

Walking Friend

Team 4

Jeong Minkyung
Jae Yong Kim
Kim Minji
Yeom Joonho

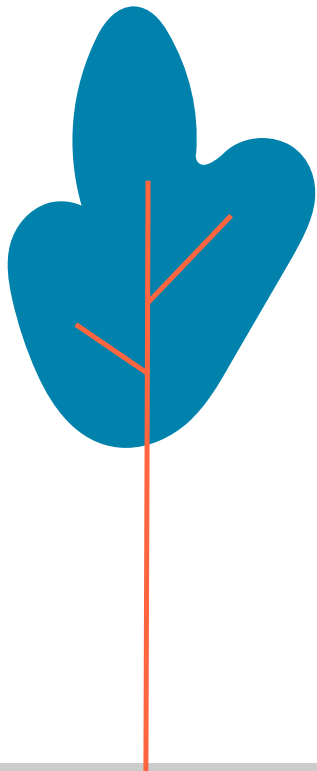
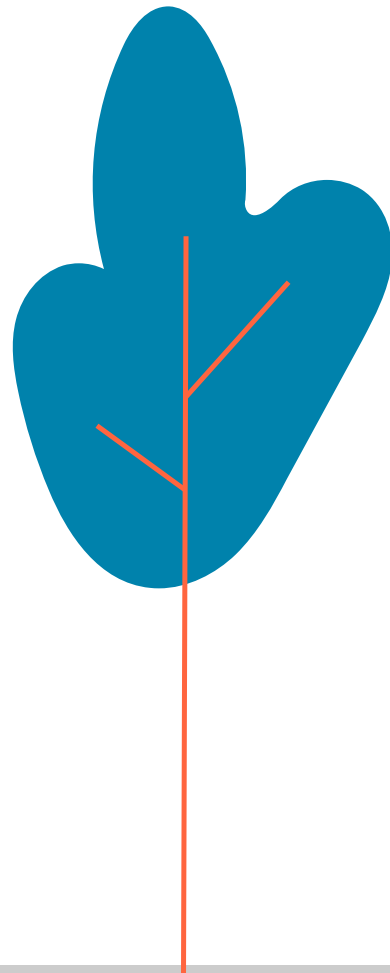


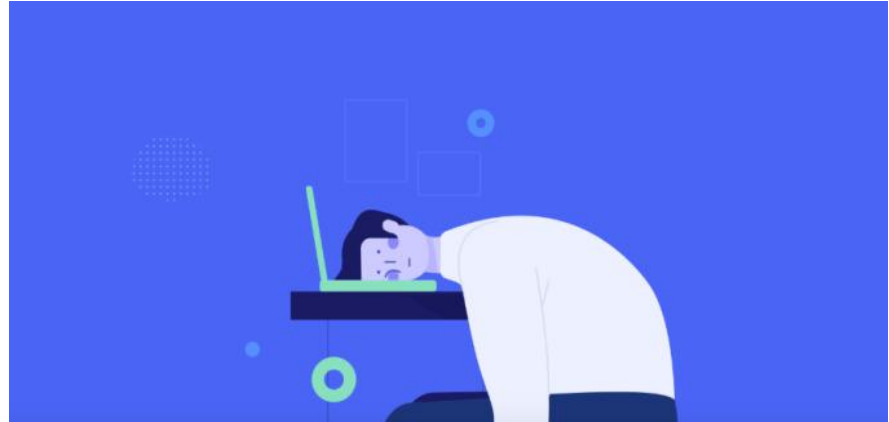
Table of contents

- 01** Refined project idea
- 02** Use cases
- 03** System architecture
- 04** Key technical challenge
- 05** Project schedule
- 06** Final deliverable & success criteria



Target Users

- People with **sedentary lifestyles**
- People who want **lightweight, gamified walking**
- People need fun motivation for outdoor activities



