TEAM 13

ROAD MAP OF SUNGKYUNKWAN UNIVERSITY.
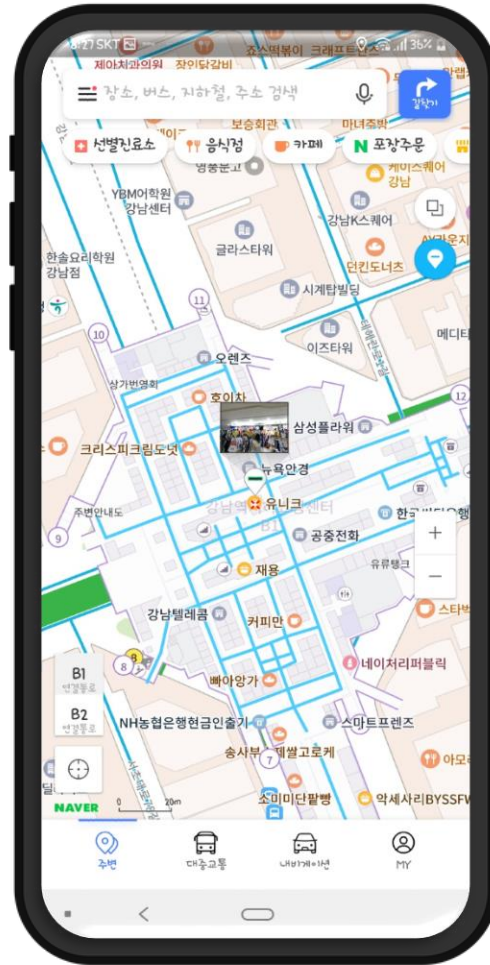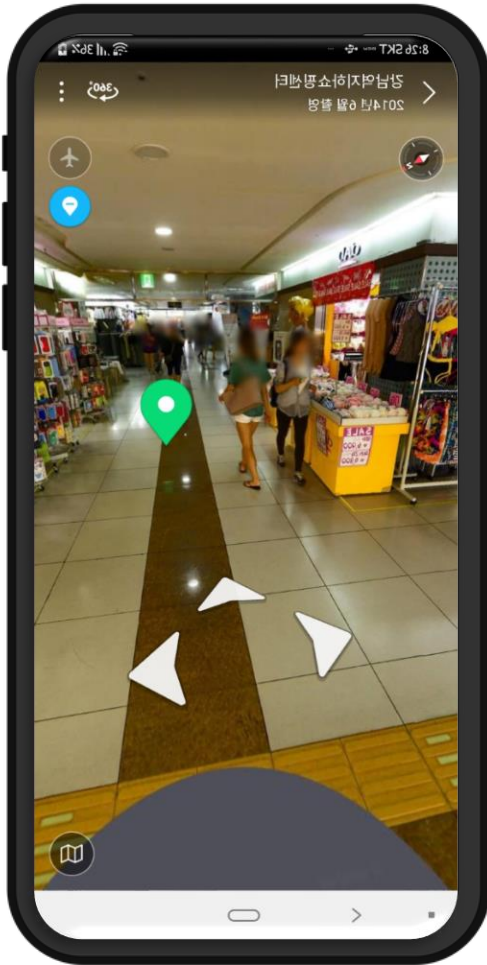
CONTENTS

