Continuous Visualization of CyRide Through an Interactive Map

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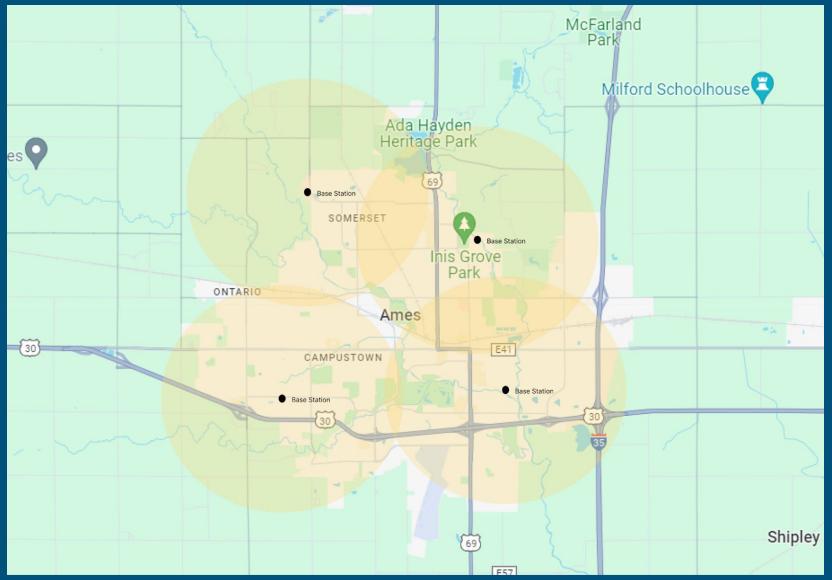
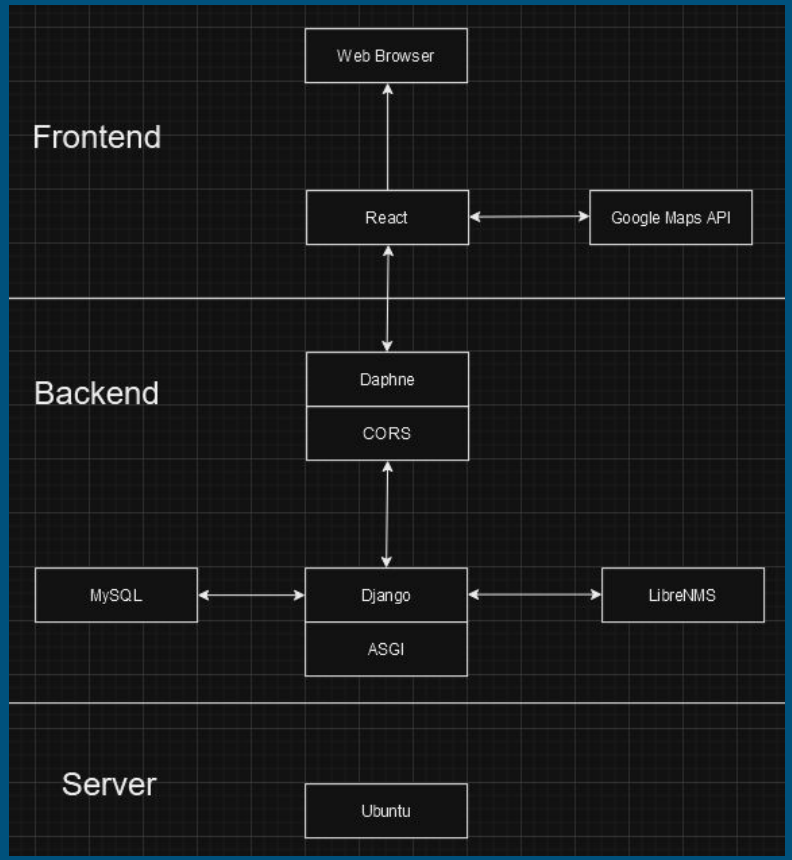
Project Overview

Provide a visualization of Cyride movement through a UE (user equipment) device that transmits its location when in range of given base stations (signal towers). This is called ARA and provides a wireless network to track locations. When outside of that range, it will predict the movement using GPS locations and machine learning. The application will updates on the UE connection and provide predictions for when a UE will be in range of base stations.