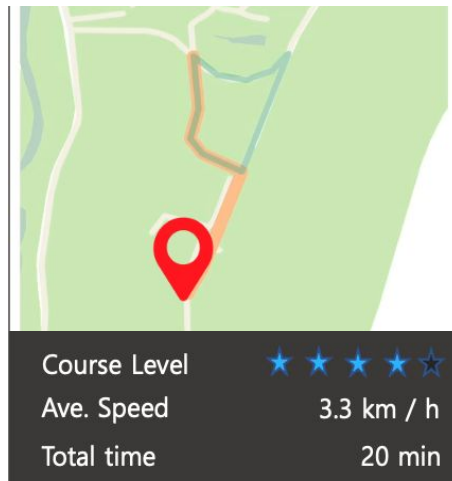
Approach

Gamified walking app



Scene-based game interactions

Fun motivation for walking

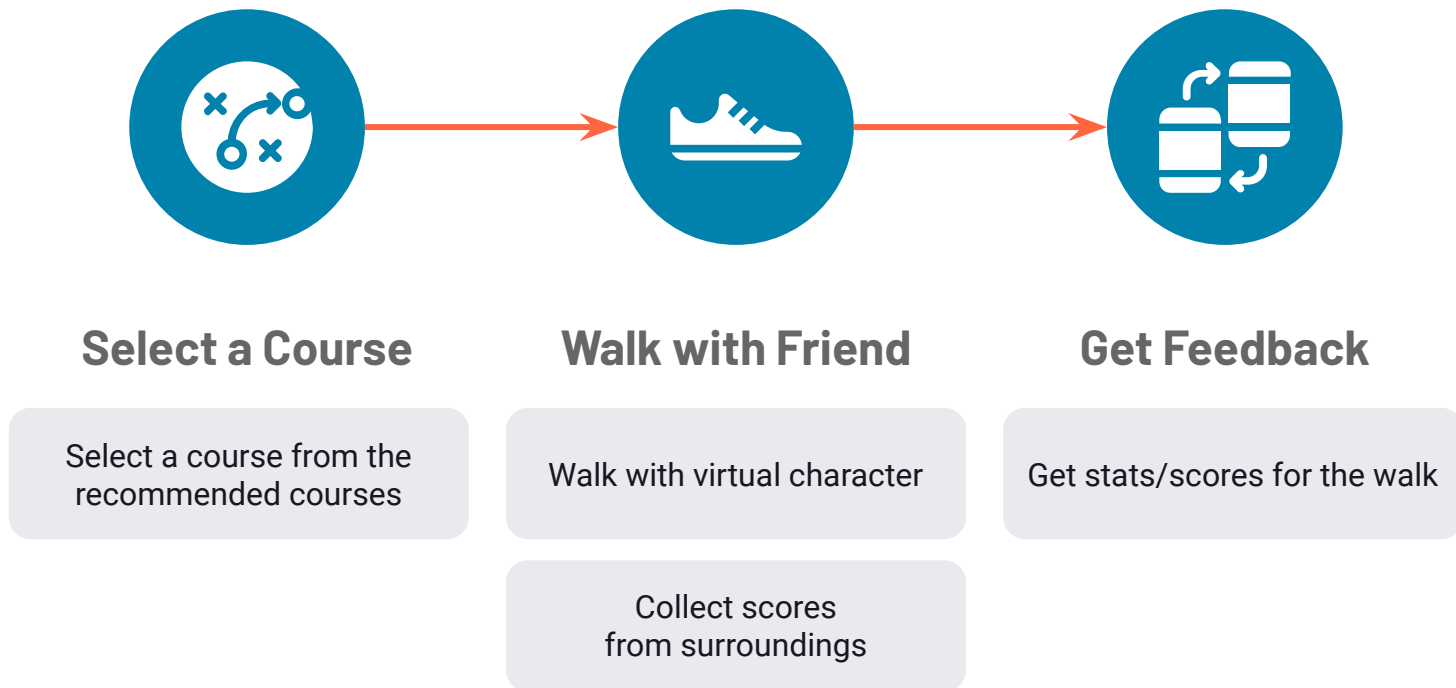


Sensing technologies to help walking

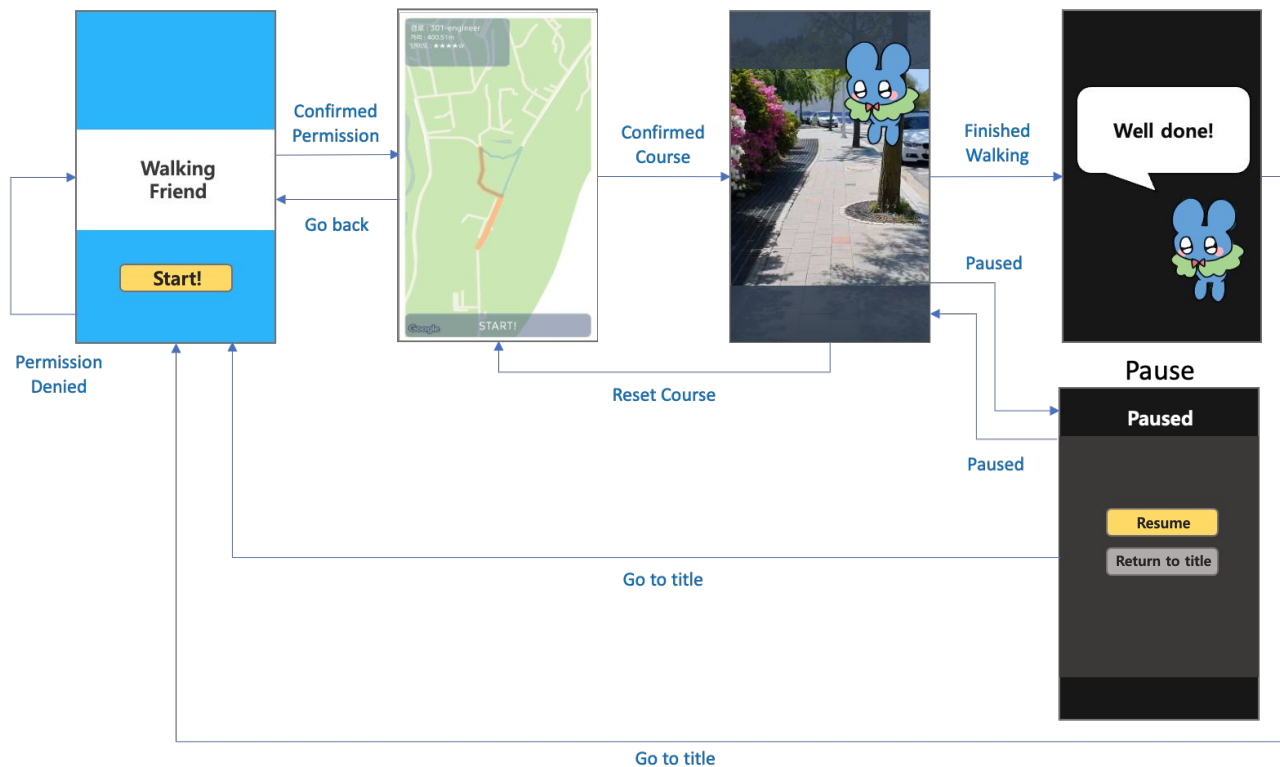
Make users feel achieved

Reduce burden of planning

