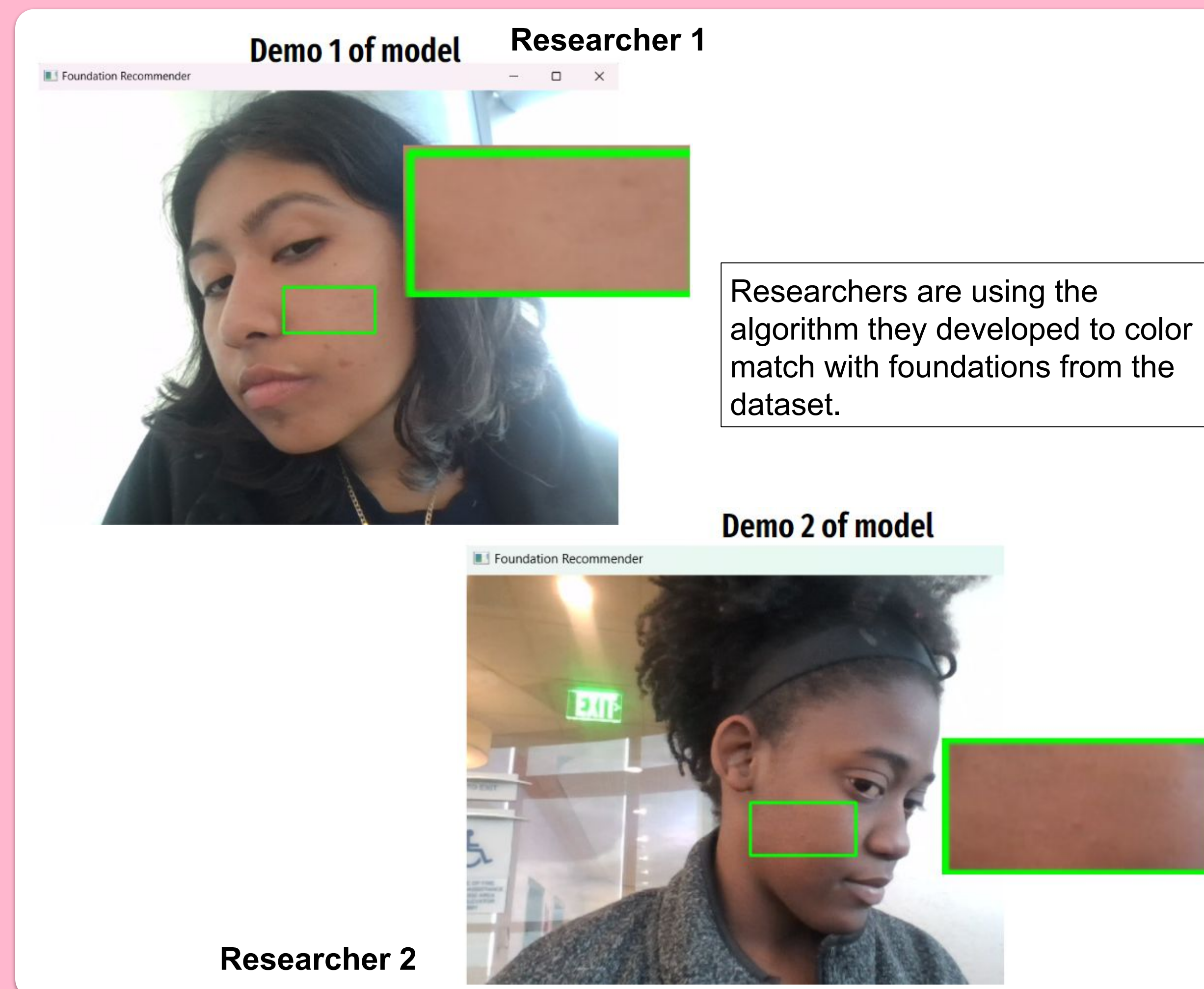