PART 1

Overview

Background

Because of corona virus, students, professors and the others who work or study in university cannot visit school. People, especially freshmen or new students, may have difficulty locating the classroom when taking offline classes after Corona is over.
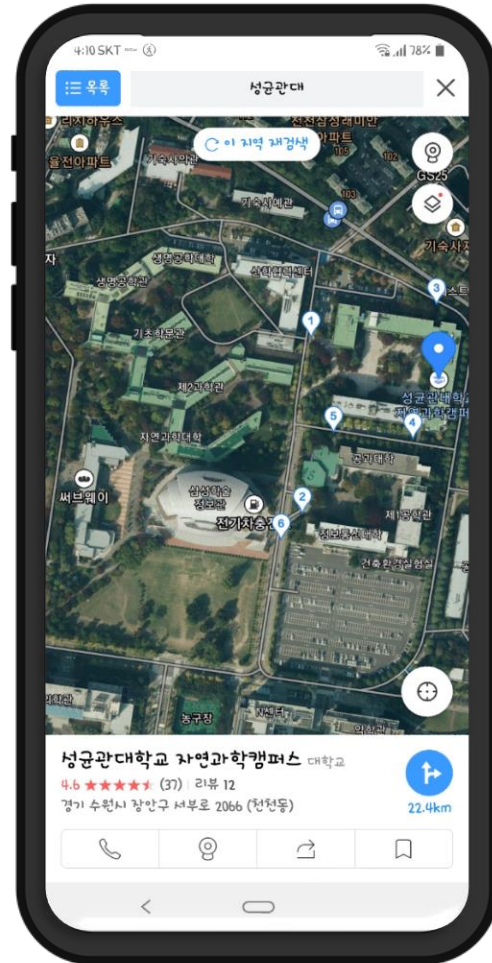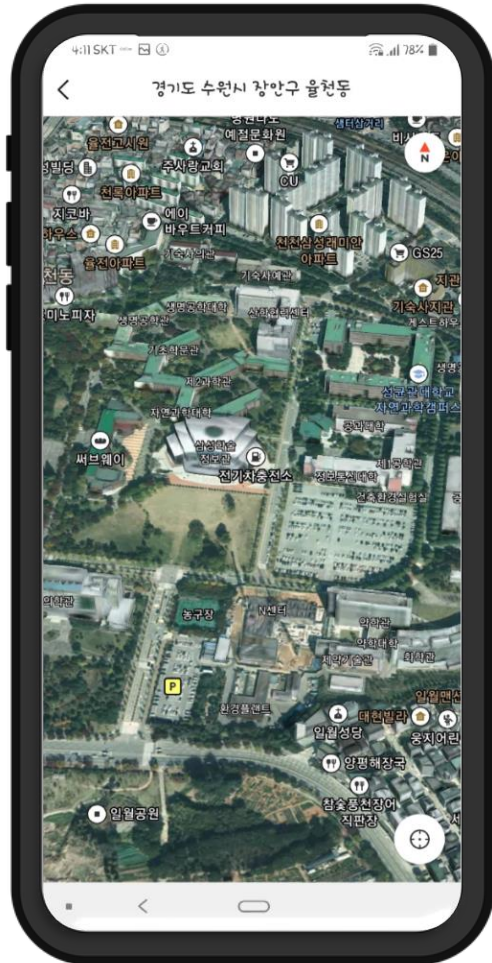
Background

Strength Point
1. We can see the inside of the building through the road view.
2. We can find the best path in the building.
3. We can use the arrows to see it as if it's actually going around.

Weak Point
1. It is limited to several buildings.
2. When indicating the location inside the building, it is not expressed which floor it is currently on.

Background

Strength Point
1. Using 3D Skyview, we can see the building model with approximate height.
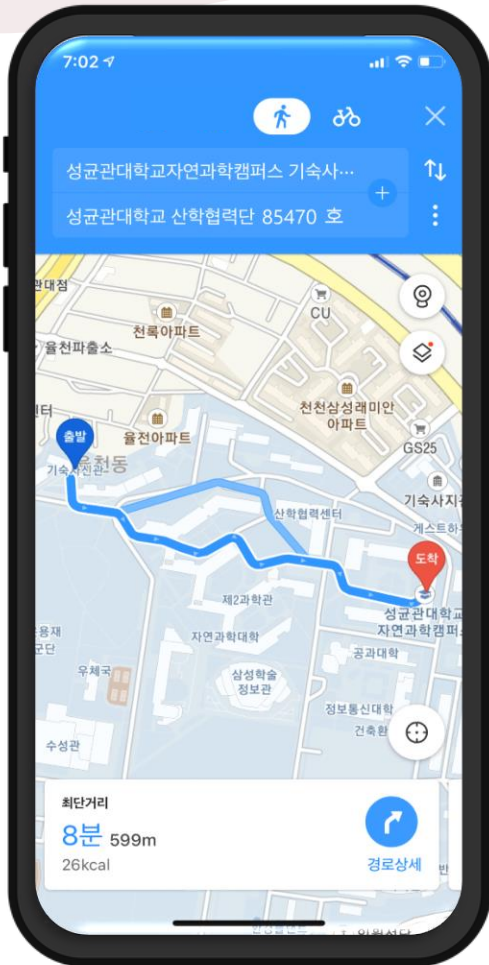2. With Kakao app, we can share where we are now.