Detailed Design

- Frontend
  - React
- Backend
  - Django
  - MySQL
- Server
  - Ubuntu



Detailed Design

- User Home Screen
  - Provides view of Ames using google maps

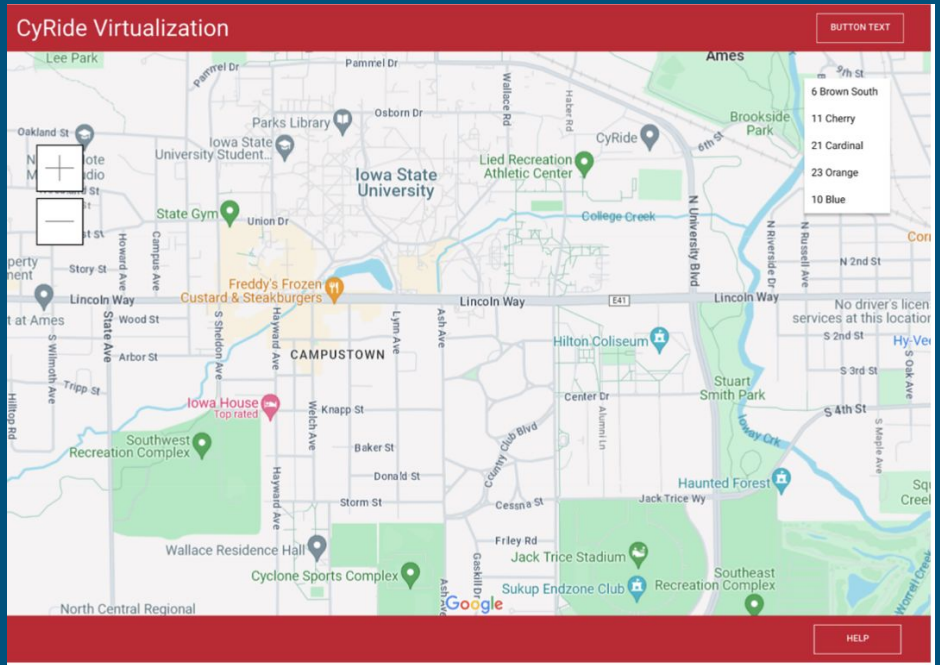
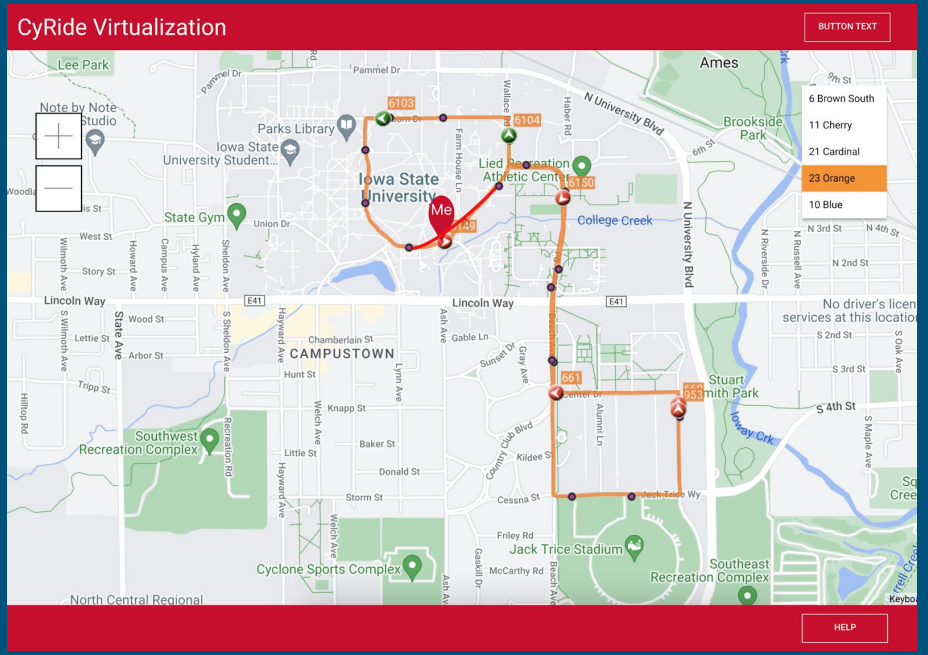


