

CHOSEN TRACK: CAMPUS SAFETY APP

GROUP: RTXЧОБОТІ



UniWay

**AI-DRIVEN
EVACUATION TOOL
TO NAVIGATE
THROUGH CROWDS**



PROBLEM STATEMENT

Evacuations in universities suffer from:

1. congested main routes
2. underutilized alternative exits



STANDARD EVACUATION PROCEDURE

1

Fire alarm sounds,
all occupants stop
activities and
proceed to the
nearest emergency
exit.

2

Safety officers
guide occupants
down stairwells.

3

Occupants
gather at
designated
outdoor areas,
away from
access roads
for fire trucks.

4

Safety officers
check **roll calls**
at the assembly
point.

Real-time, customized
instructions for students

Balance traffic &
crowd at each exit

AI-driven,
but available
OFFLINE too!!

How to transform
evacuation??

faster check in
using geolocation,
find who's left
behind instantly

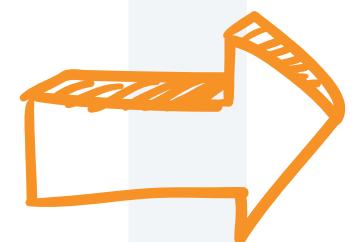
Knows where to go &
what to do even if
student missed fire
drill day

more accessible
for safety
officers

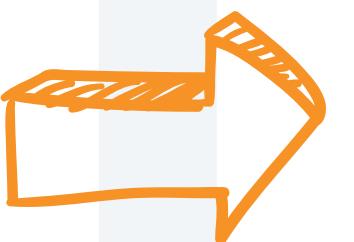
USER STORY I :

DYNAMIC EVACUATION ROUTING

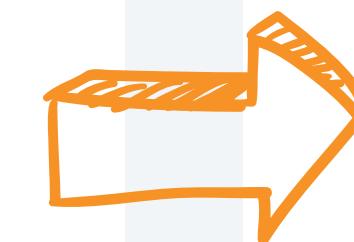
Fire alarm sounds,
all occupants **receive alert** on their phone.



Occupants **click on the alert notification** to enter the app.

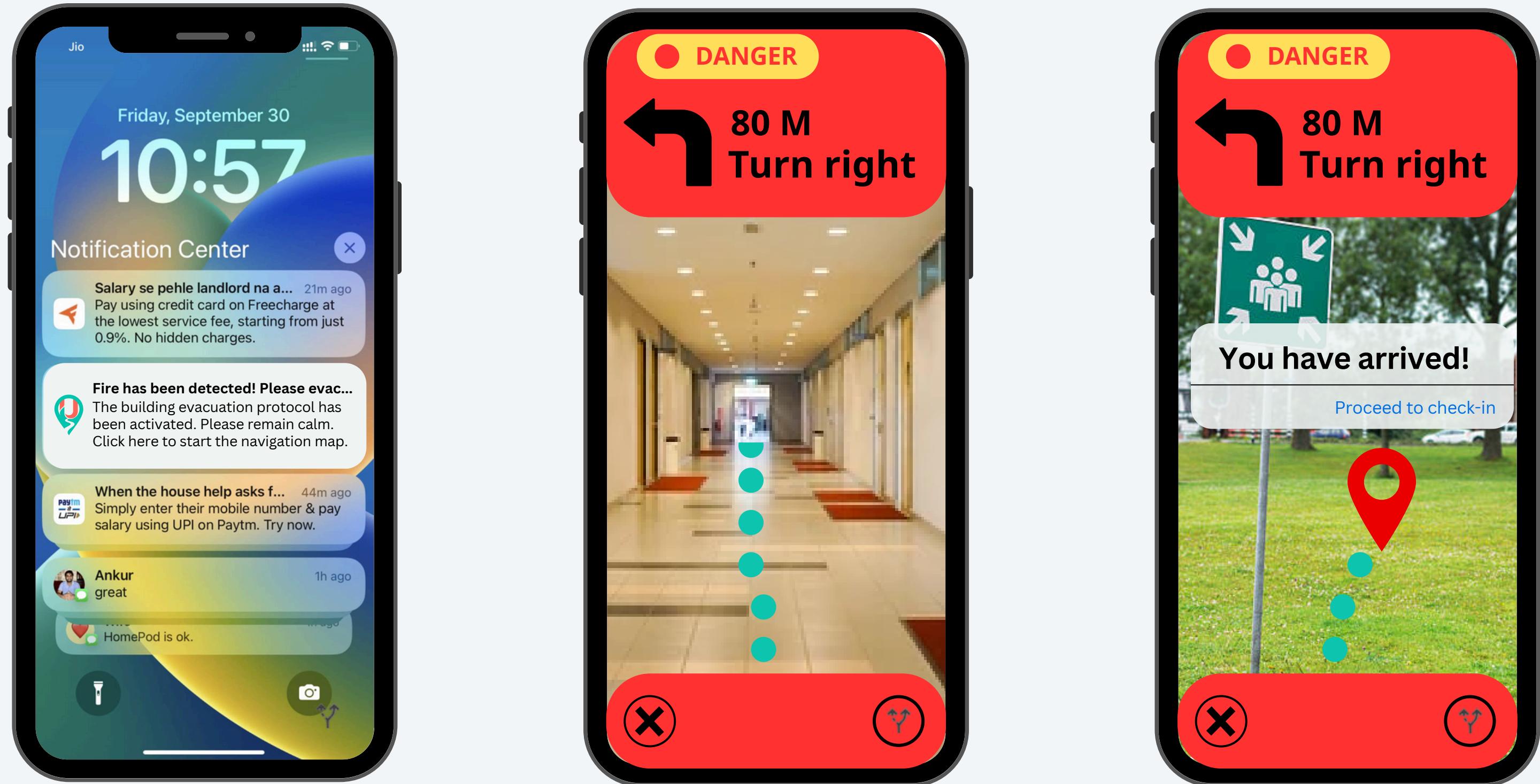


Occupants **follow instruction prompted** on screen.



