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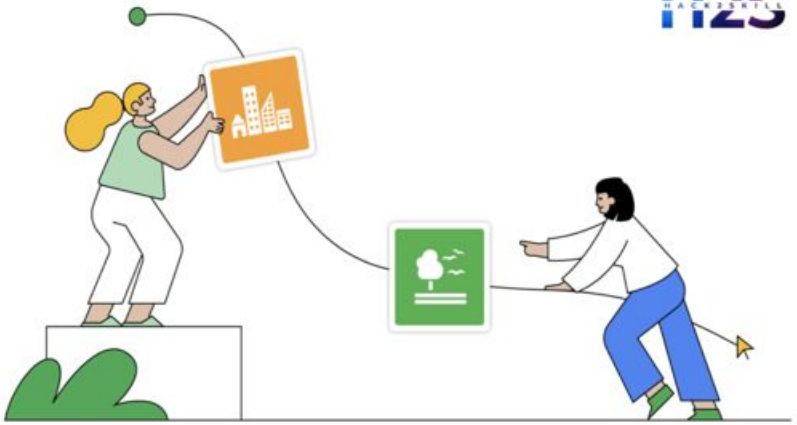
Solution Challenge

AI for a better tomorrow



Team Details

a. Team name: **CLOOP**
b. Team leader name: **Sihyun Kim**
c. Problem Statement: **Sustainability**

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The Problem

The rise of fast fashion has led to a surge in clothing waste, exceeding 106,000 tons in Korea by 2022.
Due to poor recycling systems, most discarded clothes are incinerated or landfilled, harming the environment.
Only 15% of global clothing is recycled — the rest contributes to serious air and soil pollution.
Sustainable solutions like reuse, donation, and exchange are urgently needed.

Our Solution – CLOOP

CLOOP is a mobile app that promotes sustainable fashion by:

- Using **AI** to analyze and categorize clothes
- Tracking **wear frequency** and **last worn date**
- Flagging **unused clothes** for donation
- Helping users donate before clothes become waste

From registration to donation—**all in a few taps.**
CLOOP turns good intentions into **real sustainable action.**

What Makes CLOOP Different?

More than a closet organizer: **AI-powered classification + donation suggestions based on wear history**

Focuses on **actual usage data** to measure how often clothes are worn

Problem-Solving Potential

Helps users understand their **consumption patterns**

Reduces **unnecessary purchases** and **clothing waste**

Unique Selling Point (USP)

Combines **AI analysis** with **personalized wardrobe insights**

Visualizes **fashion habits** to promote mindful and sustainable choices

1

Google Login
Implemented using OAuth 2.0 via Google API

2

Clothing Registration
Register clothes with image and metadata.
AI classification results are editable before saving.

3

Clothing Image Analysis & Auto Classification
Automatically analyzes clothing images via Gemini API to extract name, category, color, and season.

4

Look Registration (OOTD)
Users can create daily outfits by selecting clothes and uploading a photo.
Look data (image, date, selected clothes) is stored.

5

Wear History Tracking
Each time a look is registered, the app updates wear count and last worn date of included items.

6

Donation Recommendation System
Clothes with no activity for a set period (e.g. 6 months) are flagged as donation candidates using usage analytics.

7

Donation Action Flow
Users can confirm donation via a modal.
Once confirmed, item status is updated in the system.

1. Sign in with Google

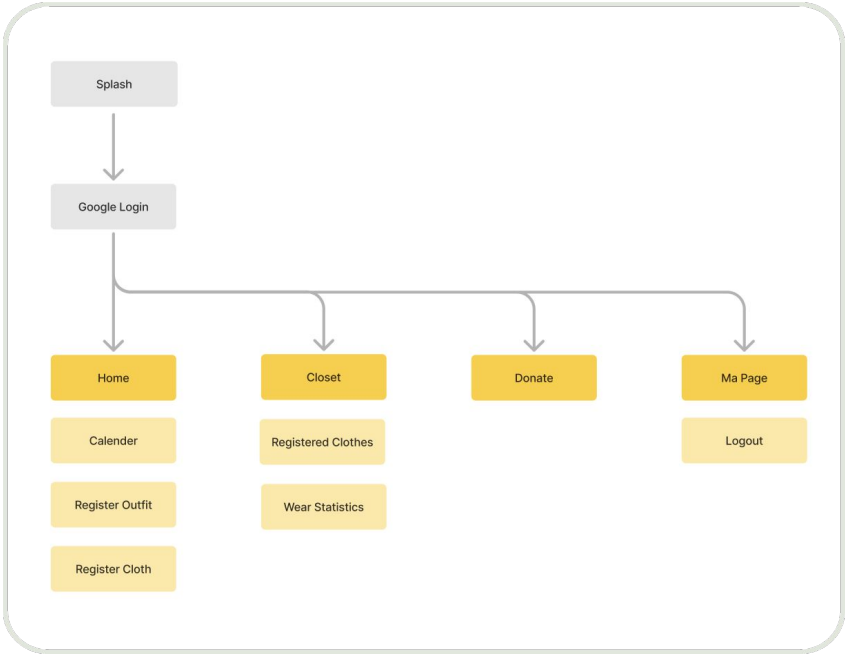
2. Upload clothing photo → AI auto analysis → Review/edit → Add to wardrobe