Weak Point
1. We cannot see the map inside the building.
2. Some road views point on the roadway so we can get confused with the sidewalk.
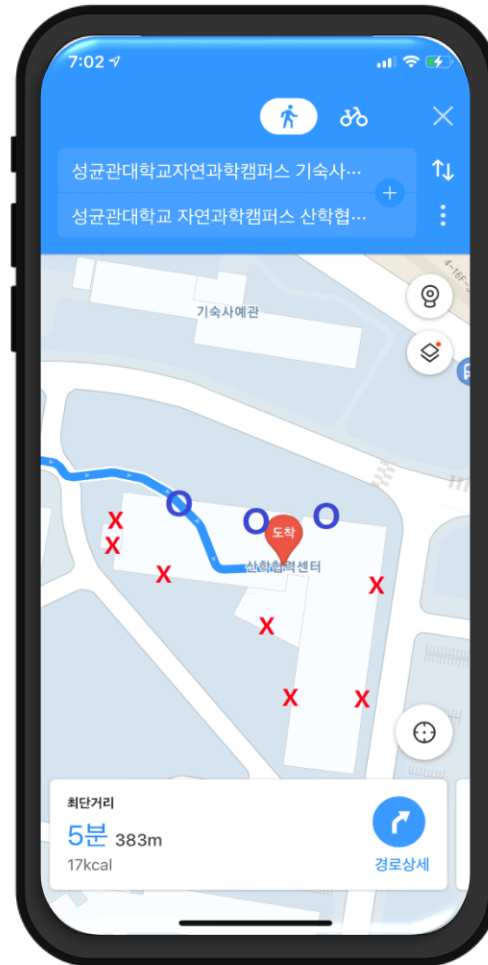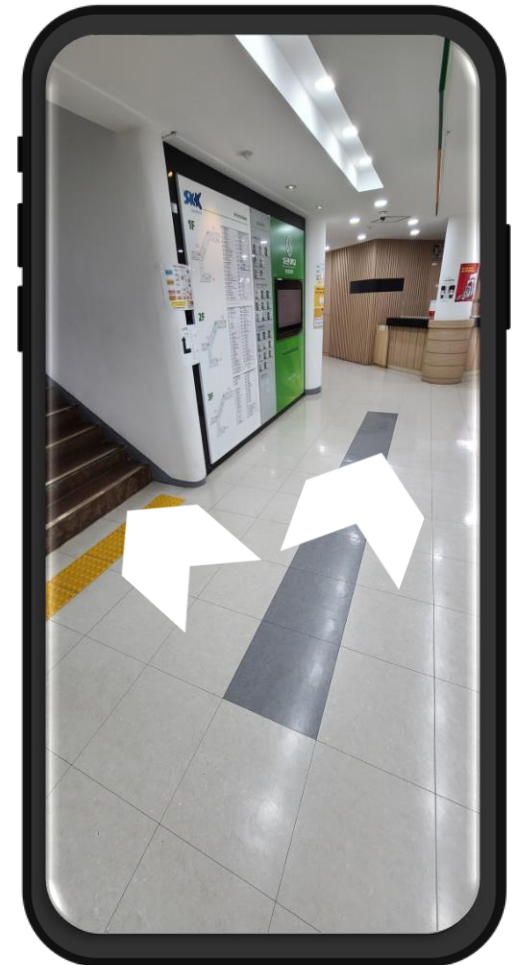
PART 2

Goals & Methods

Final Goals We want to achieve

Navigation even in building
to particular room

Shows available door to building
(∵ locked due to COVID-19 & late night time)

Road view inside the building

Goals

Get to know inside the school Right Now

without any step

Goals – details

- Make map data inside each buildings

- Data collecting with particular transportation(ex. Walk, bicycle, board) to Rooms in the buildings.