Occupants reach assembly point **without needing external guidance.**

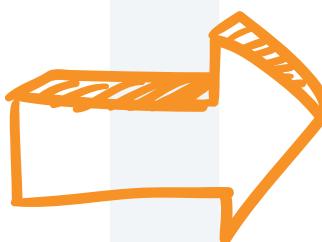
DYNAMIC EVACUATION ROUTING



USER STORY 2:

SELF CHECK-IN FOR ROLL-CALLING

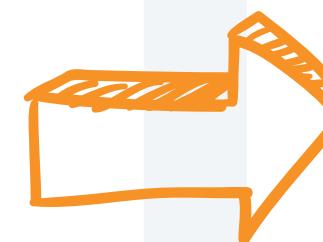
1



Check-in prompted on screen when occupants reach assembly point.

Occupants **click on check-in** on their phones.

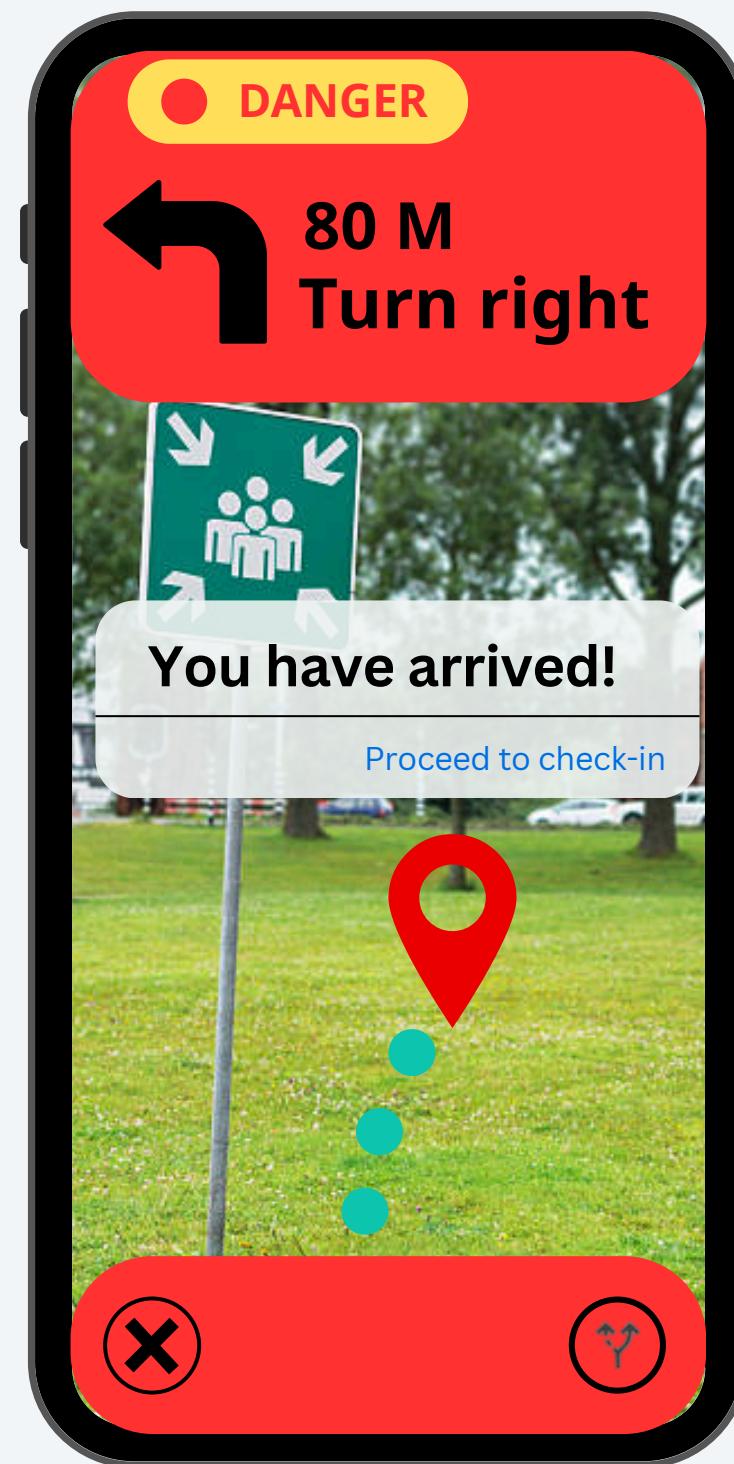
2



Occupants **without phones / cellular data.**

Check-in done through other occupants' phones.

SELF CHECK-IN



A smartphone screen showing a 'Check-in' form. The title 'Check-in' is at the top in a teal bar. Below it is a 'User Type:' section with a dropdown menu labeled 'Select type'. The 'Name:' field is empty. The 'ID:' field is also empty. A red 'SUBMIT' button is below the ID field. A teal button labeled 'Check-in for others' is below the submit button. The bottom bar is teal with five icons: a megaphone, a bell, a house, a person, and three dots.

USER STORY 3:

PANIC BUTTON

User click on panic button.