Usage Scenario

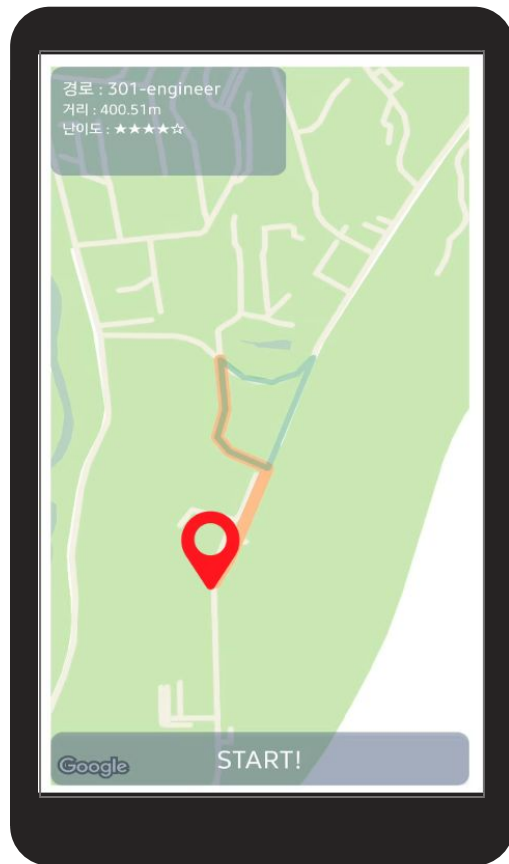


Usage Scenario



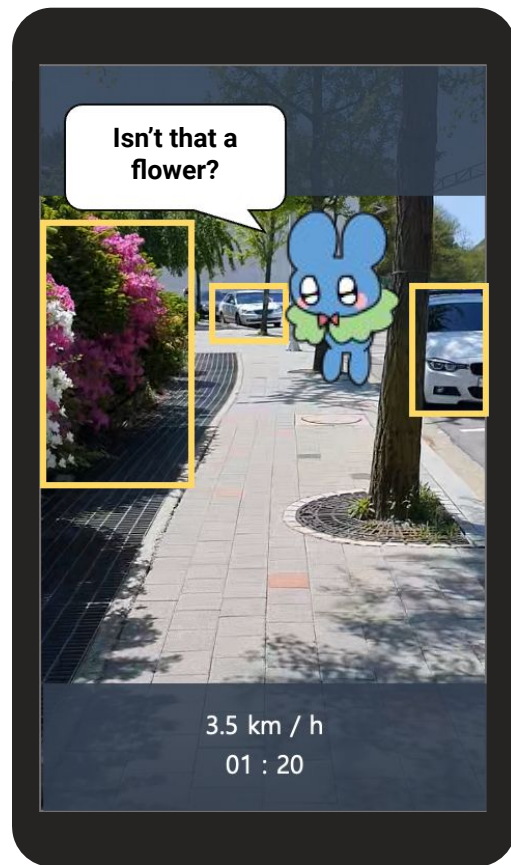
Usage Scenario

- **App recommends courses near the user**
 - Get current location using Google maps API
- **Start walking when user selects a course**
 - Route, distance and difficulty of the course are provided



