2023 Software Engineering Project

SkinCare Solution for LG Pra.L Care

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CONTENTS

1-2 Market Analysis

Increased Interest In Home Beauty

- Increasing number of consumers find visiting dermatologists time-consuming or financially burdensome
- Trend of self-care without visiting a dermatologist.

Growing Home Beauty Devices Market

- Rising Interest in 'Beauty Devices' that can meet anti-aging needs with Technological Advances
- The beauty device market is expected to grow by about 25% every year and reach about 116 trillion won by 2030

LG Electronics leads the beauty device market

LG Pra.L

- LG Electronics, which entered the market by introducing LED masks in 2017, expanded its organization by establishing a 'Home Beauty Research Institute' in 2021
- Strengthen competitiveness with the launch of 'Dermassera', which takes care of facial lines with ultrasonic technology

Lack of understanding of beauty devices

- 10% of consumers experienced side effects when using beauty devices
- One in 10 customers who purchase LED masks (11.0% as of 2018) complain of side effects such as itching (54.5%) and erythema (52.7%) after use
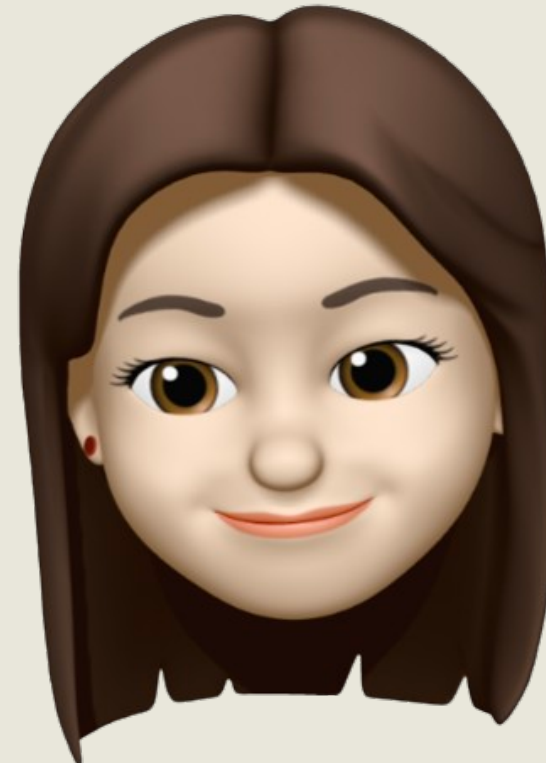
**Based on the above market status and consumer trends,
We want to develop software that allows consumers to have a better user experience in the
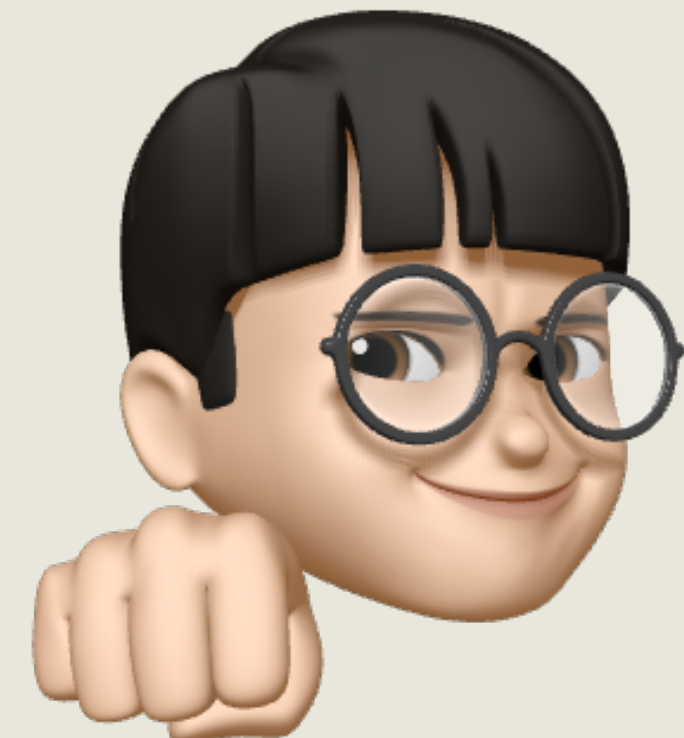process of using beauty devices by LG Electronics' beauty care solution brand LG Pra.L**