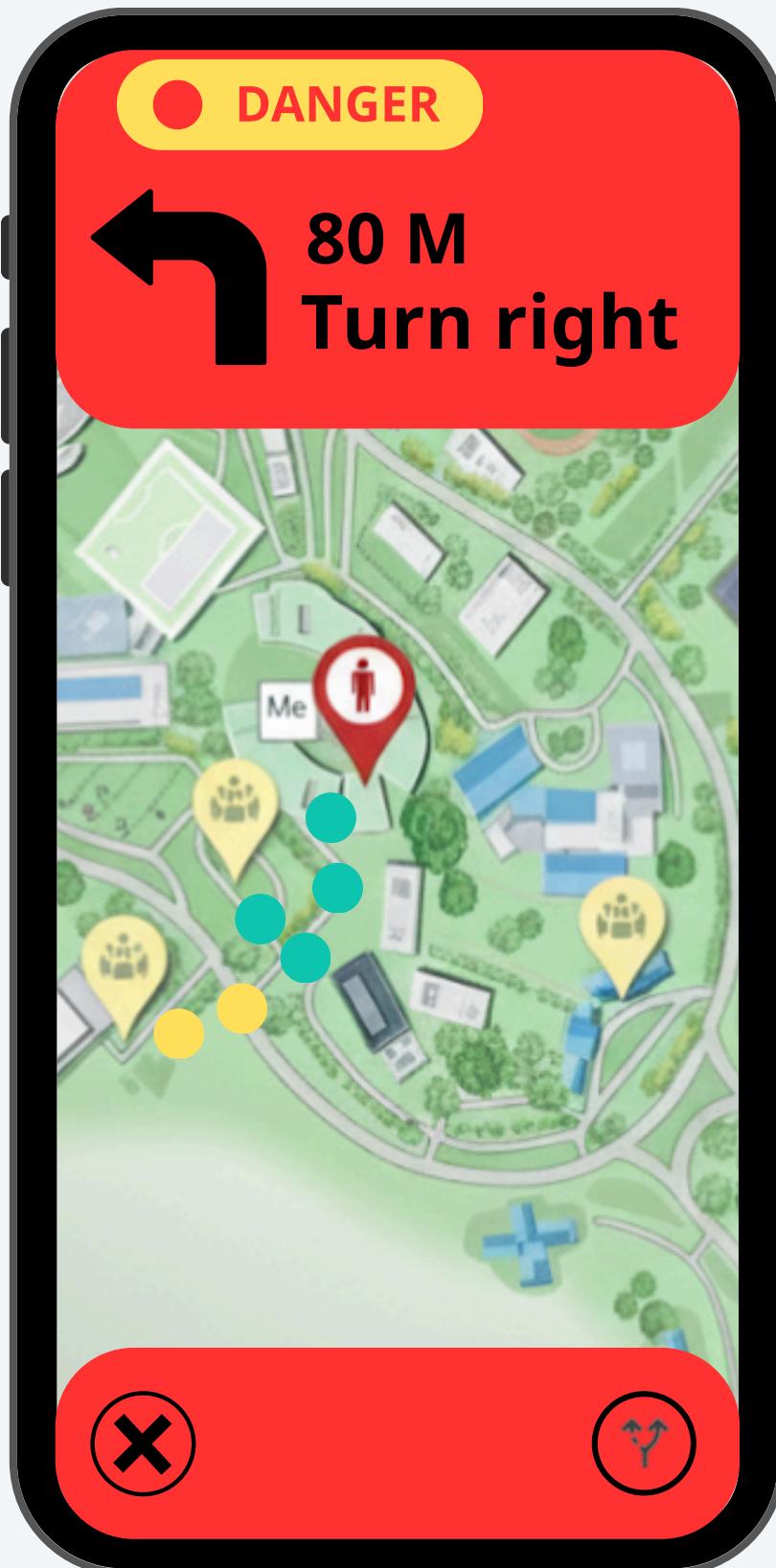
User's own **emergency contacts**, as well as the **university management** is notified.

Location of incident in sent to server.

Other users receive notification of their **approximate distance from the incident**.

Prototype

Offline Smart Routing

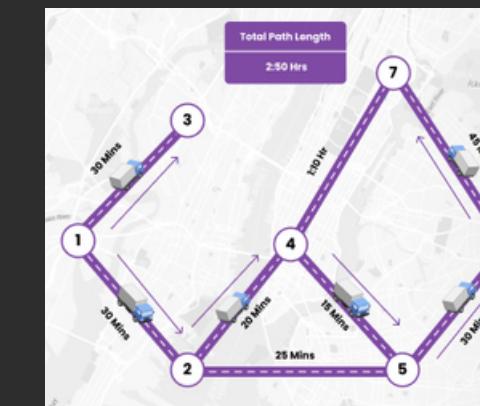


- Offline Smart Routing stores a cached offline map of the building or area, allowing routing even without internet.
- Using Routing AI (graph-based shortest path + reinforcement learning) and ML predictive models (PyTorch / TensorFlow), it dynamically adapts safe exit routes while predicting congestion points in real-time.

OFFLINE Tech Stacks:



Mapbox's Indoor
Mapping SDK



Graph-based algorithms
(Dijkstra, A*)



PyTorch Mobile

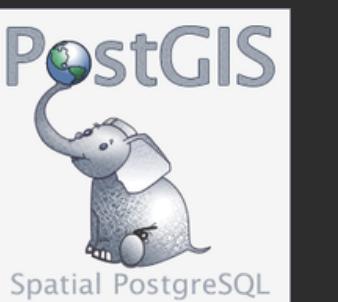
Online Crowd Controlling

- Online Crowd Controlling during Evacuation provides real-time monitoring of people density through connected devices and location data.
- It guides evacuees with dynamic routing and alerts to prevent congestion and ensure faster, safer evacuation.