3. Register outfit (select worn clothes + upload outfit image)

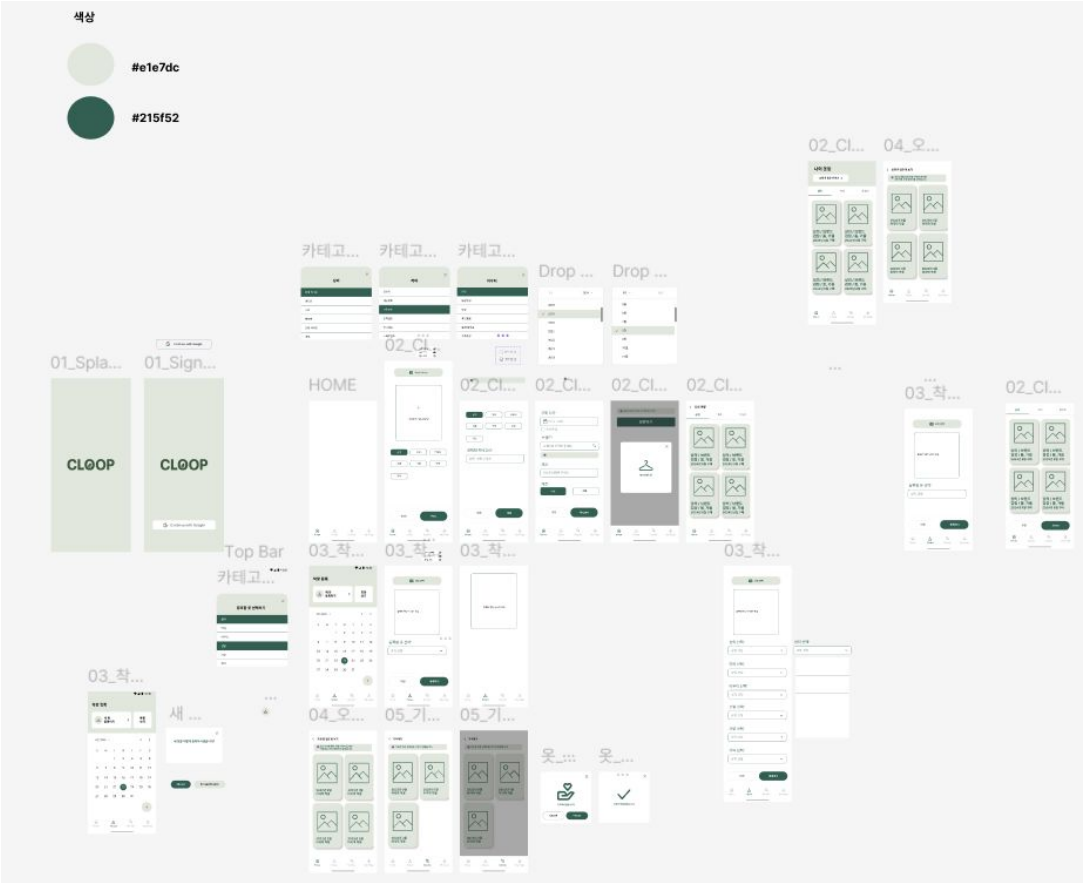
4. Save wear history (date and frequency)