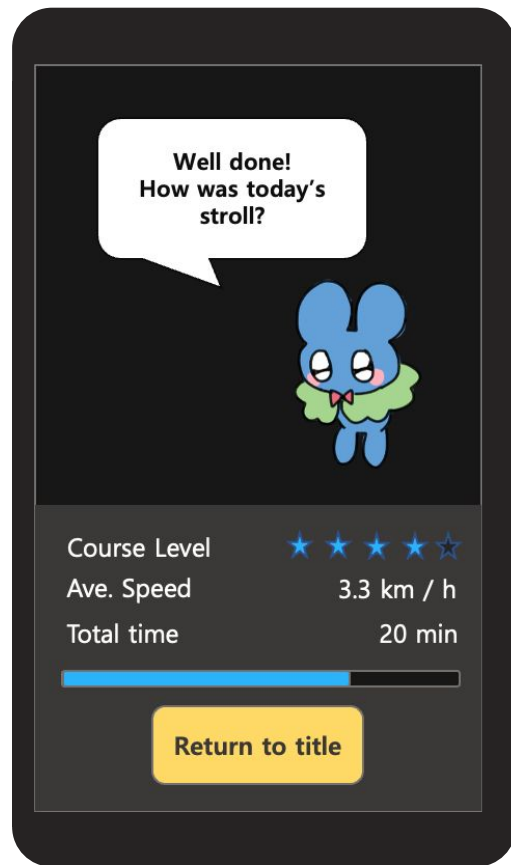
Usage Scenario

- **Virtual character interacts with the surroundings**
 - Interactable objects are extracted by detection model
 - Character's behavior changes depending on the scene
- **Users can earn scores from character's action**