Cloud(wifi needed) Tech Stacks:



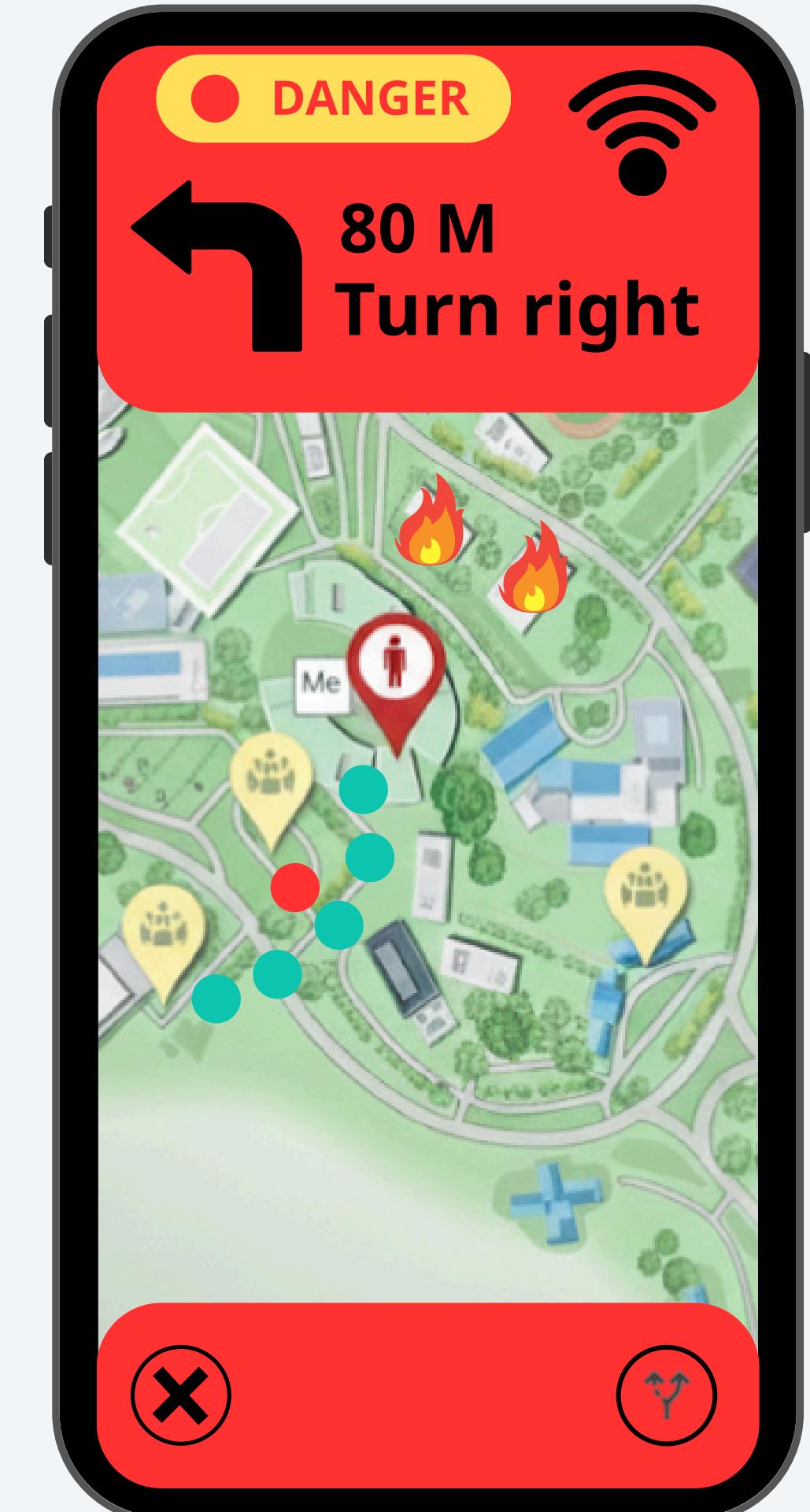
Crowd counting