1-2 Motivation

Let's create an application that gives users the effect of visiting a dermatologist just by taking care of them at home

Allow users to check their skin condition and care routine on their own

Let's add communication functions through AI so that skin care can be healed

Developing a HI-Skin app that can give you a more comfortable and secure user experience in the skincare process using beauty devices

HI·
SKIN

SkinCare Solution
for LG Pra.L Care

2-1 Service Introduction

Healing

Interaction

**HI-SKIN
Healing & Interaction**
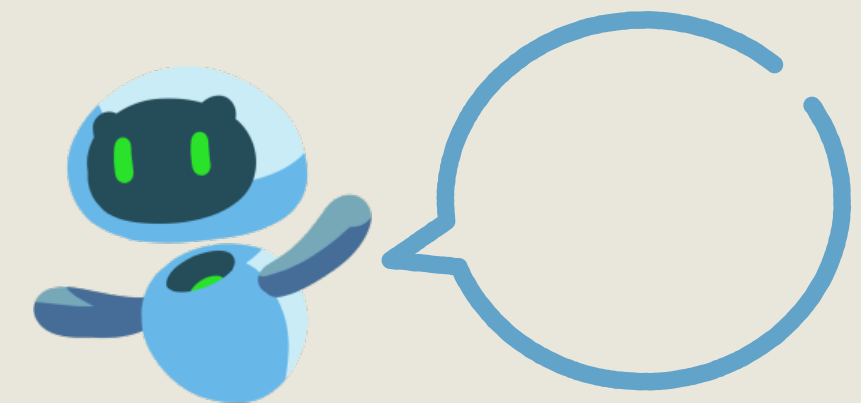
Applications that provide
customized skincare solutions

Skin challenge every day

Take care of your skin while doing
new skin challenges

My kind AI friend

Have fun communicating with your
AI friends and managing them

2-1 Challenge

What is Challenge?
Four major skincare routines selected by the Korean Dermatology Association (moisture, care, stress, and food)
+ Check the skin's three color elements (icicles, blushes, and dark circles) daily

9:41

< 피부 유형 진단

오늘 내 얼굴은

여드름 피부

오돌도돌 요철이 두드러지는
여드름 피부

오늘 피부 관리가 부족해서 생긴 여드름일 수 있어요.
내일부터는 수분, 피부관리, 스트레스, 음식에 더 신경써봐요!