Figure 2. Default View

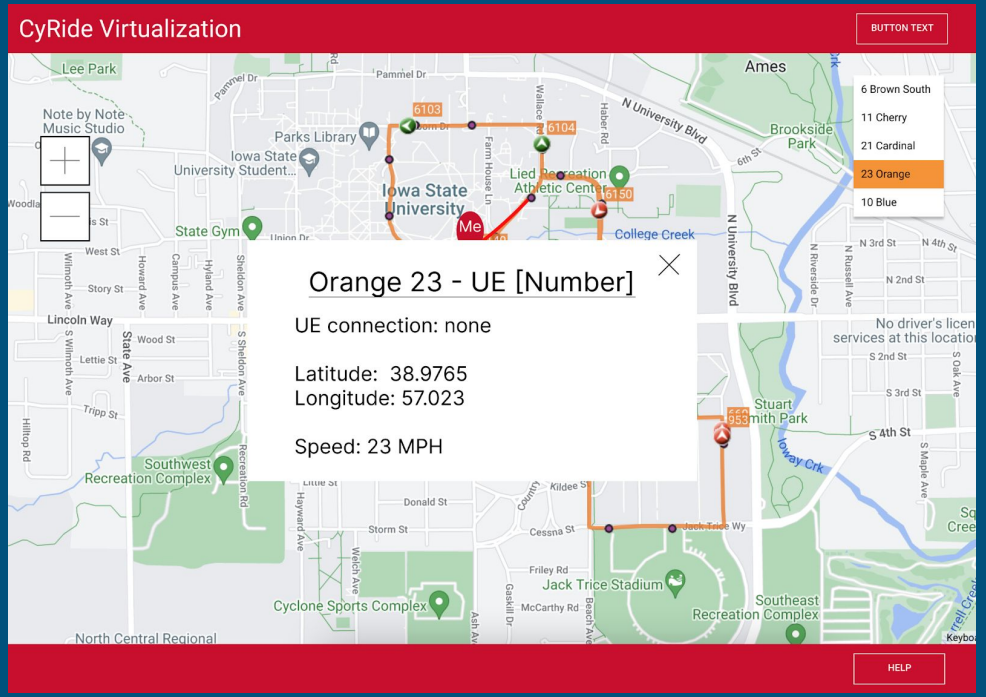
Functionality

- Routes
  - User can pick a bus route
- Coverage
  - Shows UE connection on the route
- Real + Predictive Arrival Times
  - Predictions for when UE will be connected



Functionality

- Notifications
  - Notify when UE is in range
- Insights
  - Provide UE/bus data



Technology Considerations

- Different Tech Stack
  - Decided on Django, React, MySQL, CORS

Criteria	MEAN	MERN	LAMP	RDCS	MEVN
Learning Curve/Difficulty	Low	Low	Moderate	Moderate	Low
Familiarity	High	High	Moderate	Moderate	Moderate
Flexibility	Moderate	Moderate	Moderate	Moderate	Low
Suitability	Moderate	Moderate	High	High	Moderate
Scalability	Moderate	Moderate	Moderate	Moderate	Low
Learning Opportunity	Low	Low	Moderate	Moderate	Low
Total	3/5	3/5	4/5	4/5	2/5

Conclusion

Any Questions?