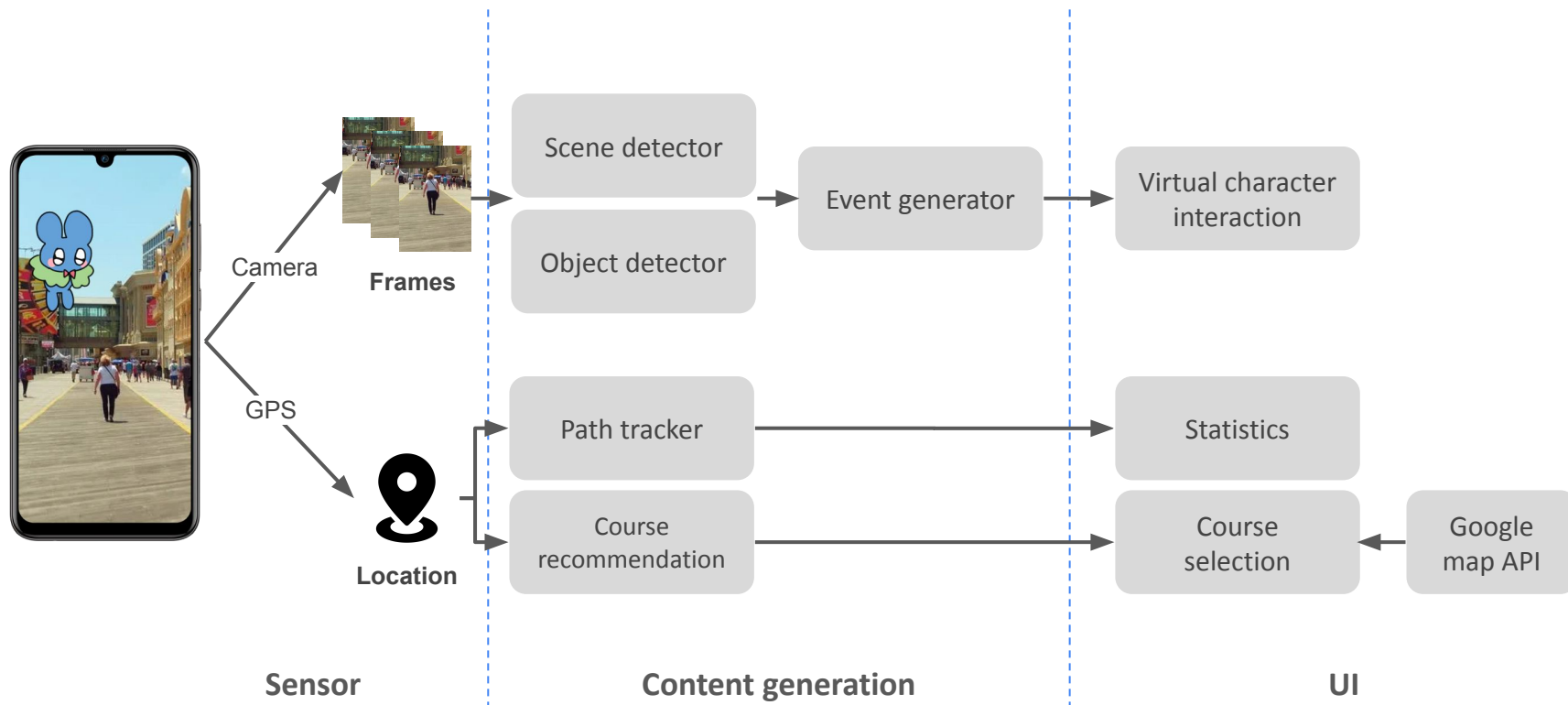


Usage Scenario

- **Get today's walking stats and scores**
 - Walking history is stored on the device
 - Users can check walking intensity from average speed and total walking time