Skin Score Test

Performing the 4 skincare routine challenges will give you today's care score

Diagnosis of Skin Condition

When a user takes a picture of his or her face, AI classifies it into three categories: acne, redness, and dark circles
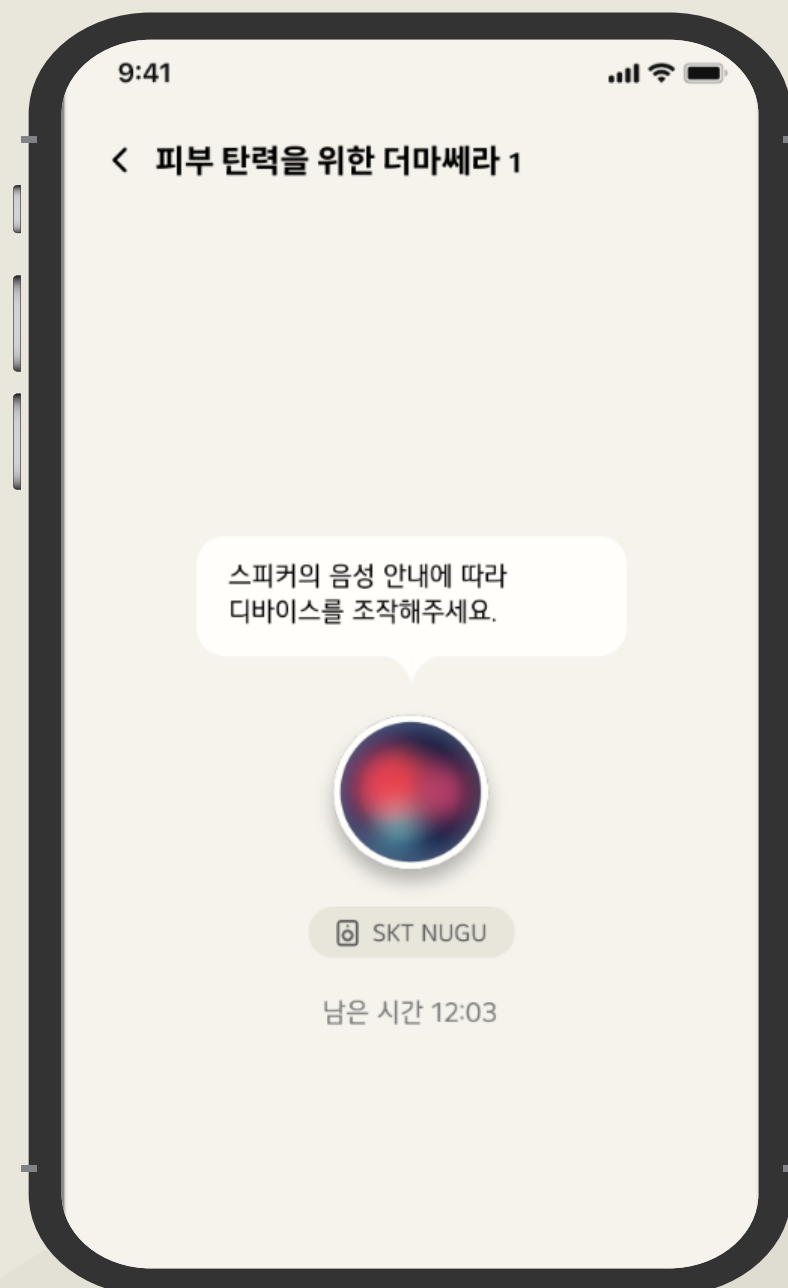
Skin Report

Provides customized feedback to users by combining care scores and facial recognition results
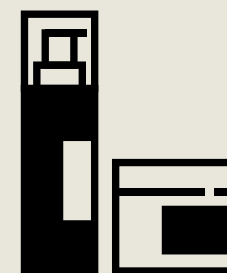
2-1 AI Communication

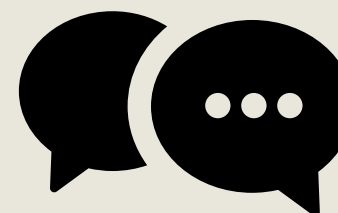**Let's talk to AI while taking care of your skin!**