5. Automatically detect unworn clothes → Move to donation tab

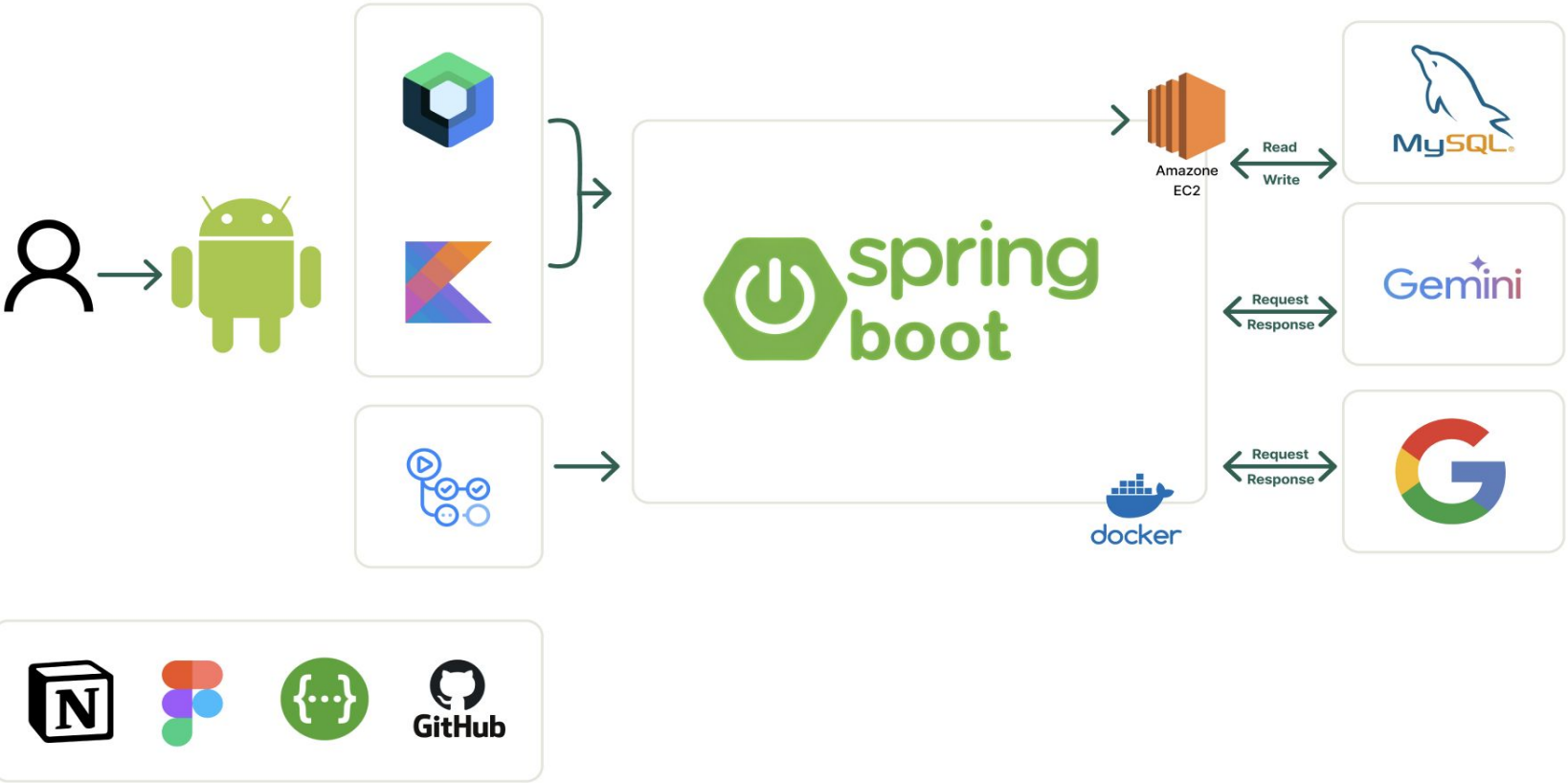
6. User decides whether to donate or not



[Figma]


색상
#e1e7dc
#215f52
01_Spla...
01_Sign...
CLOOP
CLOOP
HOME
Top Bar
카테고...
Drop ...
02_Cl...
04_오...
03_작...
05_기...
새 ...
옷_...

Architecture diagram



Technologies Used

Backend

Language: Java 17

Framework: Spring Boot

Database: MySQL

Authentication: Google OAuth 2.0, JWT

AI Integration: Gemini API (via HTTP request)

API Docs: Swagger (Springdoc OpenAPI)

Deployment: Docker, AWS EC2

Frontend

Language: Kotlin

Tool: Android Studio

Architecture: MVVM

Jetpack Components: AppCompat, LifeCycles, ViewModel, LiveData, viewPager2

Library: Standard Library, Material Design, Glide

API: Retrofit2, Gson, OkHttp, Coroutine

Deployment: APK build (via Android Studio)