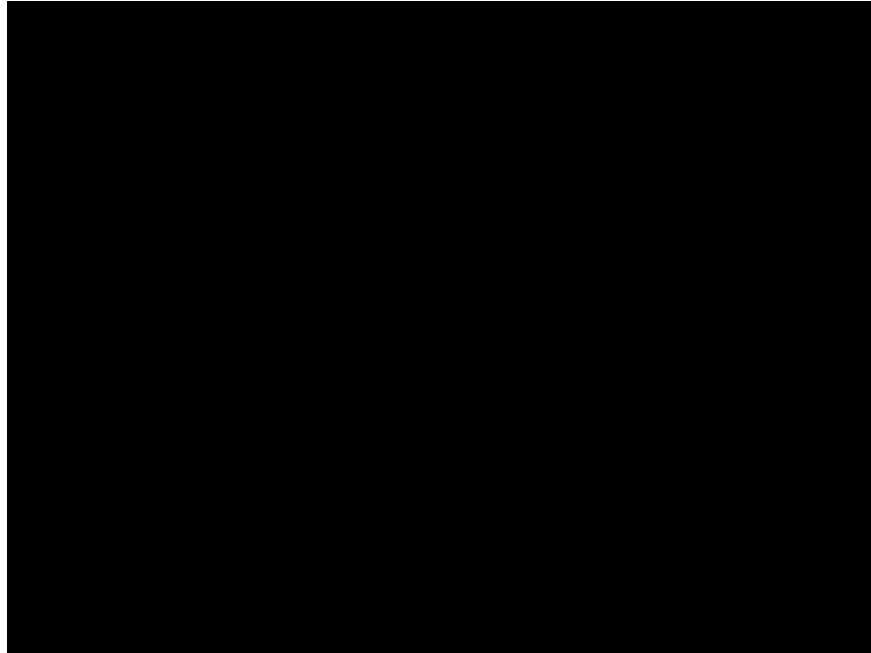


System Architecture



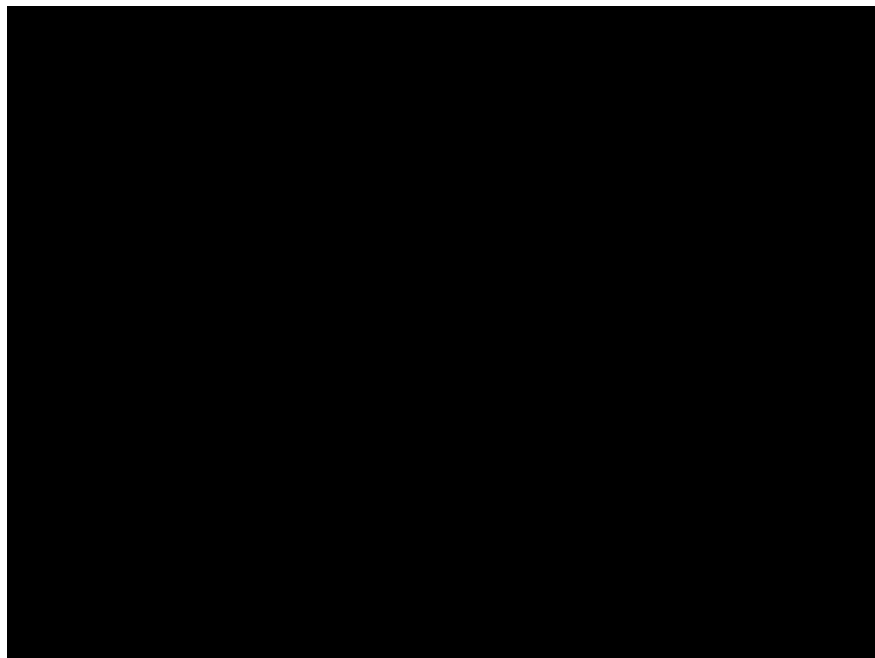
Demo : Course Recommendation

- Users can select a course from recommended courses
- App tracks the user's walking path