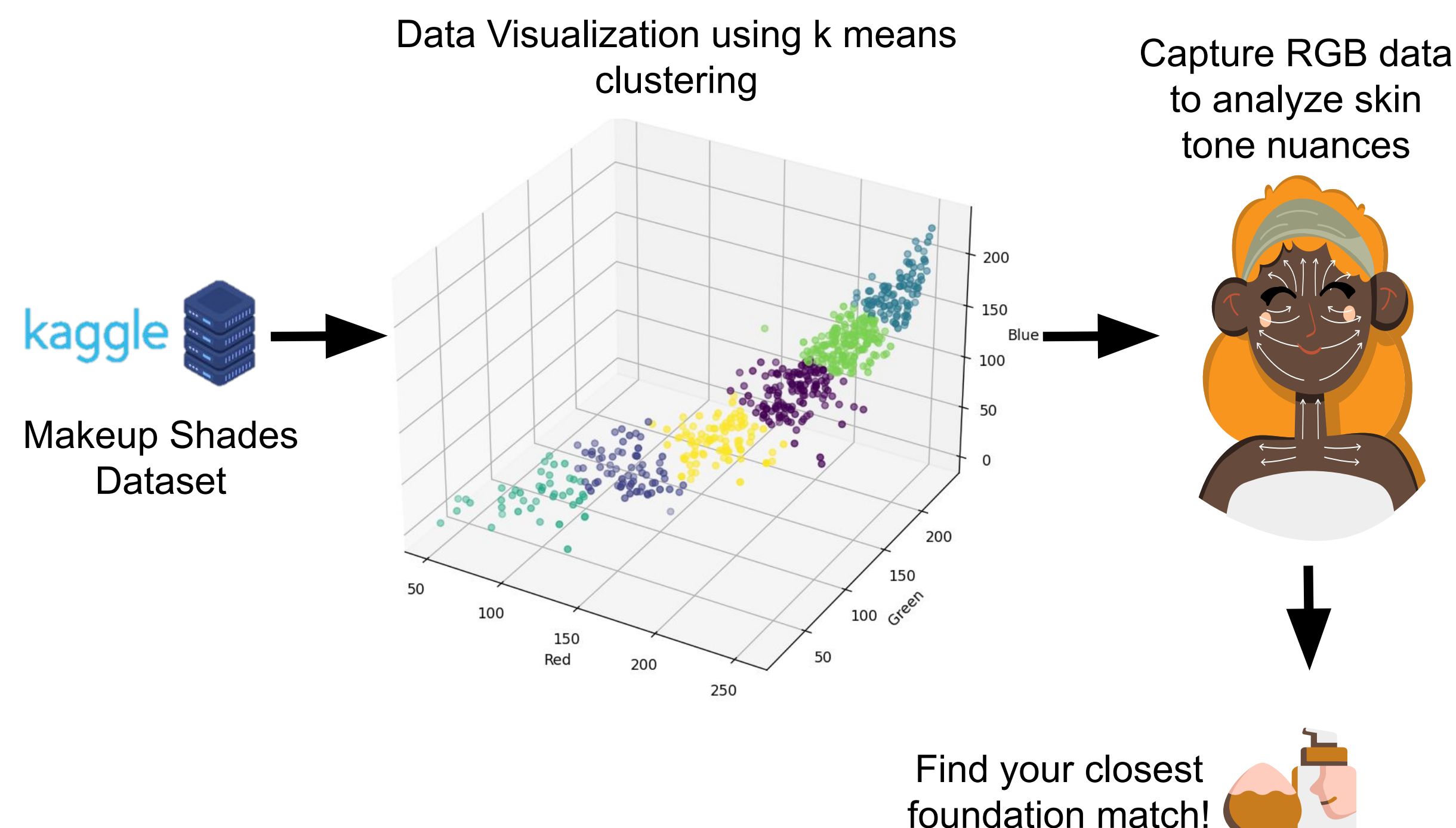
Methods and Materials