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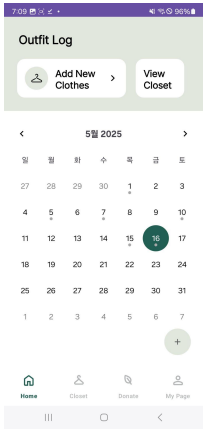
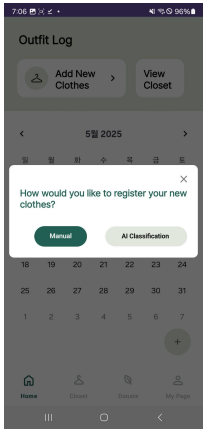
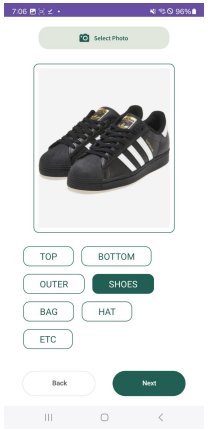
Home



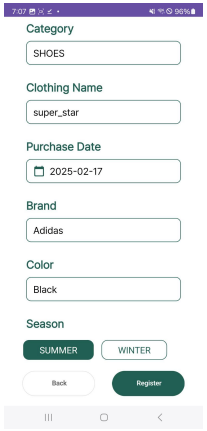
Add Clothes Dialog



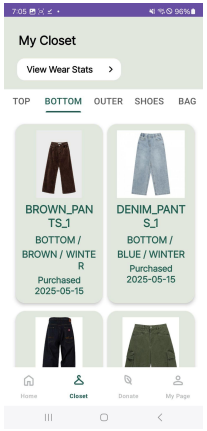
Add Cloth - Manual



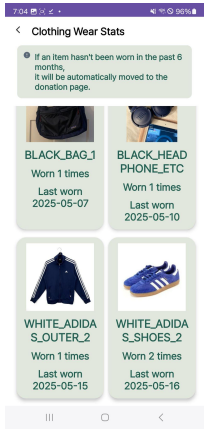
Add Cloth - AI



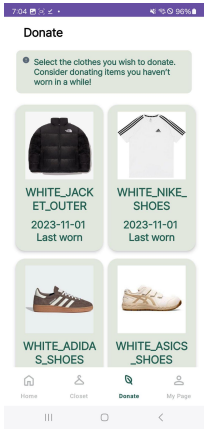
Closet



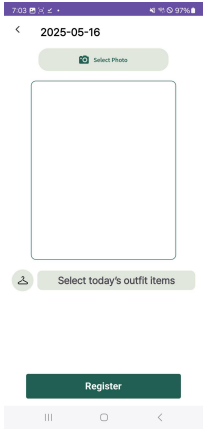
Clothing Wear Stats



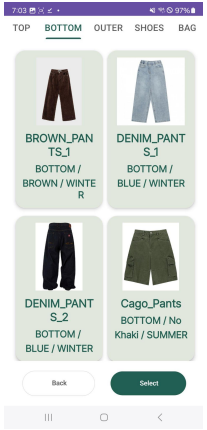
Donate

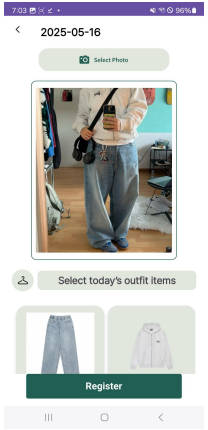


Register Outfit

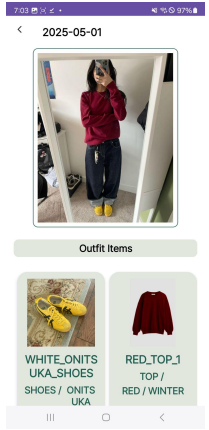


Select today's outfit items





View Registered Outfit



My Page - Logout

What's Next for CLOOP

Weather & Style Suggestions

Recommend daily outfits based on weather conditions and the user's preferred style, using existing wardrobe data.

Style Analytics & Smart Suggestions

Visualize user style patterns (e.g., favorite categories, most-worn colors) and suggest outfits based on frequently worn or underused items. Encourages smarter, more efficient wardrobe usage.

In-App Donation Integration

Let users select donation organizations and request pick-up or drop-off directly within the app. Builds trust and transparency in the donation process.

Clothing Exchange Feature (Circular Fashion)

Support peer-to-peer clothing exchange to promote sustainable fashion. Users can mark items as "Exchangeable" and browse others' listings. Reduces waste and boosts community engagement.

Working prototype link:
https://drive.google.com/file/d/1a_CDYG50pzqyj6rozV3Z-19eK8AM6AwC/view?usp=drive_link

Demo Video:

https://www.youtube.com/watch?v=3nnp0zJQwYM

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Thank you