Demo : Object detection

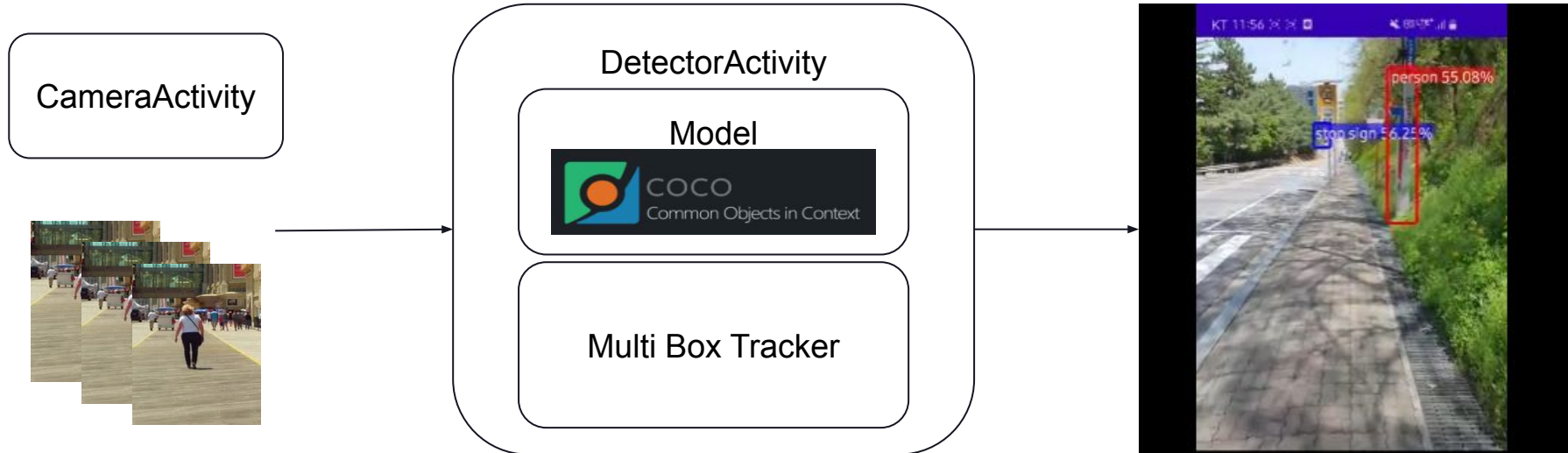
- App detects objects in the scene



Technical/Design Challenges #1

Object Detection Model

- MobileNet-SSD (Single shot Multi-box Detector)
- Currently trained with CoCo dataset



Technical/Design Challenges #1

CoCo Dataset

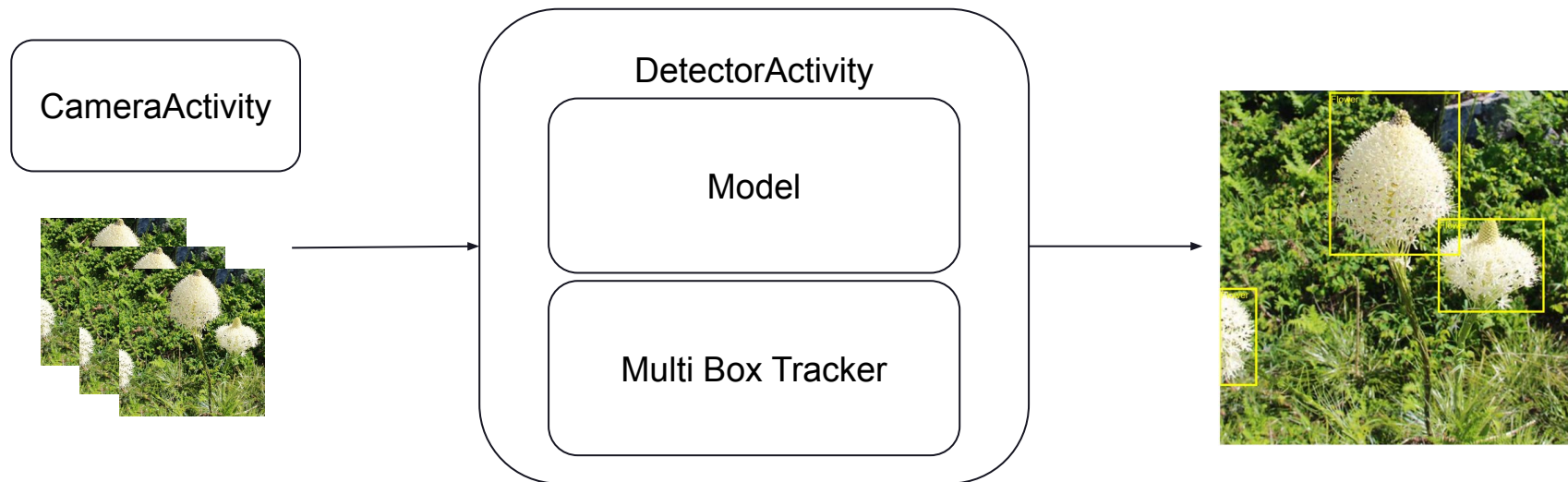
- CoCo does not have categories that we are actually looking for (e.g. trees, flowers)



Technical/Design Challenges #1

Fine-tuning w/ flower & tree dataset

- Oxford 102 category flower dataset for segmentation
- Preprocess bounding boxes from ground truth segmentation masks



Technical/Design Challenges #2

When should characters interact with the scene?