The research utilized a dataset consisting of foundation products from 38 different brands which in turn included 625 different shades of foundation –spanning the USA, Japan, India, and Nigeria– gathered from Kaggle. The project utilized the k-means clustering algorithm to analyze makeup shade data stored in a CSV file. By clustering RGB values, it categorizes shades into distinct groups. Upon user input of skin section and color detection via webcam using openCV, the algorithm recommends the closest makeup shade from the dataset. This recommendation is based on the cluster center most akin to the detected color. The process concludes with the display of the recommended shade's brand, product name, and hex value. The k-means algorithm's unsupervised learning nature enables partitioning of makeup shades into clusters, optimizing recommendation accuracy. Inputs comprise makeup shade data and live video feed, while outputs encompass personalized makeup shade recommendations and associated details. This system enhances makeup selection convenience and accuracy, streamlining the user experience with its efficient and automated process.

Future Work

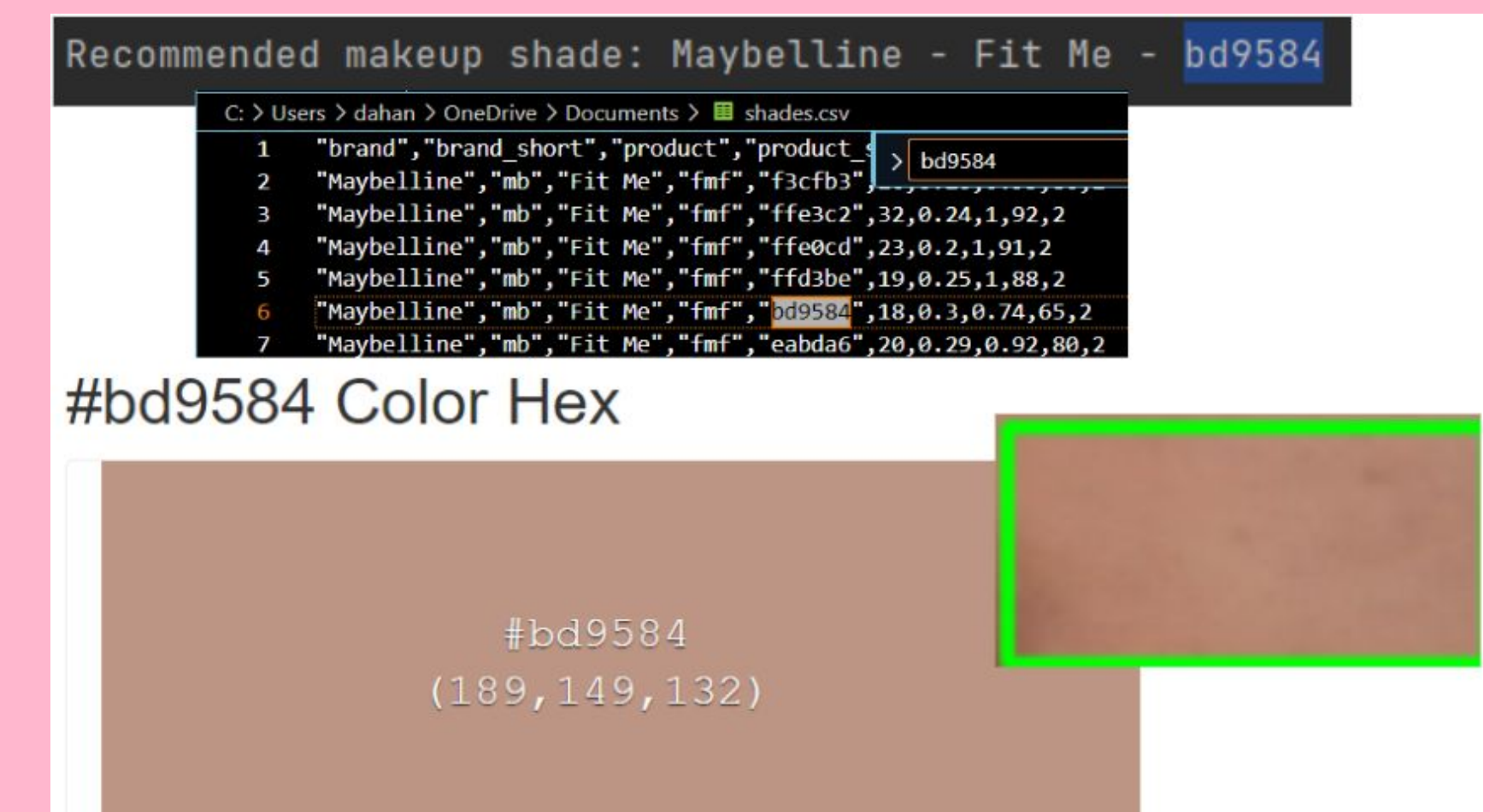
The research aimed to develop an algorithm for precise skin tone matching with foundation shades. Future plans involve enhancing user input methods, such as importing higher-quality images or adjusting hue/saturation pre-capture, and refining the makeup brand/product recommendation system.

