Team : Team 3

Team members:

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Title: Development of a personal color analysis and customized style recommendation algorithm using deep learning analysis of face images

Description:

-what to do

Personal color analysis

Personalized style recommendations based on personal color

-how to do

We use two main approaches for personal color analysis:

First, we utilize a semantic segmentation model like DeepLab to accurately identify skin tone, eye color, and hair color from facial images. After distinguishing these elements from the face, we apply k-means clustering to categorize colors. To improve the accuracy of the images, we standardize the white balance across all photos and consider the three-dimensional structure of the face for a more realistic analysis. This method offers higher accuracy than traditional 2D image-based analysis.

Second, after conducting the personal color analysis, we proceed to the recommendation stage, where we suggest tailored styles that match the individual's colors. This includes recommendations for cosmetics and clothing. In this step, we analyze which colors suit or clash with each personal color category using natural language processing on web-crawled articles. Using BERT embeddings, we determine whether the relationship between the mentioned colors and personal colors is expressed positively or negatively in the text. BERT’s bidirectionality helps to better understand context.

Through this process, we propose the top color groups frequently mentioned as positive as recommended colors, while colors with more negative sentiment are categorized as those to avoid. Cosmetic recommendations follow the same methodology.

With this approach, we aim to build a personalized style recommendation system tailored to individual personal colors.

Contributions :

Comparison with Existing Models:

Unlike existing models from platforms like TikTok and Colorwise.me, which often suffer from issues such as low color recognition accuracy, our model is expected to significantly mitigate these problems. We plan to compare our model’s test results with those of existing models to highlight the improvements.

Rich Dataset:

One of the common criticisms of existing applications is the lack of sufficient datasets. To address this, we plan to use comprehensive datasets commonly utilized in various research papers, allowing for richer and more thorough analysis.

Colors that Suit Personal Color Types:

This aspect is often seen as highly subjective. To overcome this, we aim to gather and analyze opinions from multiple sources, rather than relying on the opinion of a single individual.

Utilization of Research Results:

We plan to develop a highly accurate personal color analysis service and make it available for use by university students.

Future Directions:

If the service achieves a high satisfaction rate, we aim to expand it to include services like skeletal structure diagnosis and face shape analysis in the future.

Role & Responsibility :

Chaerin Hwang & Dahyun Kim : Personal color analysis

Chanwoo Park & Seunghyeon Seo : Personalized style recommendations based on personal color