Skin Concern

When users talk about their skin concerns, they provide a skincare solution

Cosmetic Recommendation

When a user requests a cosmetic recommendation, it provides customized cosmetic information for the user's skin type
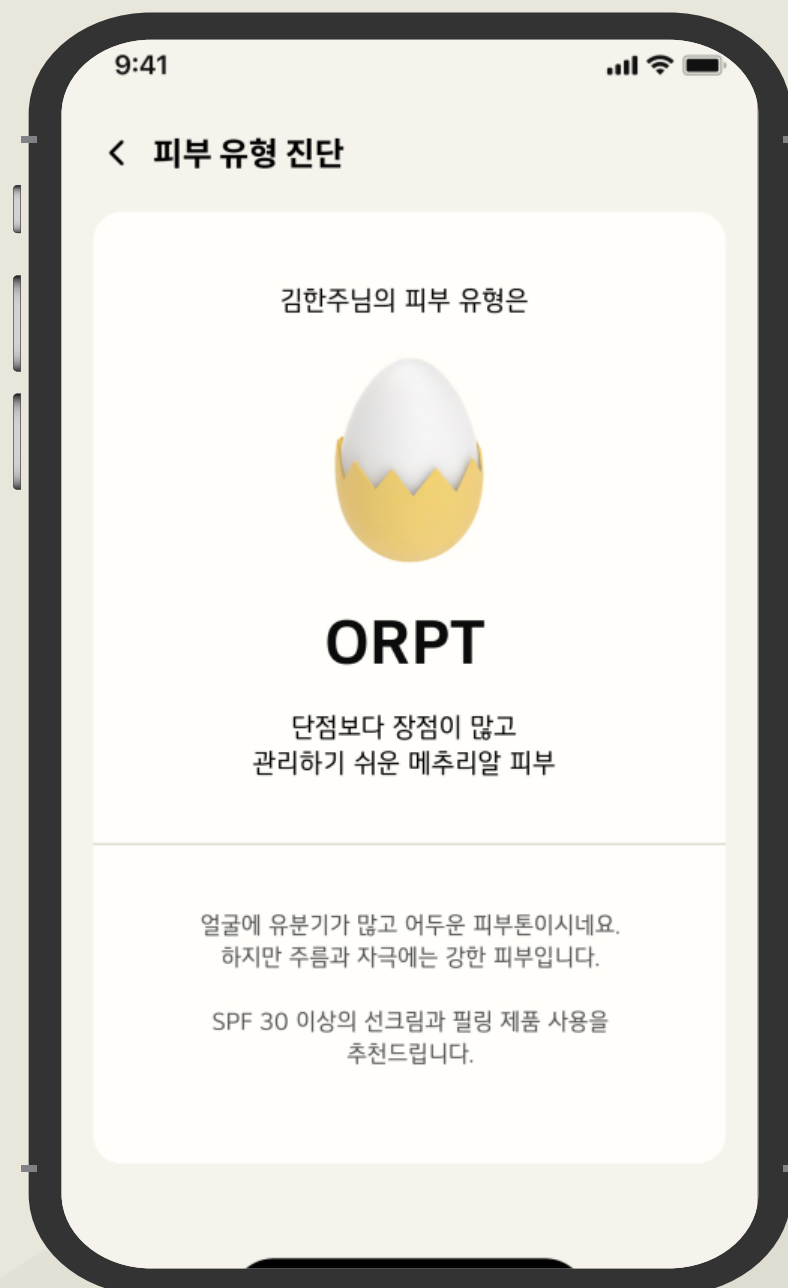
Daily Conversation

Give users more pleasure through casual daily conversations

2-1 Service Introduction

Skin Type Test

- Designing a skin type MBTI test based on Bauman skin type test
- Before using the device, the user's skin type is carefully diagnosed

