SmartPark

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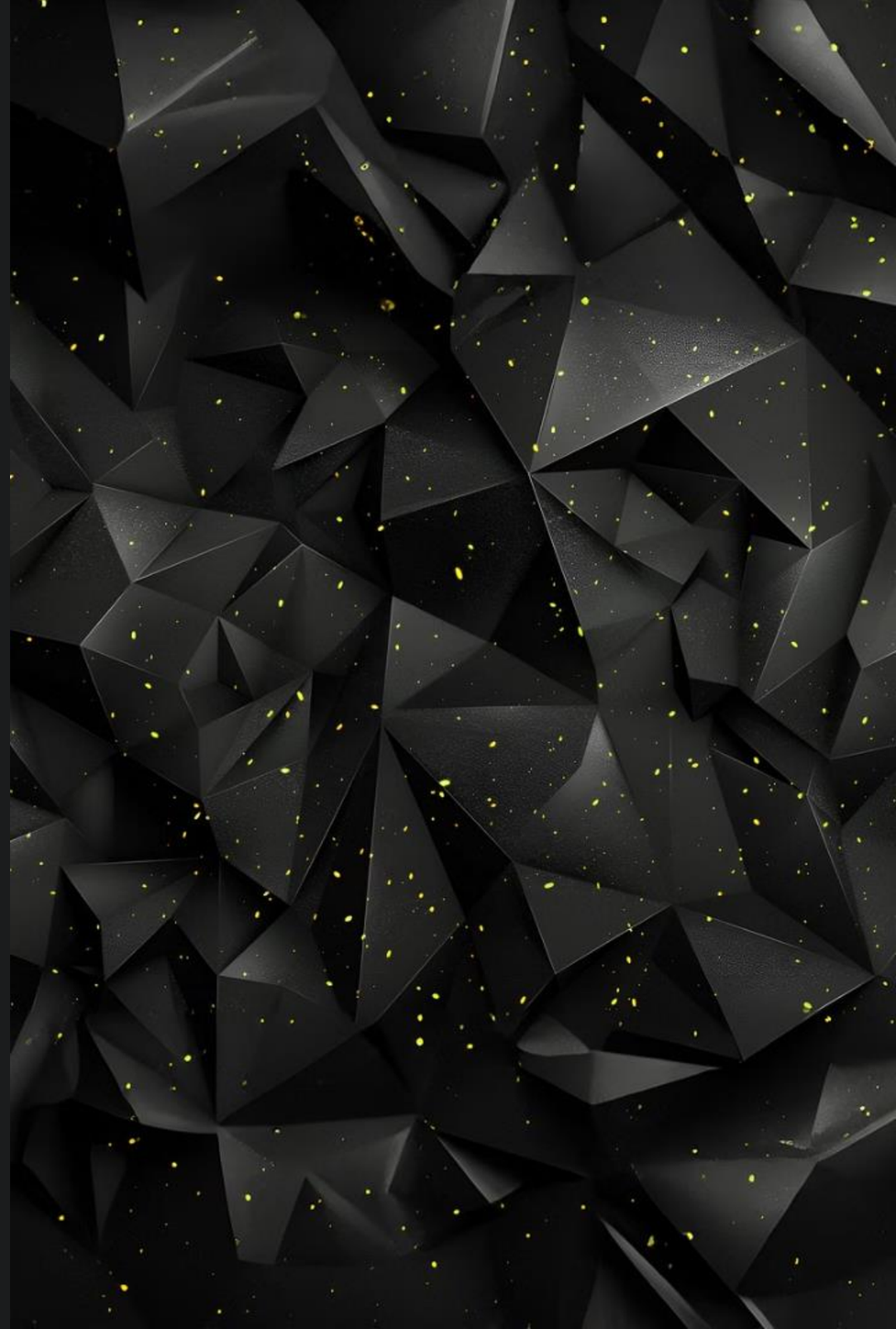
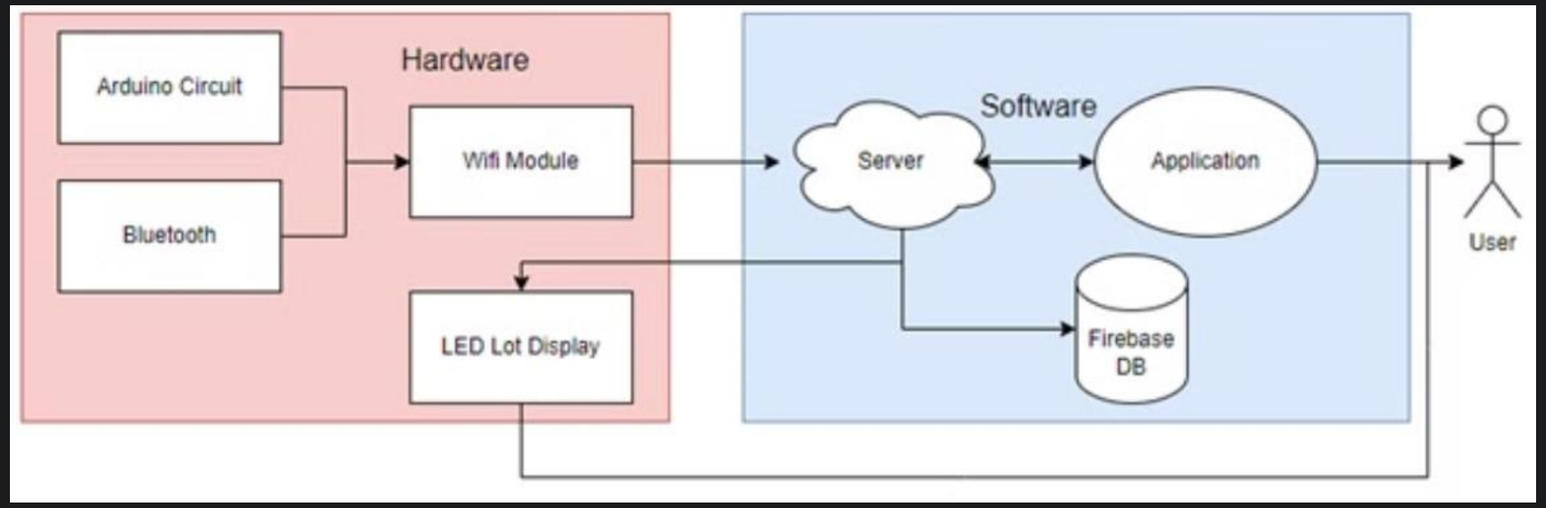


Project Overview

We are developing a cutting-edge system to manage and optimize open parking spots. Users can easily find, reserve, and pay for parking using our intuitive app.

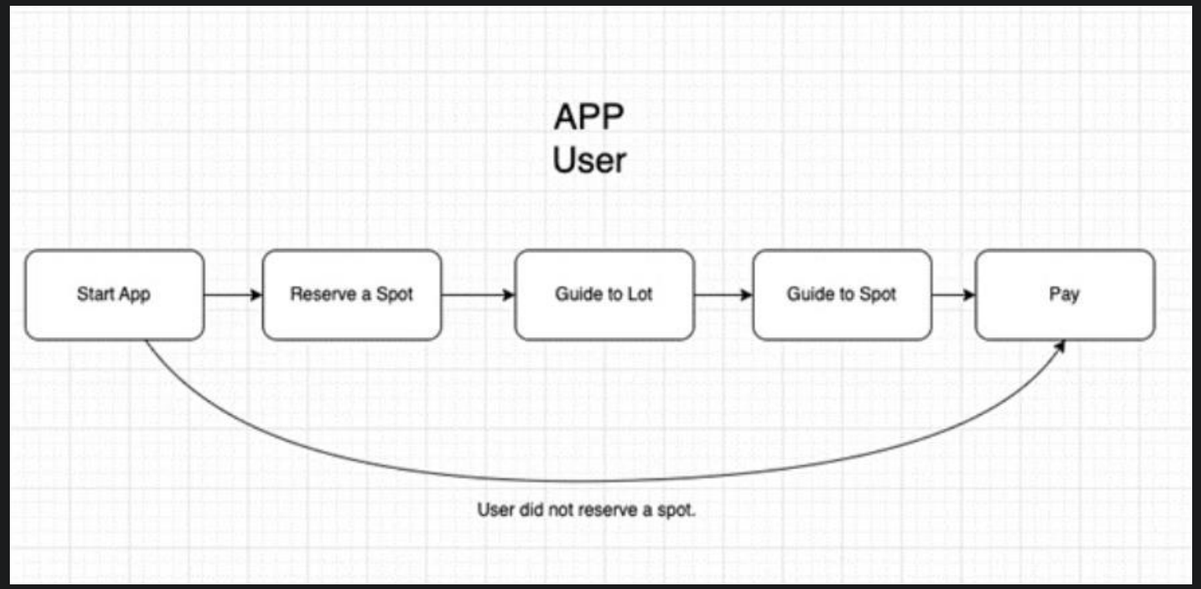
Detailed Design

Overall



Detailed Design

Software



User Interface

React Native

React Native Paper

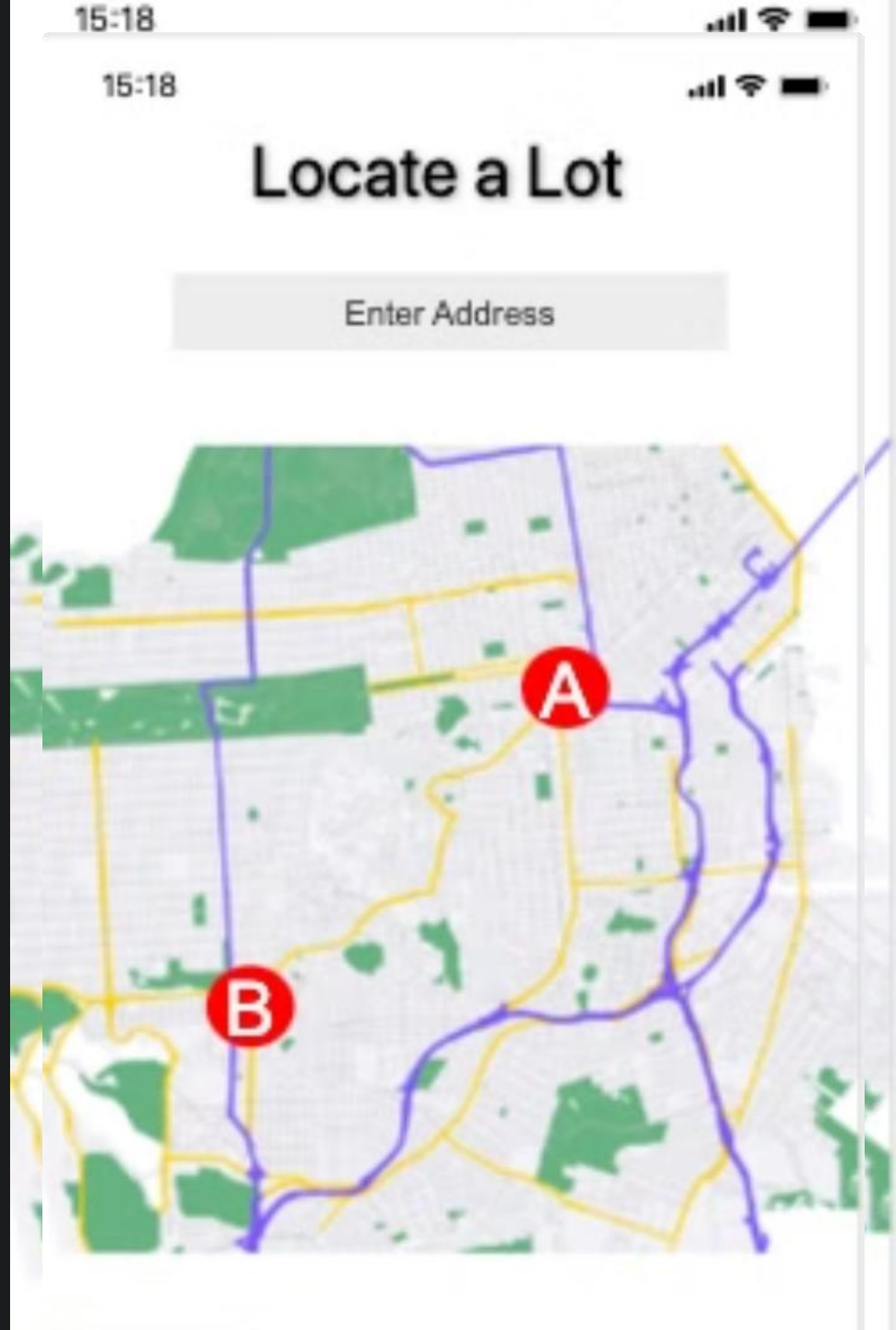
Database Structure

Firebase

Http Requests

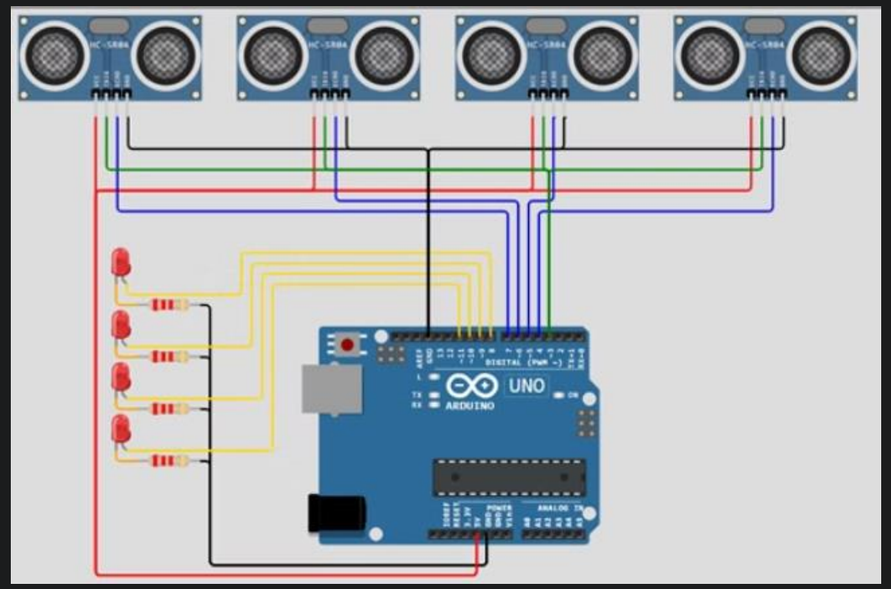
Software

UI



Detailed Design

Hardware



Ultra-Sonic Sensor

- There will be a sensor for every parking spot
- Sensors connected with the same trigger but will be tracking the echo signals separately.

Arduino Nano Board

- 4 sensors per one board
- Boards will be connected through Bluetooth modules

Functionality

1 **Guided Parking** **Parking Parking**

Helps users find parking spots by clearly displaying which spots are currently in use.

2 **Parking Reservation Reservation**

Users can reserve a spot in advance so that they have access to a parking spot when they need it

3 **Parking Payments**

Payment for any given spot, can be done easily done through the app.

Technology Considerations

Arduino Nano

- Easily programmable
- Less ports than Arduino UNO but cheaper
- Harder to implement on a large scale

React Native

- Team already knows how to use
- Not as convenient with UI design
- Not as fast as main competitor "Flutter"

Ultra-Sonic Sensors

- Most common and easy to use detection sensor
- Not as accurate as other sensors out there
- Difficult to weather proof

Areas of Concern

User Experience

Users should be able to easily learn and use our application and trust that it can provide a safe and effective parking experience.

System Maintenance

Post-deployment system maintenance and management should be as simple as possible

Navigation

Create a system that can efficiently guide users to a parking space

Questions?