Spatial Data store



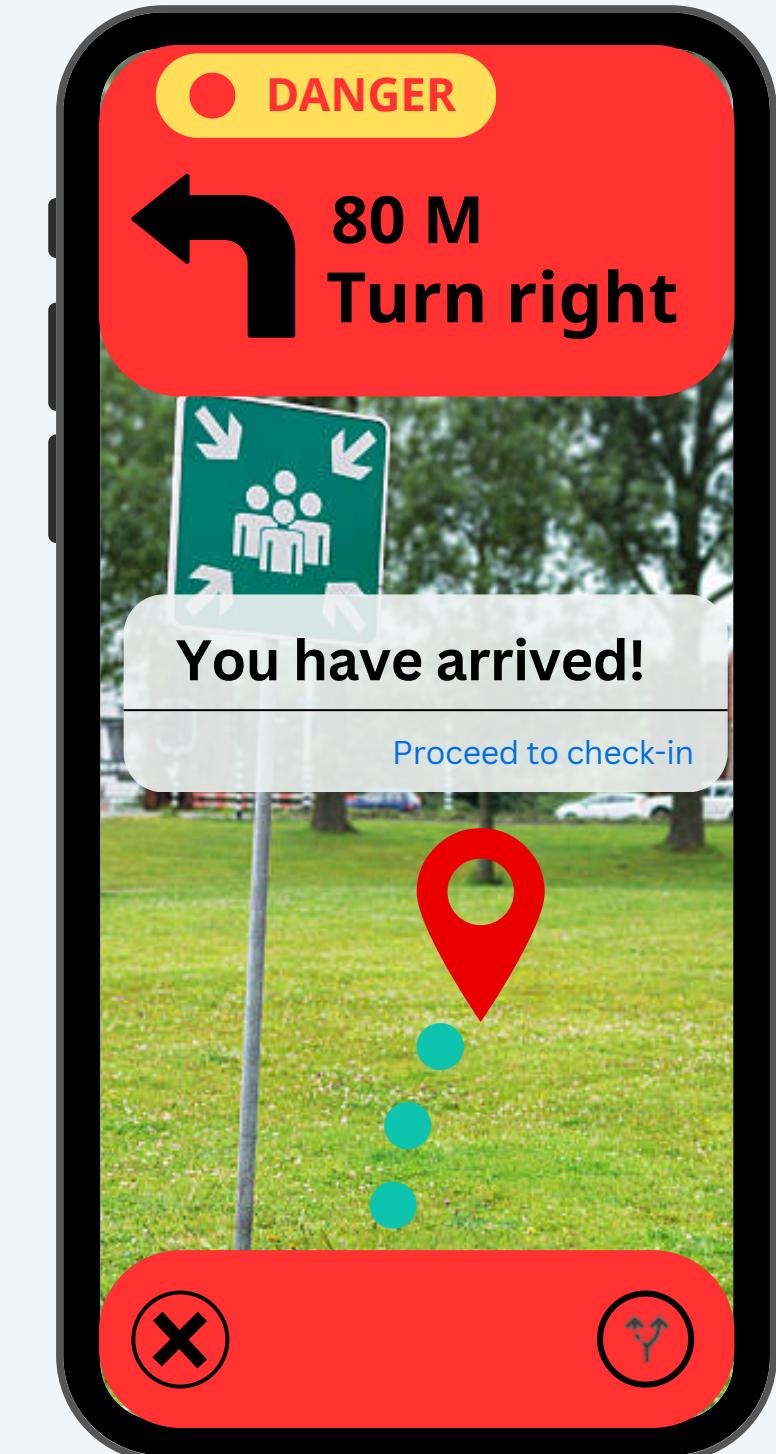
ML Model

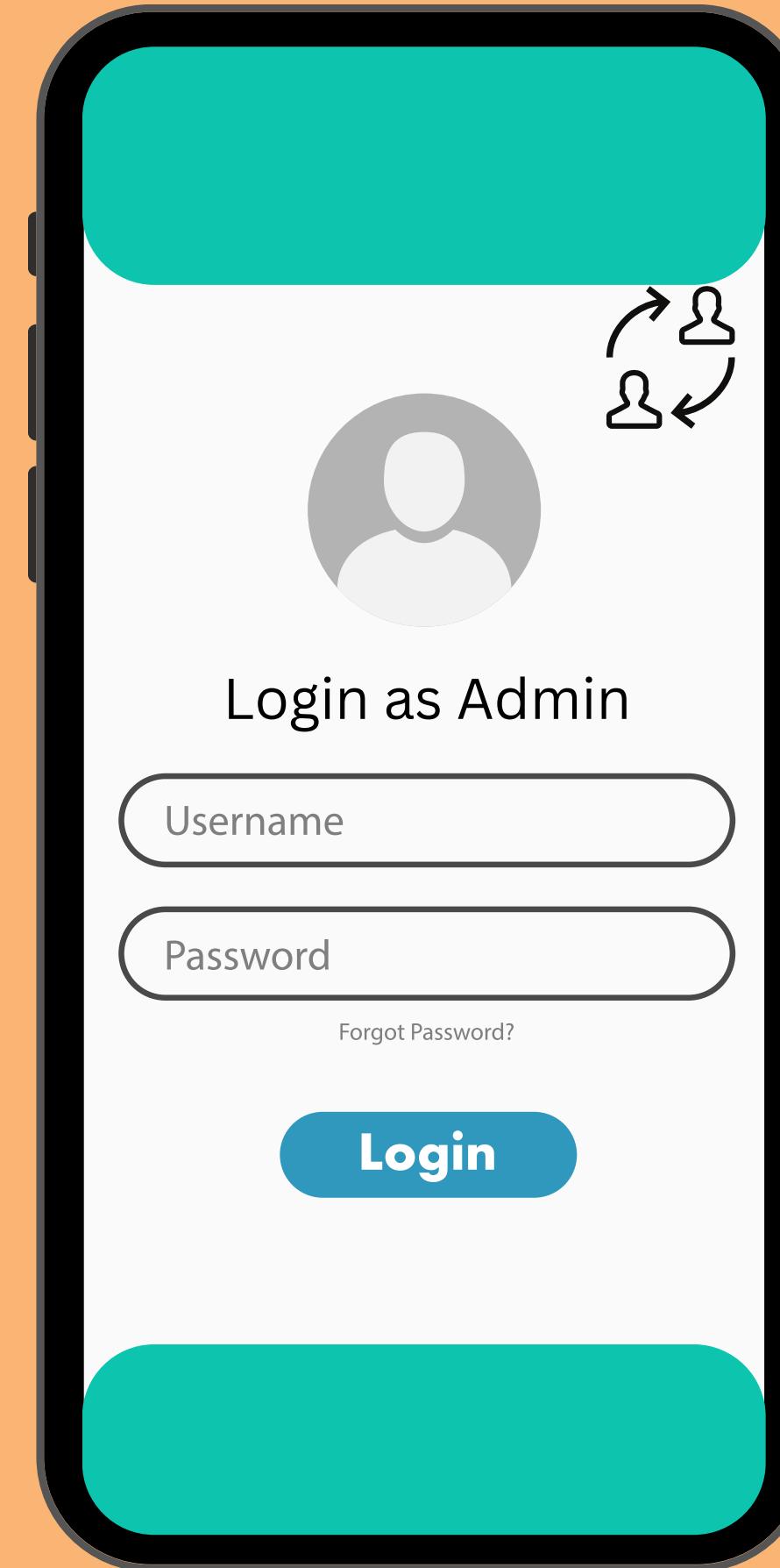