Results

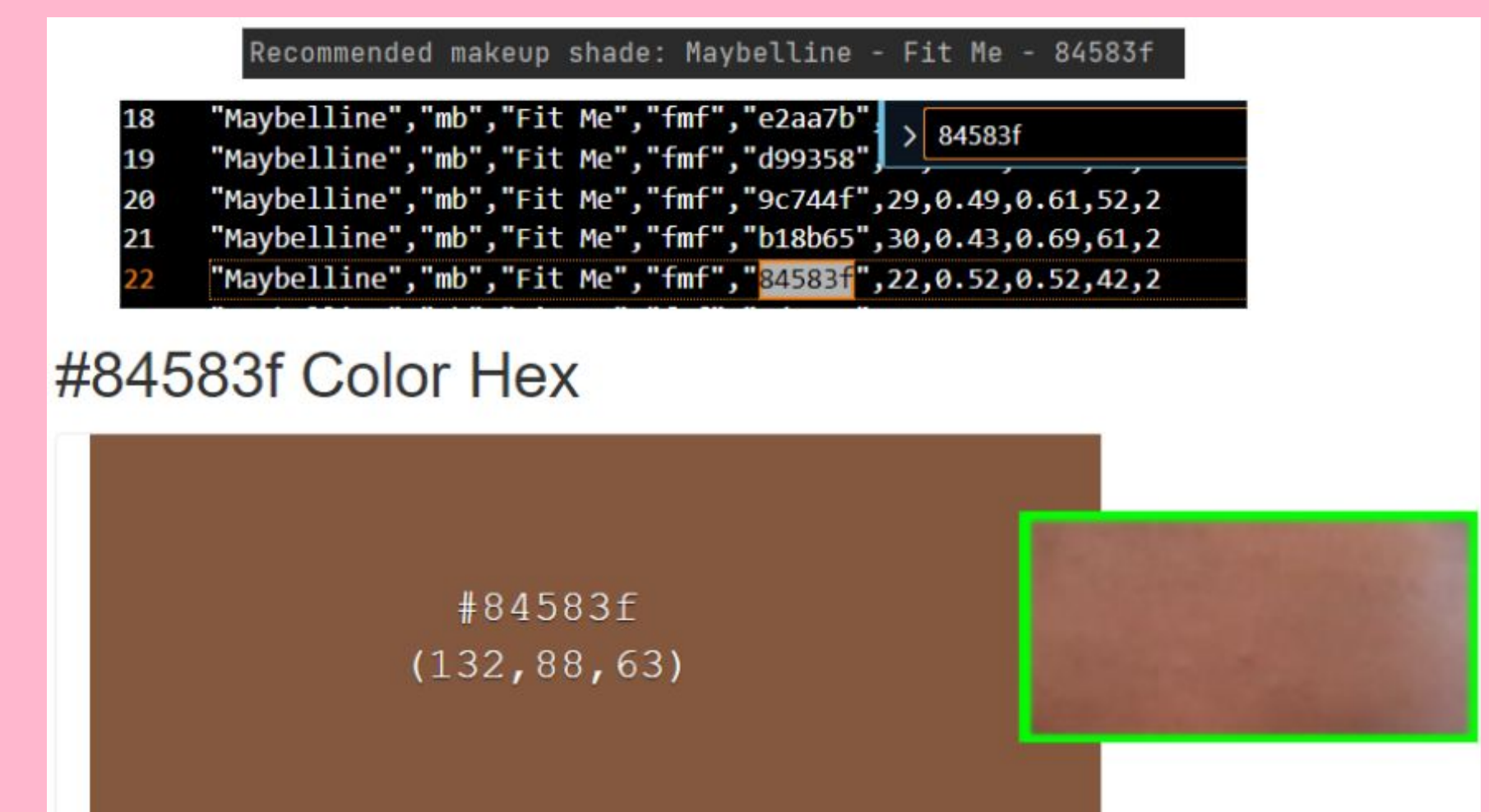


Conclusions

Researcher 1



Researcher 2



Acknowledgement

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References

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