Communitiy

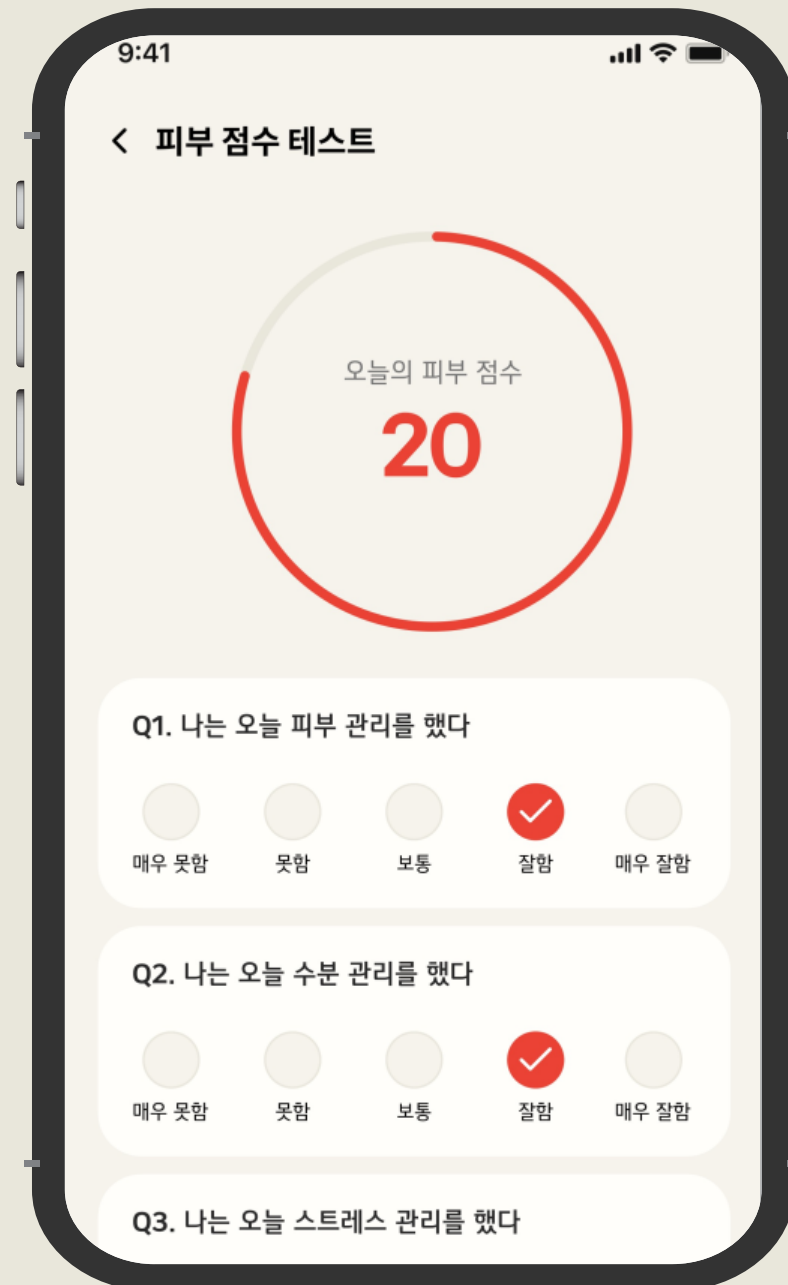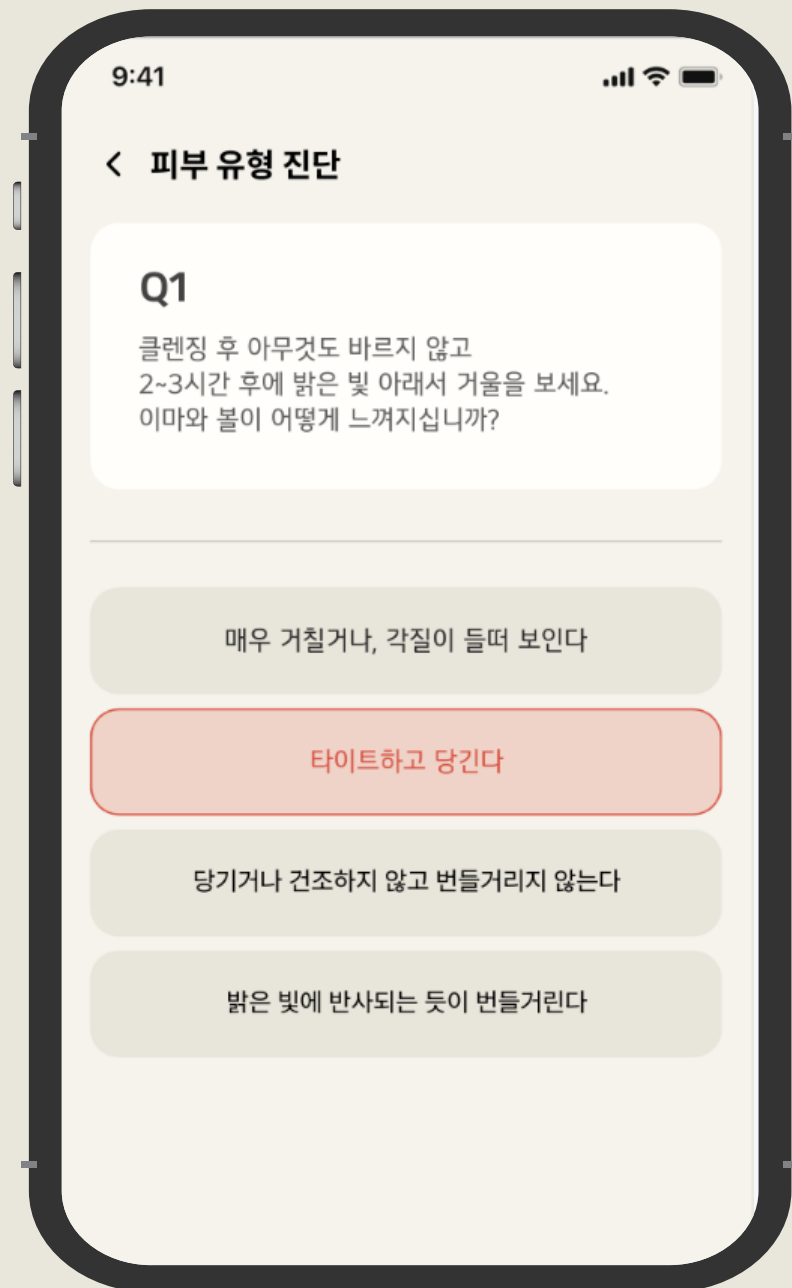