- Numerous boxes at the same time
- Possible incorrect detection or classification of an object
- Same category object in a very short span of time



Technical/Design Challenges #3

- Dataset vs. Actual Target Environment

Training Dataset



Target Environment



Final Deliverable / Success Criteria

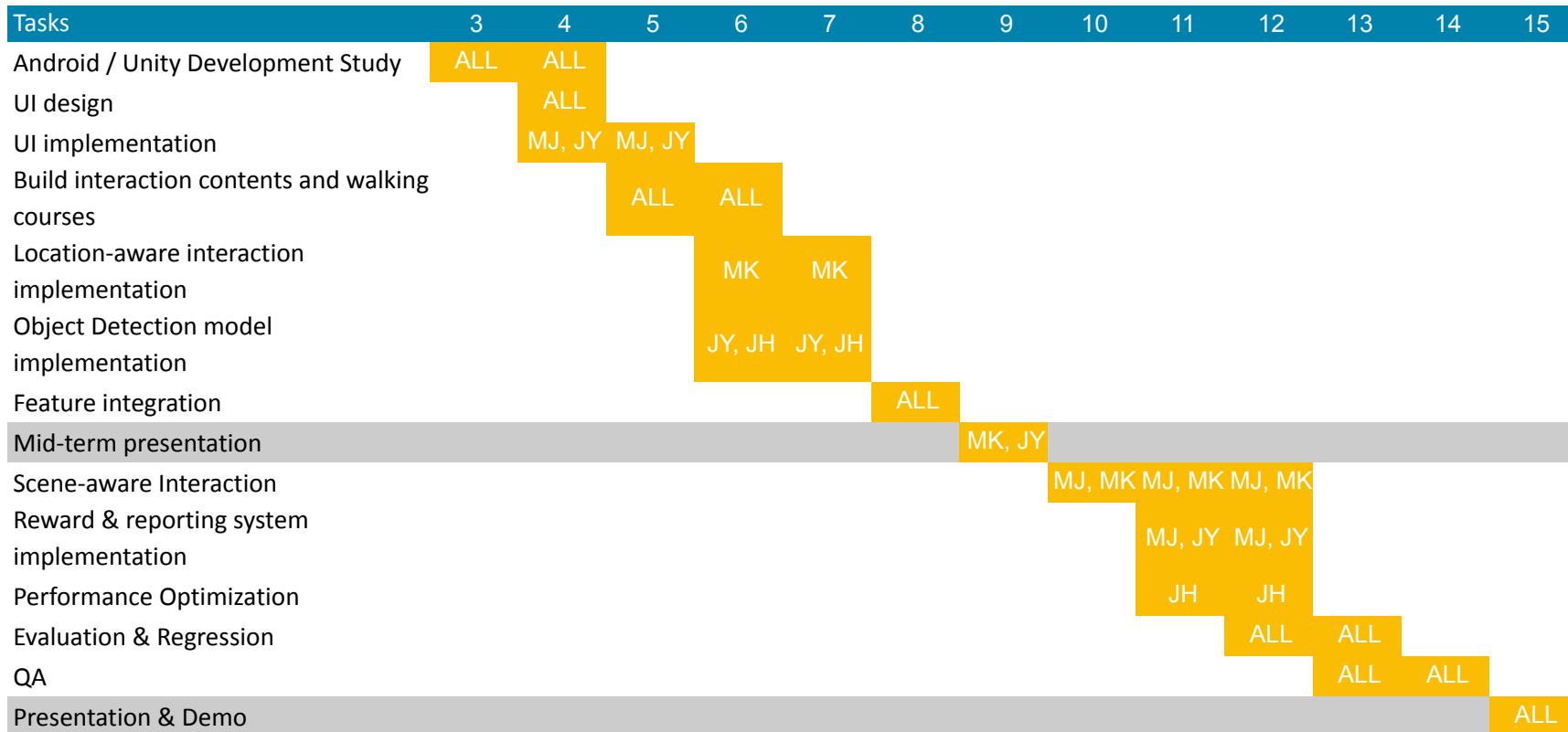
Scene Recognition

- Detects objects well that are meant to be detected (e.g. flowers, trees)
- Correctly classifies the current scene in the camera
- Interaction with UI character along with recognition

Course Recommendation

- Accurate tracking of the user's current location
- Correct statistical feedback after completion of a course

Project Schedule



Thanks

Do you have any questions?

CREDITS: This presentation template was created by **Slidesgo**, including icons by **Flaticon**, infographics & images by **Freepik**