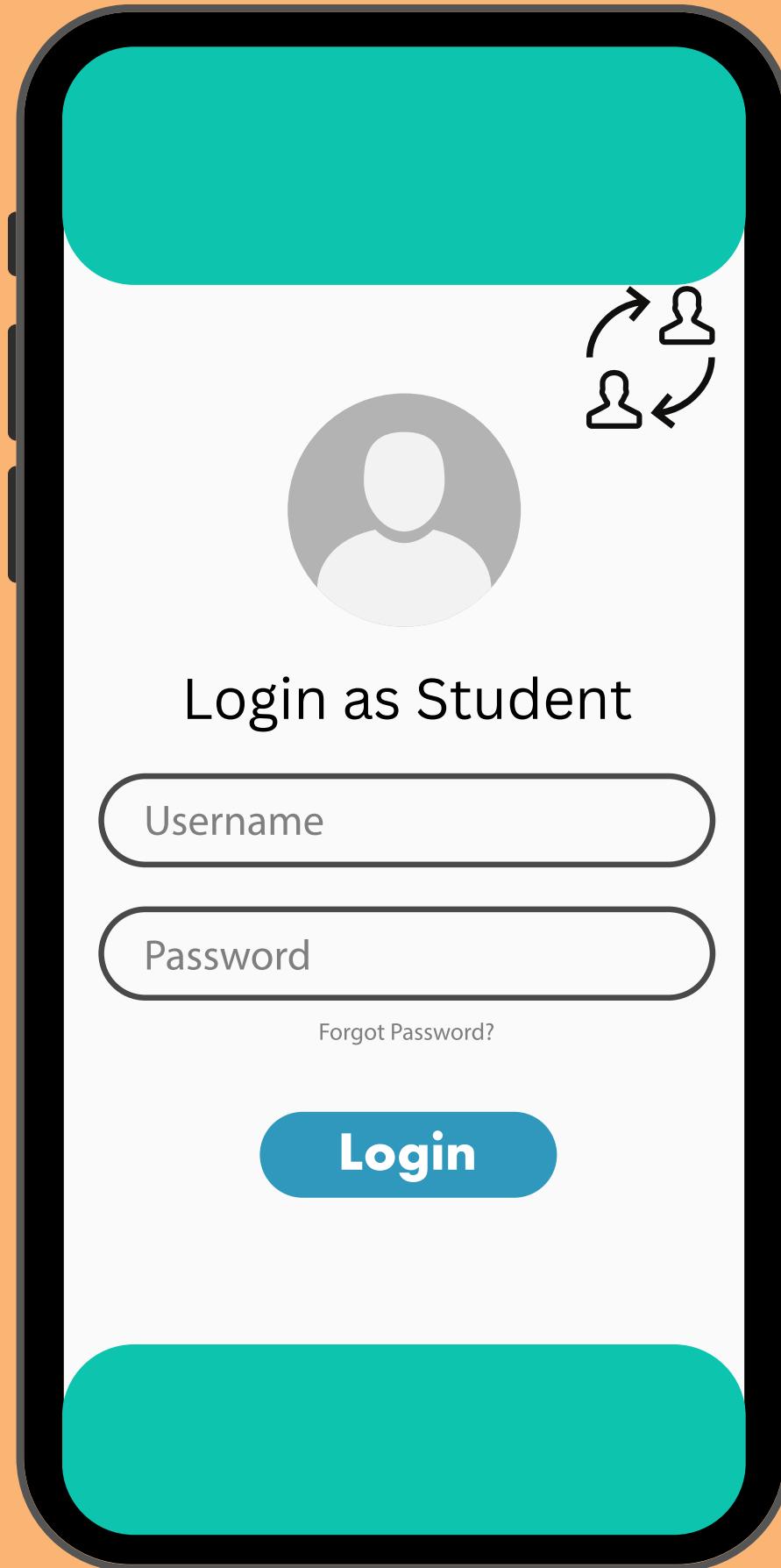
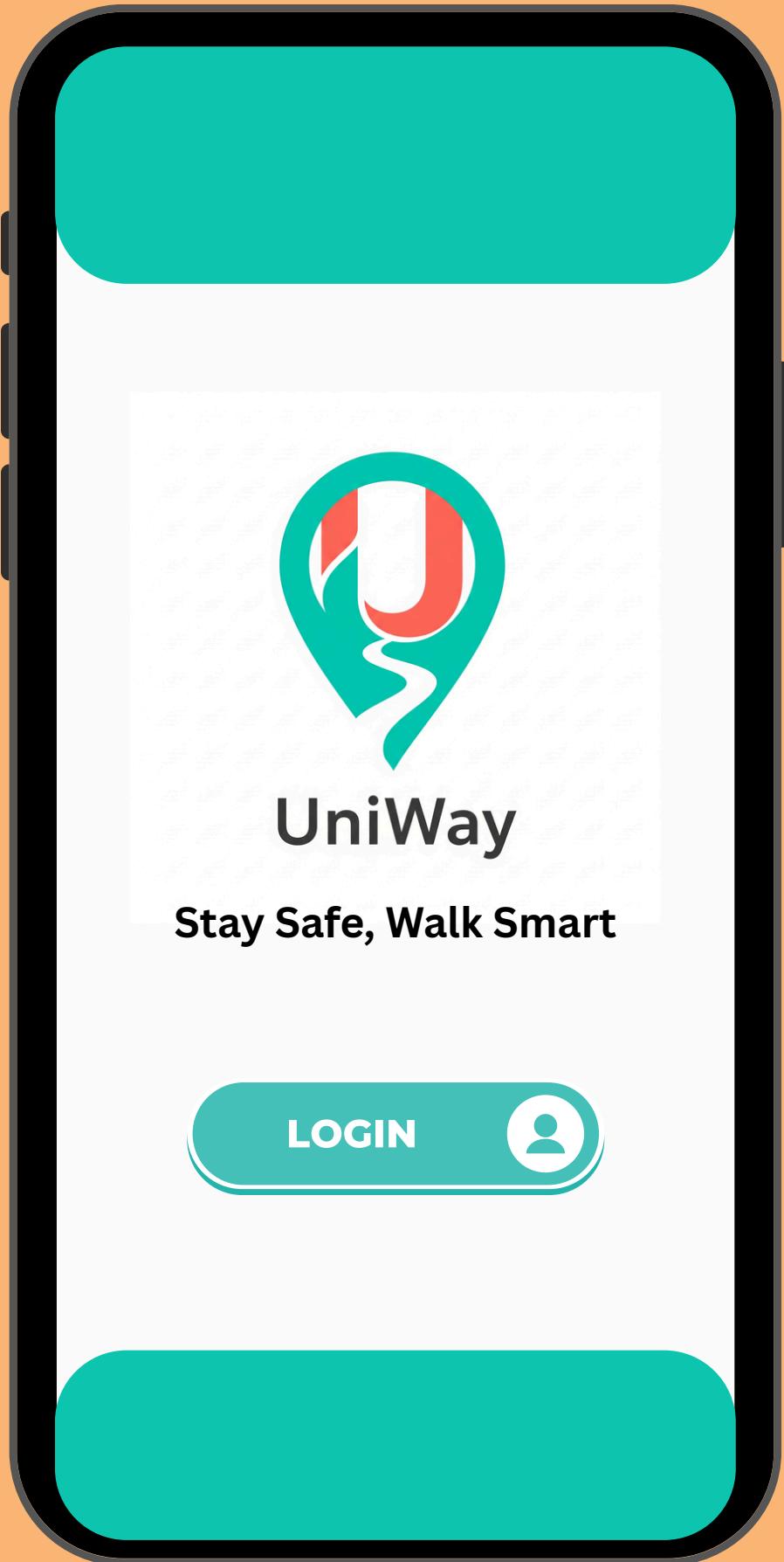