- Develop more accurate GPS system using common GPS and Wifi system

- Develop shortest path algorithm even guides to front of room, not building entrance.

- Represent navigation route easily including stairs and elevator

- Develop Road-map function showing inside the building

Methods – Main Points

Frontend	Backend		Extra Works
UI/UX Design	CI/CD	Shortest Path Algorithm	3D Panorama Pictures
Light App	Sending High Quality Map		Mapping Pics With GPS info
Get Accurate GPS info	Micro-service Architecture		Blur out sensitive Information

Methods – details

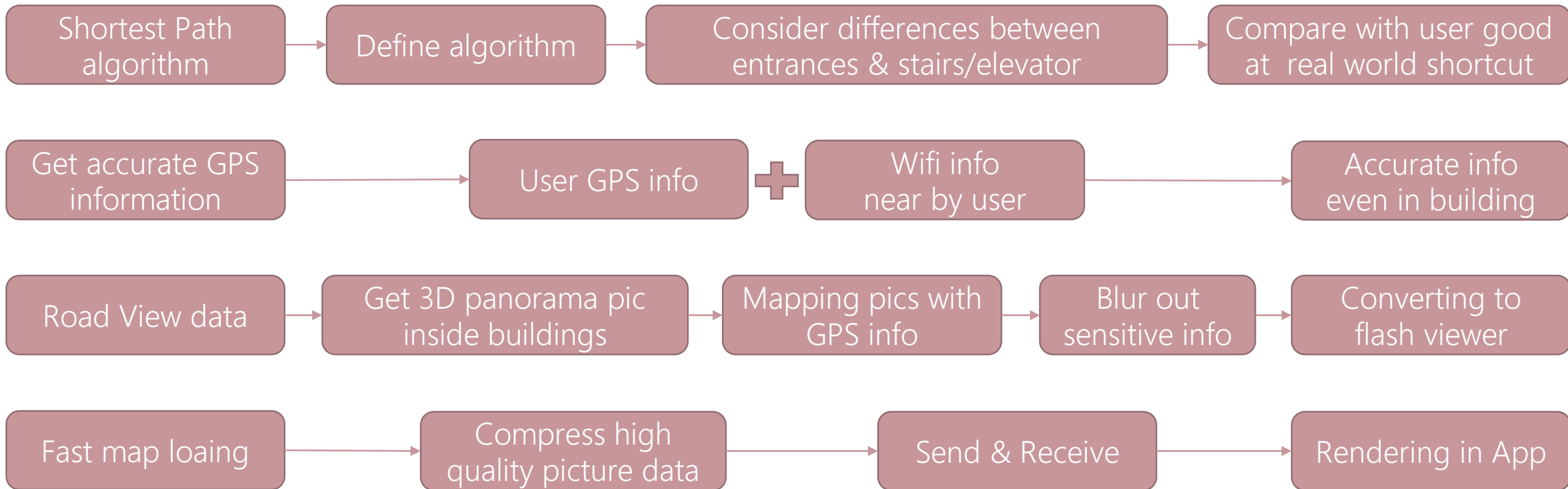Our Apps Provides

Direction guide inside buildings

Notice duration of time by Transportation
(by walks, bicycle, board)

