# Proposal

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## Project title

What's in my Cosmetic Pouch?

## Project Background

There are many customers who feel that some cosmetic products don't fit well to their skin, but they don't know the reason. High likelihood is that there is a common ingredient in the cosmetic products that doesn't fit well or cause allergies to their skin. Also there are some customers who avoid some ingredient when buying a cosmetic product because they know that the ingredient is harmful to their skin, or they are allergic to it. So we propose an application to help users find the ingredients that don't fit well to their skin, check if some ingredient is in the cosmetic product, and recommend users products that will fit well to their skin based on skin type, age, and ingredients. Although users might not use this app everyday, they will use this app whenever they have to buy a new cosmetic product or when some product causes problems to their skin.

## Project motivations

There are many friends near us saying that cosmetics don't fit well with their skin type, so they want to know what ingredients cause problems to their skin.

Also one of our team members, Yeeun, worked in Olive Young a few months ago, and she had experience of many foreigners looking for some cosmetic product that didn't have some kind of ingredient in it because they were allergic to it. So she thought that it would be nice if there was an application that could check if an ingredient is in the cosmetic product or not.

## Project goals

1. We classify the skin types of users and the cosmetics into oily, dry, combination, etc. Also, we classify the age and gender group. Then, we recommend cosmetics only for the user's skin type, age and gender by re-ranking products containing ingredients suitable for the user by skin type.
2. If the users directly input the names or components of the products that caused the problem to the user, issues such as a typo may occur. Therefore, we allow users to take a picture of the products so that the products can be recognized, using a text recognition AI model.
3. Currently, the cosmetics data found by our group is from 3 years ago. Therefore, when recommending cosmetics, we crawl the product ranking data on the Olive Young website.

## Data

1. **Cosmetics datasets**
   https://www.kaggle.com/datasets/kingabzpro/cosmetics-datasets
   Dataset Description
   - Data for comparing cosmetic ingredients, finding the same ingredients among the cosmetics selected as worst, and excluding them from recommendations according to skin type such as Dry, Normal, Oily, and Sensitive.
   - Columns: Label(type of product), Brand, Name, Price, Rank, Ingredients, Combination(dry and oily), Dry, Normal, Oily, Sensitive
     - There are 5 types on the label: Moisturizer, Cleanser, Face Mask, Treatment, and Eye Cream.
     - The skin types in the dataset are divided into 5 types(Combination, Dry, Normal, Oily, Sensitive) and show which type each cosmetic is suitable for.

2. **'Olive Young' Product Crawling by Consumer Ranking**
   - Data for recommending cosmetics, based on ingredients not listed in worst cosmetics and consumers ranking by age group(Elderly or puberty teenager, etc).

\+ A dataset may be needed to recommend cosmetics that are popular or contain ingredients suitable for each age group. Alternatively, we can also consider solving the problem through crawling.

## System development

We will develop this project into a mobile application. Operation of the application is as follows.

1. The application allows a user to search an image by taking pictures of the labels displaying components of products that do not suit him or her. Plus, users must input their age and gender.
2. The application extracts common ingredients among those and informs the user that these ingredients do not suit your skin.
3. If you press the 'next' button on the screen, there are two menus. One tells the user what cosmetics to not use. The other recommends products that would be good for the user's skin, considering ingredients, age and gender.

## Expected results

With this cosmetic recommendation mobile application, if a user selects cosmetics that did not work well or do not suit him or her, it can help to get results about what the same or frequently used ingredients are in those worst products. Based on the results, the app can sort out cosmetic products that do not contain the worst ingredients and recommend the top few popular products according to his or her skin type and age. Therefore, he or she can check which ingredients do not fit the skin type or cause allergies.

Among other users who use the app, a user also can check which products people who are similar to the user mainly use, or recommend personalized skin cosmetics through the filters mentioned above. And by using the mobile app, users can expect the convenience of being able to easily search and find the product they want when they need it.