Location-Based Check-In



- Location-Based Check-In lets users securely mark their attendance or presence by verifying they are within a defined geofence using GPS/Wi-Fi/Bluetooth.
- It ensures accurate, real-time tracking for events, workplaces, or services with fraud prevention and seamless mobile experience.





SIGN IN

Forget Password

LoremIpsum@mail.com



Send Email

PASSWORD

Recovery Password

Reset Code

New password

Conform Password

Send Email

HOME



SOS



REPORT



MAP



SMART
EVACUATION



OFFLINE SMART
ROUTING



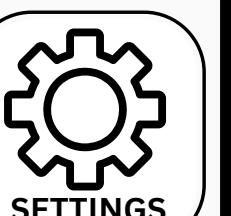
NOTIFICATION



FEEDBACK

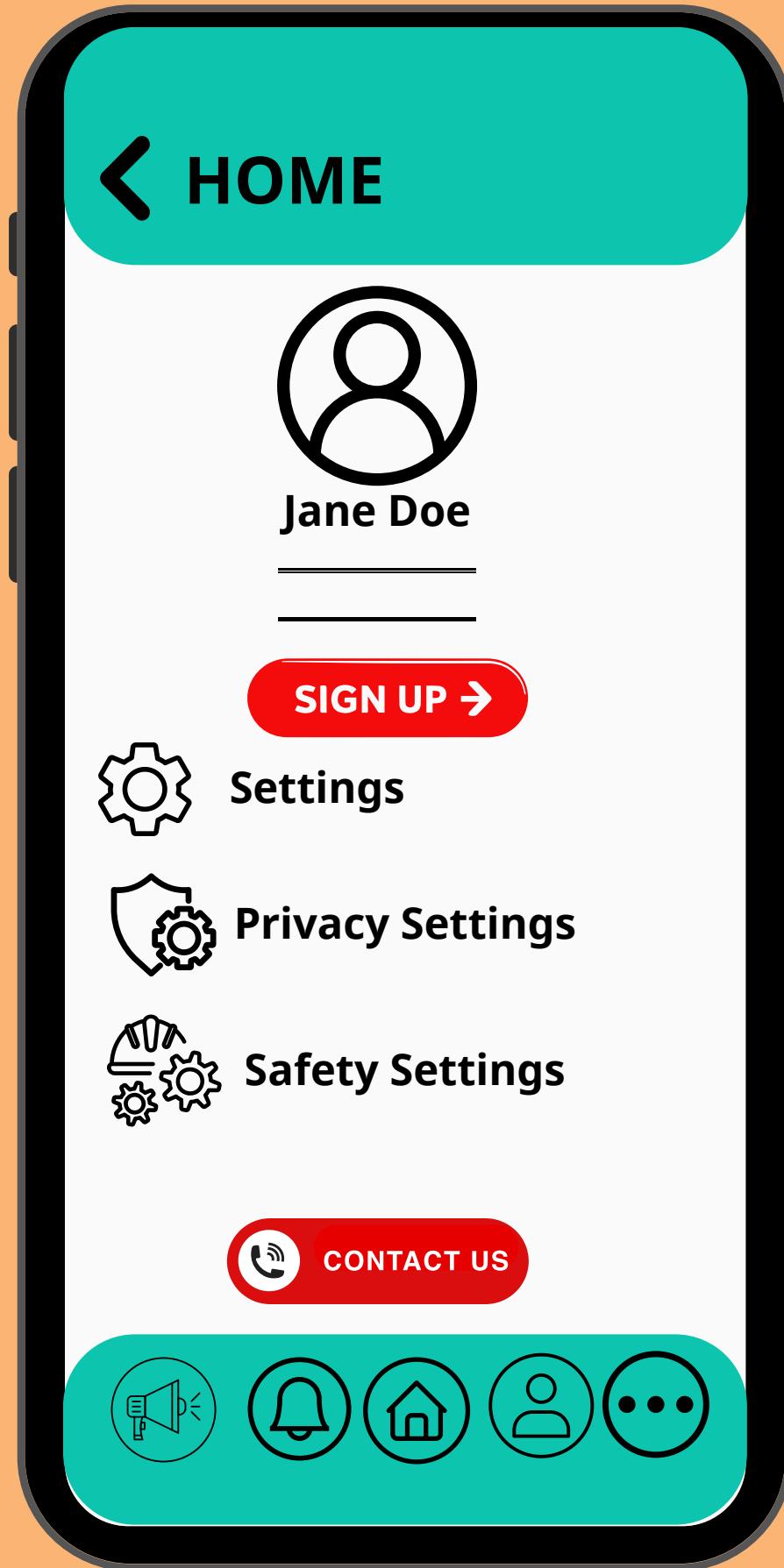


ANNOUNCEMENT



SETTINGS





EMERGENCY MESSAGE

Security

Emergency Contacts

Housemate A

Bestie B

Brother

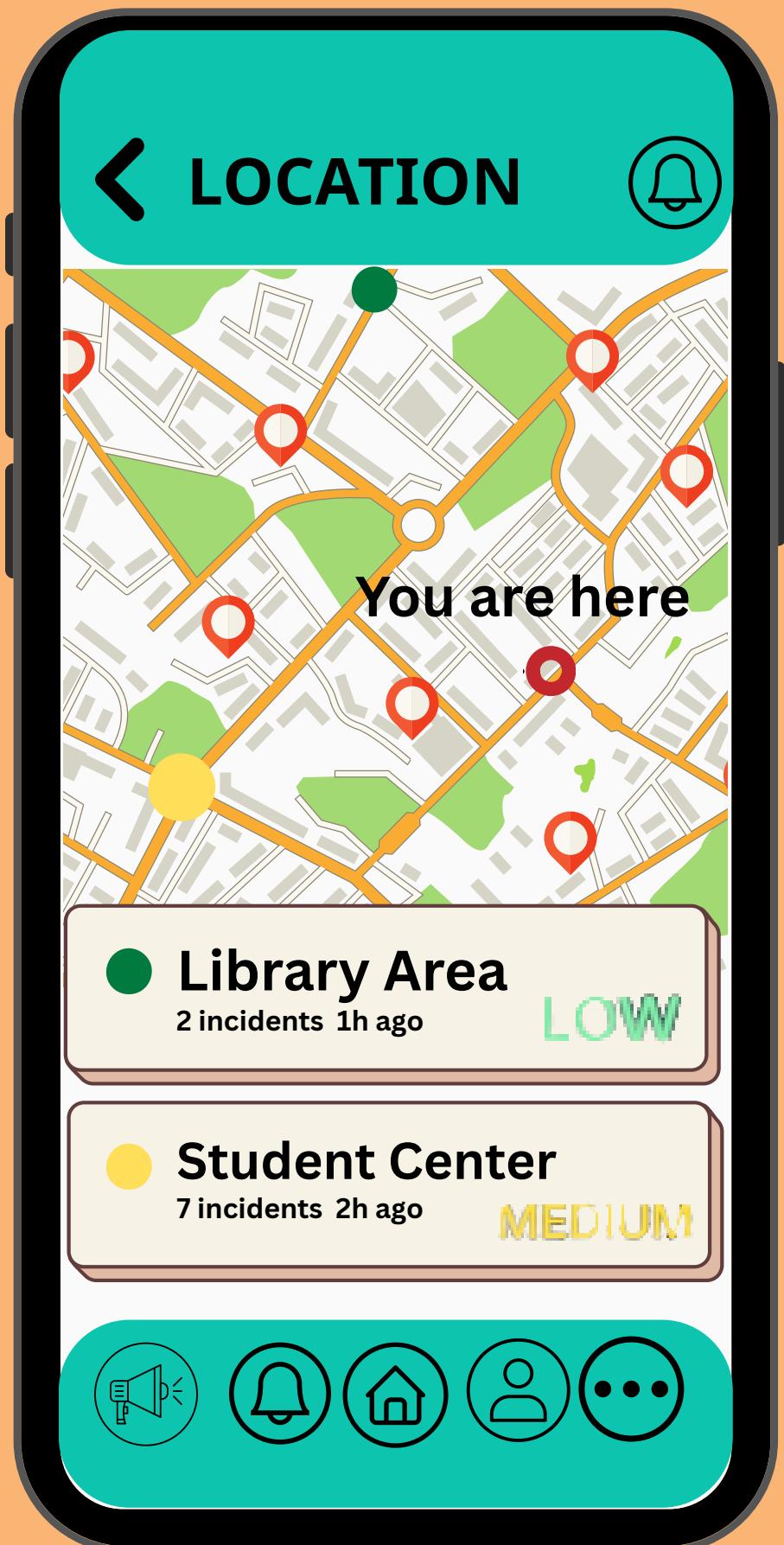
I feel unsafe, call me.

Contact security, I need help.

I am being followed, please track my location

Attach current location

CANCEL **MESSAGE**



Report

We will assist you as soon as you describe the problem in the paragraphs below.

Issue Type:

Location:

Description:

Priority level:

Report Status:

