MICHIGAN STATE UNIVERSITY

Project Plan

Ford SmartPark App

The Capstone Experience

Team Ford

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From Students…
…to Professionals

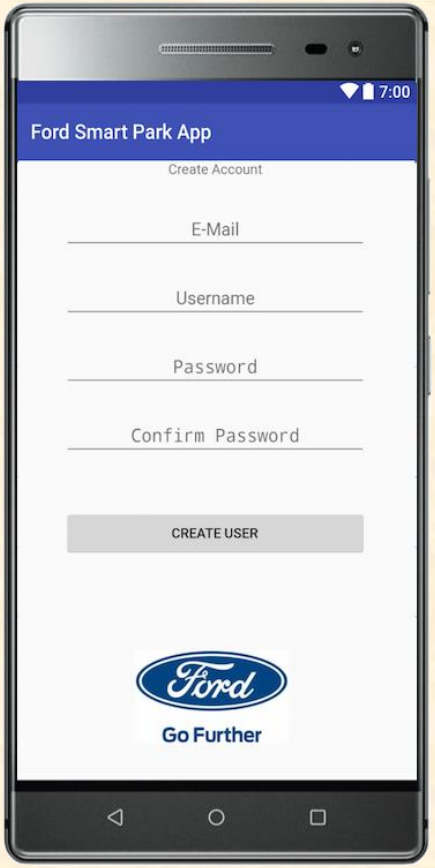
Functional Specifications

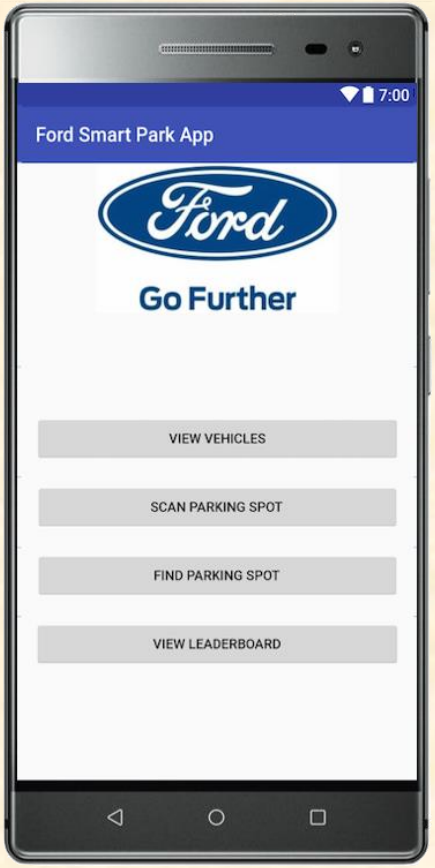
- Mobile App
  - Create / Edit Ford Smart Park Profile
  - Send in parking spots for reward incentives
  - View Rewards Leaderboard
  - Receive notifications of available parking spots nearby
  - Register owned vehicles
- Google Tango
  - Scan parking spots
  - Analyze and report measurements
- Sync 3
  - Receive alerts from mobile app of available parking spots
  - Map to available parking spots
- Server
  - AWS Free Tier Server

Design Specifications

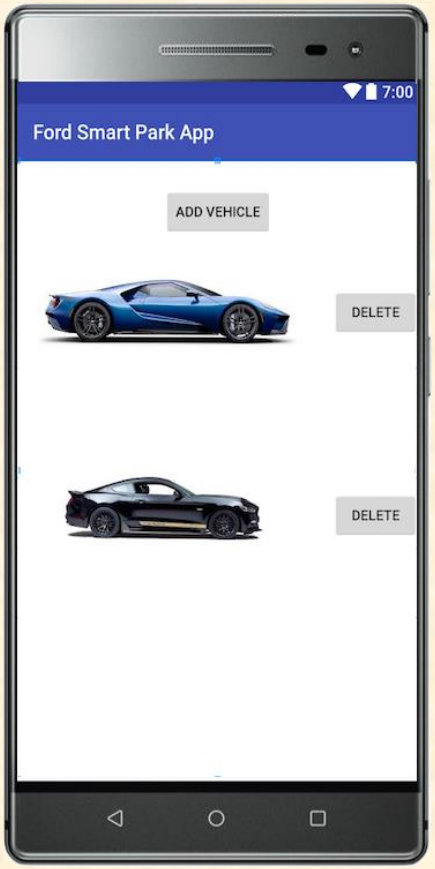
- Our project has two User Interfaces: Mobile Application and Sync 3
- Mobile Application has 7 interfaces
- Sync 3 mirrors mobile app in the vehicle

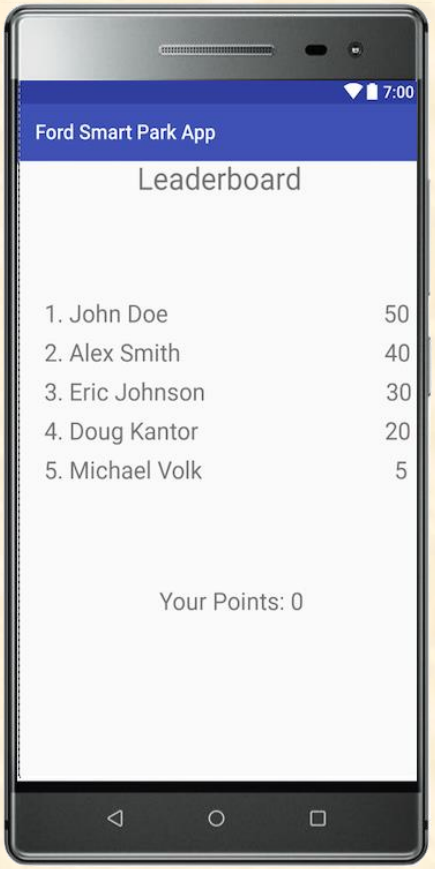
Screen Mockup: Android Application



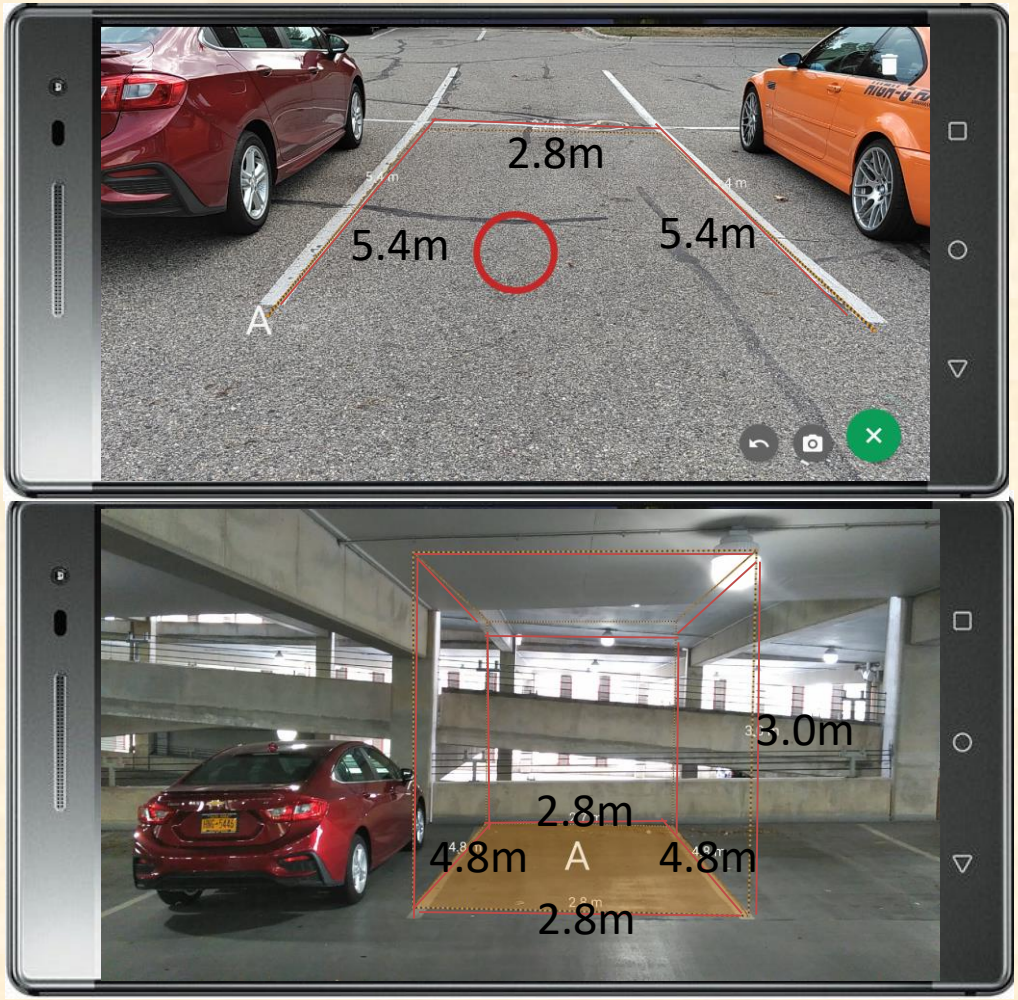


Screen Mockup: Android Application





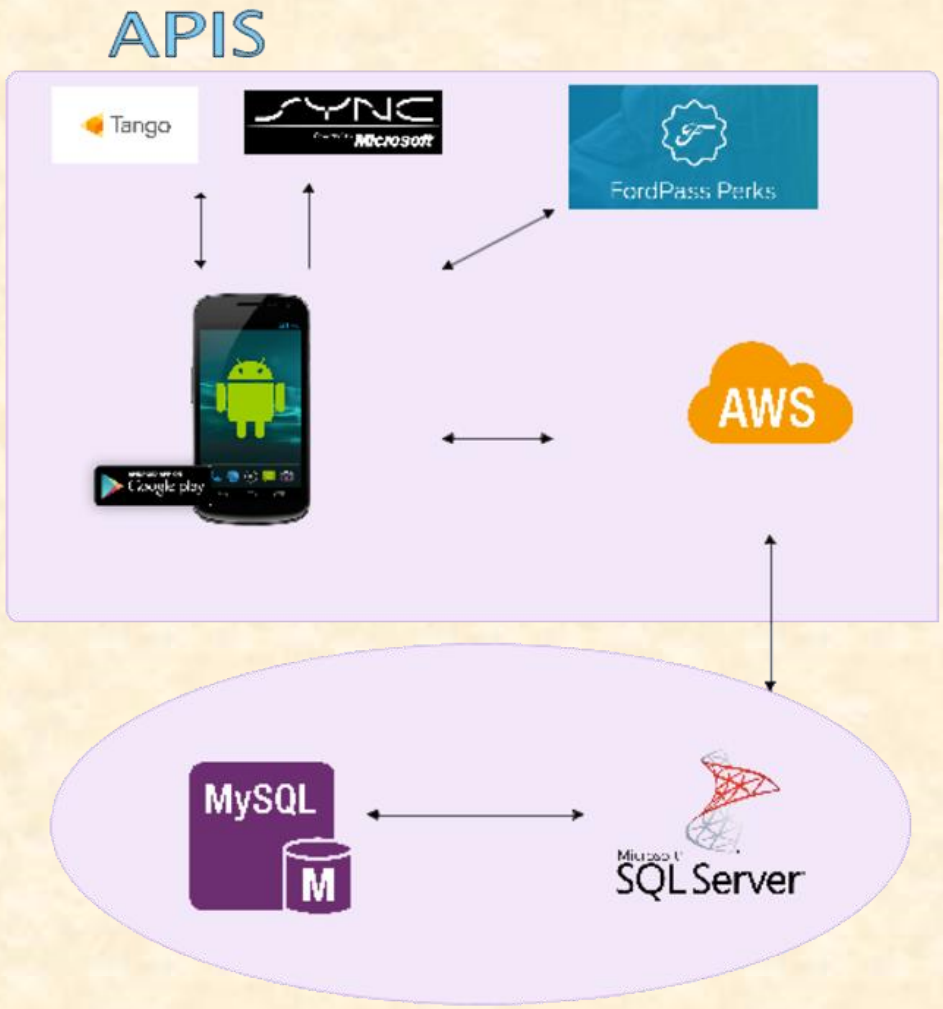
Screen Mockup: Google Tango Parking Spot Scanning



Technical Specifications

- Mobile Application
  - Android Studio 2.3.3
- Google Tango
  - Software Development Kit
- Sync 3
  - Emulator
  - Testing Development Kit
- Server
  - MySQL
  - Amazon Relational Database Services

System Architecture



System Components

- Hardware Platforms
  - Sync 3 Testing Development Kit
  - Lenovo Phab 2 Pro Smartphone
- Software Platforms / Technologies
  - Android (Java)
  - Google Tango (Java)
  - Sync 3 Emulator & TDK
  - MySQL Database

Testing

- Server Communication
- Google Tango Communication
- Sync 3 Communication
  - Sync 3 Emulator
  - Sync 3 TDK

Risks

- **Google Tango Augmented Reality Implementation**
  - Team has no experience with AR.
  - No existing evidence can prove that Google Tango can implement scanning functionality.
  - Lots of time-consuming research and building process
  - Starting early is most efficient solution for time consuming tasks.
  - Using Documentation and tutorials to manipulate source code.
  - More team member work on AR implementation if needed.
- **Depth Sensing camera compatibility**
  - Depth Sensing camera has maximum 3.5m detecting distance. However, length of most parking spot is larger than 4.5m
  - Try different method of depth sensing process and create new scanning algorithm.
- **Inbuilt Hardware corporation**
  - Need to communicate lots of sensors since team is creating source code and no experiences.
  - Barely any documentation provided
  - Go through tutorials and Test carefully ensure specific software functionality is cooperating with correct hardware signal

Questions?