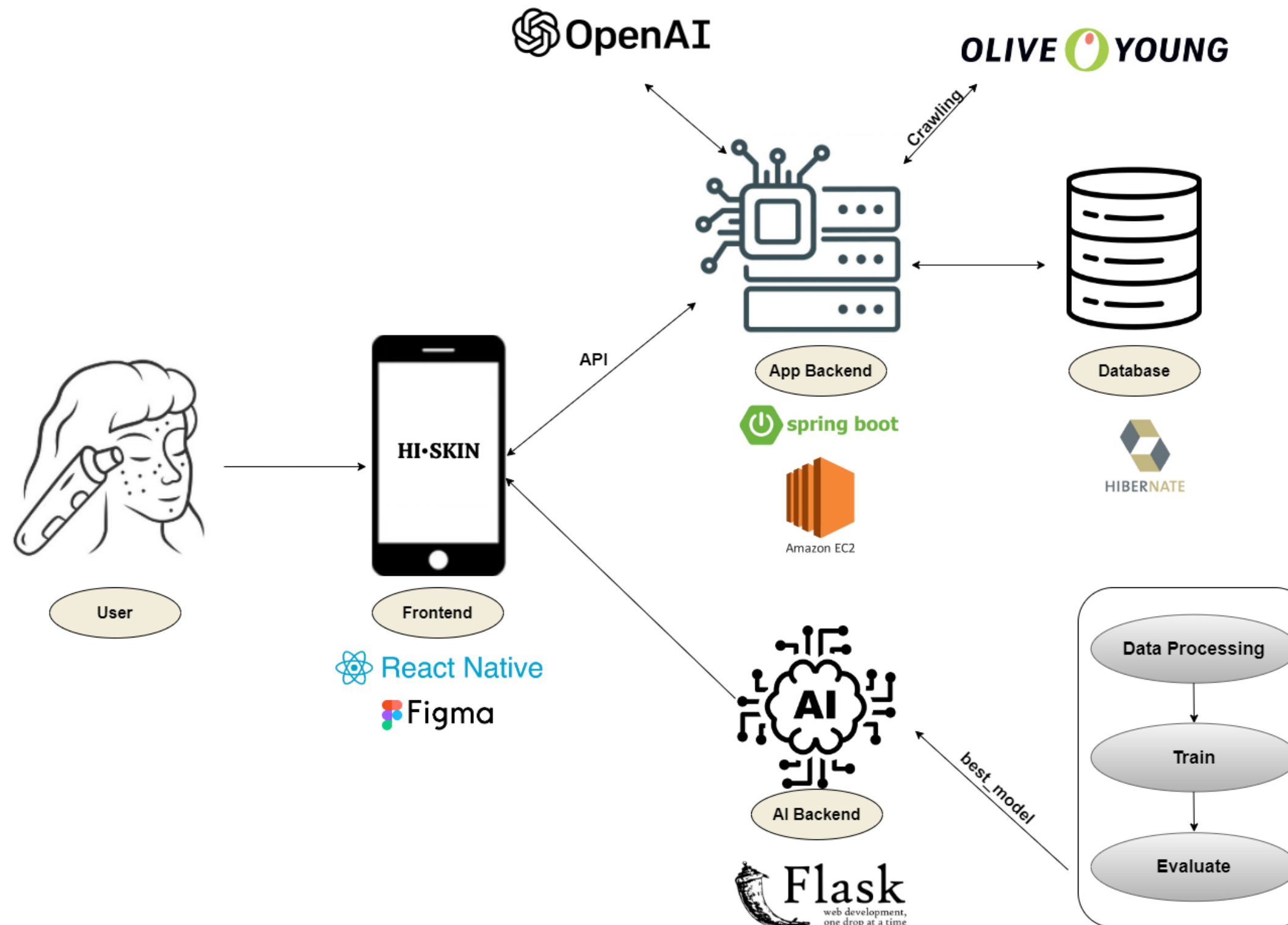Feel free to share users' various beauty tips and skin concerns