Road view inside building

Map inside building which shows # of room

Methods – details

In order to provide those, ~

| Shortest Path algorithm | → | Define algorithm | → | Consider differences between entrances & stairs/elevator | → | Compare with user good at real world shortcut |

| Get accurate GPS information | → | User GPS info | **+** | Wifi info near by user | → | Accurate info even in building |

| Road View data | → | Get 3D panorama pic inside buildings | → | Mapping pics with GPS info | → | Blur out sensitive info | → | Converting to flash viewer |

| Fast map loaing | → | Compress high quality picture data | → | Send & Receive | → | Rendering in App |

Methods To be used in Front-end

To design logo & icons
to be used in Map

To design UI/UX and
visualizing simpler map

To Deal with Cross-
platform environment

Methods To be used in Back-end (early stage)

As Seamless Collaboration and Version Control System

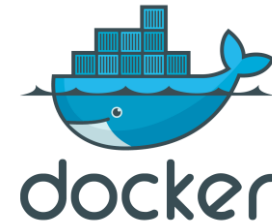As Backend (Server, DB) for speedy set-up at early stage

As CI/CD Tool

Methods To be used in Back-end

As Seamless Collaboration
and Version Control System

For Micro-service architecture
And easy to maintain

For Cloud environment and Version Control & CI/CD

PART 3

Team & Strategy

Team & Strategy

UI/UX + Front-end Team

김규용
App Design

한지명
App Design Implementation

Back-end Team

신승환
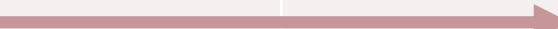Implement Algorithms

천주형
App Back-end Implementation

Waterfall
Model

Server Team

황석진
Team Leader/Implement DB

김승호
Collect & Preprocess Data

Team & Strategy – Schedule

Contents	4/5 ~ 4/25	4/26~5/16	5/17 ~ 5/30	5/31 ~ 6/13	6/14 ~
Requirement Specification	→				
System & Software Design		→			
System & Software Implementation			→		
Collect & Preprocess Data		→			
Test planning	→				
Testing (Validation & Verification)				→	
Operation & Maintenance					→

Team & Strategy – Testing Strategy

Component testing → System testing → Acceptance testing
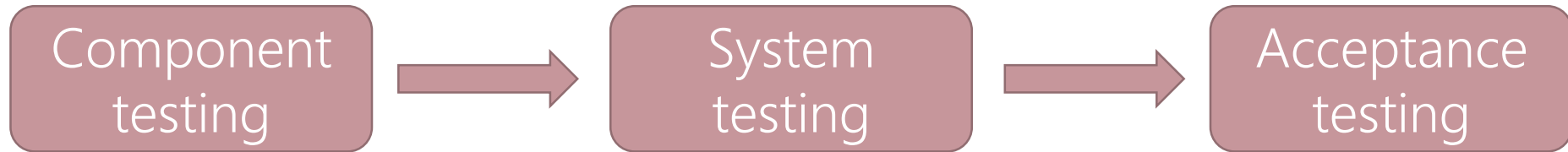
Team & Strategy – Quantitative evaluation

Evaluation indicator	Quantitative	Importance
Accuracy testing to check algorithm really shows real shortcut	95% ↑	20%
Collection rate of building inside view data	98% ↑	25%
UI / UX user evaluation	85% ↑	20%
Shortcut path search speed	3 Sec ↓	20%
Accuracy of time duration through path	90% ↑	15%

PART 4

Plan & Effect

Application Plan

Find A Way
- Can be extended to find a way between any two locations in Korea
- Seoul to Busan, 1st floor to 3rd floor in same building.. Any two places!

Rescue
- You can get quick help from police officers and firefighters
- Location and path accuracy save our life!

Find People
- Can be extended to find people around us
- Get to know each other!

Campus Tour
- Any middle or high school students interested in university can have campus tour on their smartphone
- Also useful for those who don't or rarely go to campus

Expected Benefits

Convenience
- Just click a button and get shortest path between classrooms in university
- Can find path and location in easy, accurate way

Technology
- Use machine learning models with Wifi and GPS data
- Get accurate location information even in building

Economical
- Don't have to find shortest path on your own
- Save your time and energy

Promotion
- Easy promotion of campus to middle and high school students
- Attract more students to the university