2-2 Video

2-3 UI/UX Design

2-4 Service Architecture

2-4 Service Architecture

AI PIPELINE_Facial Analysis

Preprocessing	Transformer	Result	Deployment
Normarlization of Image Data	Image Classification with ViT Models	Loss : 0.2721 Accuracy: 0.7692	Deploy to koyeb

2-4 Service Architecture
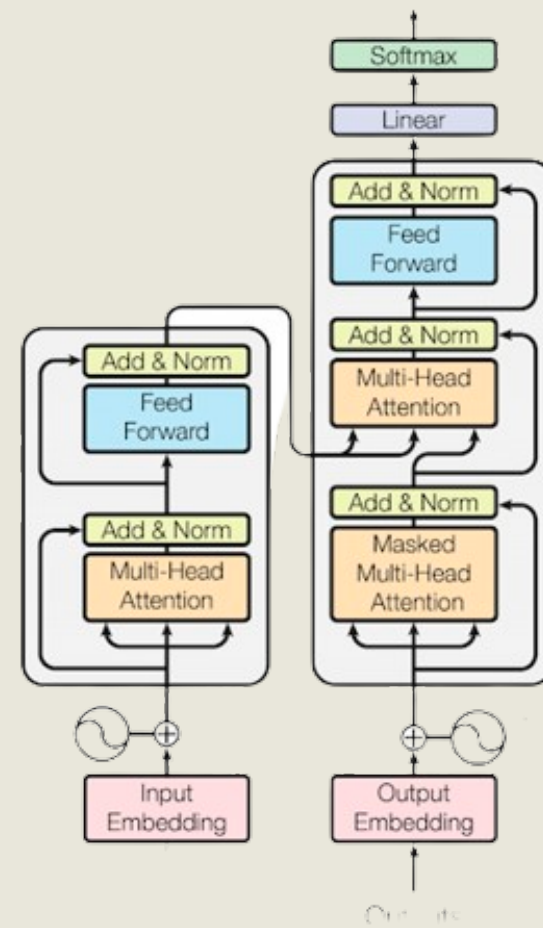
AI PIPELINE_Chatbot

Preprocessing

'여행은 언제나 좋죠 .'

```
5766 ----> 가스
611  ----> 비
3509 ----> 비싼
141  ----> 데
685  ----> 감기
3747 ----> 걸리
849  ----> 겠어
```

```
[8178 3844  74 7894  1 8179  0  0  0  0  0  0  0  0
   0   0   0   0   0   0   0  0  0  0  0  0  0  0
   0   0   0   0   0   0   0  0  0  0  0  0  0  0]
```

Transformer

Inference

```
output = predict("영화 볼래?")
```

```
Input: 영화 볼래?
Output: 최신 영화가 좋을 것 같아요 .
```

Result

Epochs	loss	accuracy
1	1.4492	0.0216
10	0.5114	0.0937
20	0.0463	0.1642
30	0.0173	0.1707
40	0.0088	0.1729
50	0.0057	0.1737

Loss : 0.0057
Accuracy: 0.1737

Conclusion

HI·
SKIN

- Create a challenge feature that allows users to check their skin condition and care routine without visiting a dermatologist

- It is different from other applications in that you can get recommendations for cosmetics that fit your skin type or skin type through conversations with your dermatologist

Implications
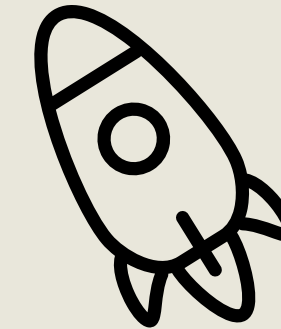
- Plans to develop a skin condition diagnosis function using AI to diagnose more diverse skin concerns and provide personalized solutions

- Currently, it has implemented AI communication function using OpenAI API, but plans to implement communication function using machine learning by connecting chatbot model with machine learning backend in the future

We want to develop into an application
that enables more detailed diagnosis and natural communication for LG Pra.L care users

End of Document

Github   Notion   Youtube