

# Team 22 - CyRide Visualization

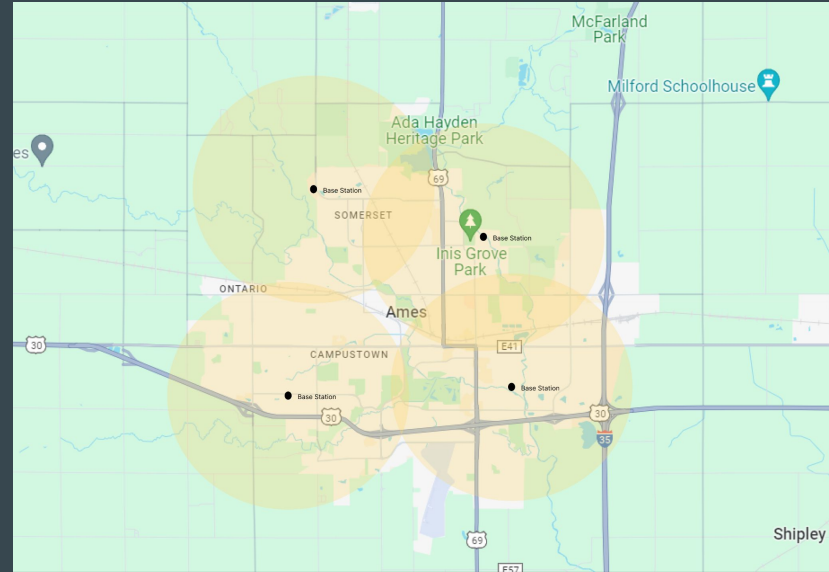
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# Project Overview

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 show which method is being utilized, providing insight into the tracking methods so users can have accurate bus tracking.



# Project Management

## Agile Methodology:

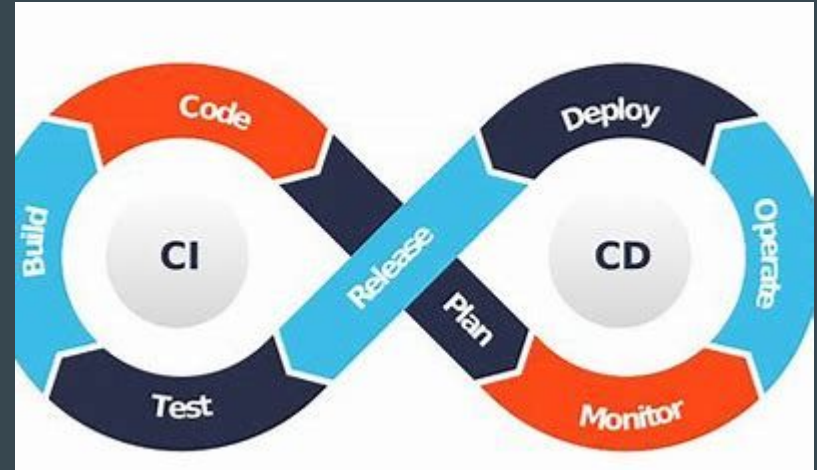
- Familiarity and Gitlab
  - Used Before + Gitlab Use
  - More easily acquainted
- Iterativity
  - Sprints, Work + Receive Feedback For More Accurate Client Needs
  - Sprint Reviews
- Collaboration
  - Frontend + Backend Team + Accountability
  - Weekly Meetings Separate from Clients
- Flexibility
  - Feedback + Challenging Adjustments



# Task Decomposition

## Server

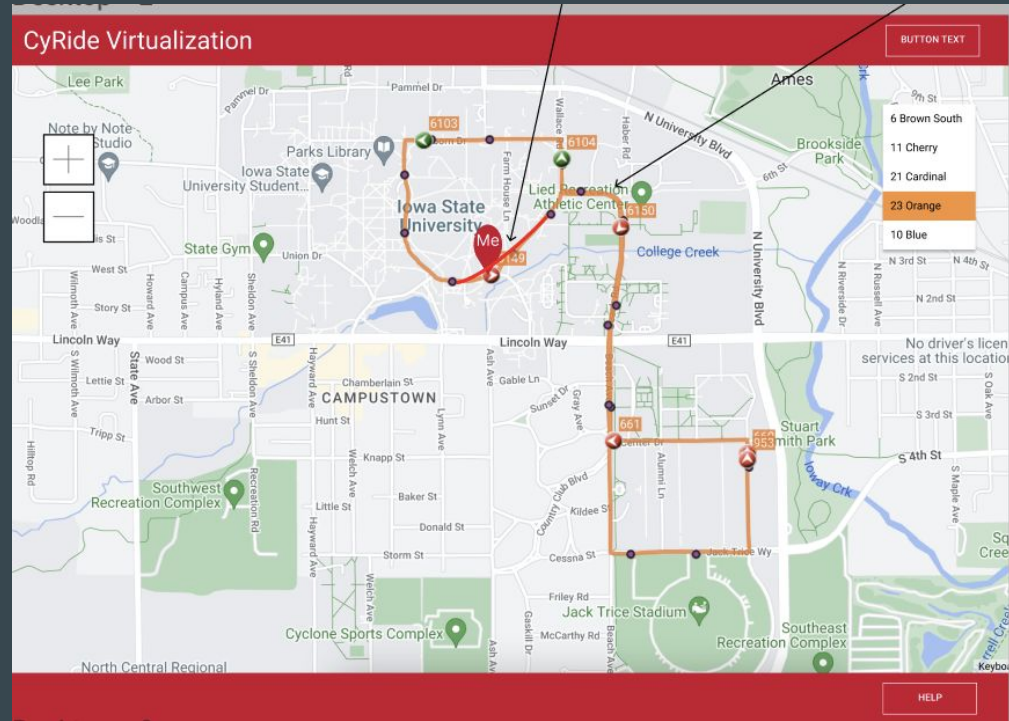
- Download all dependencies and software for the tech stack of MySQL, Django, and React
- Develop CI/CD pipelines to deploy the code on the server



# Task Decomposition

## Frontend

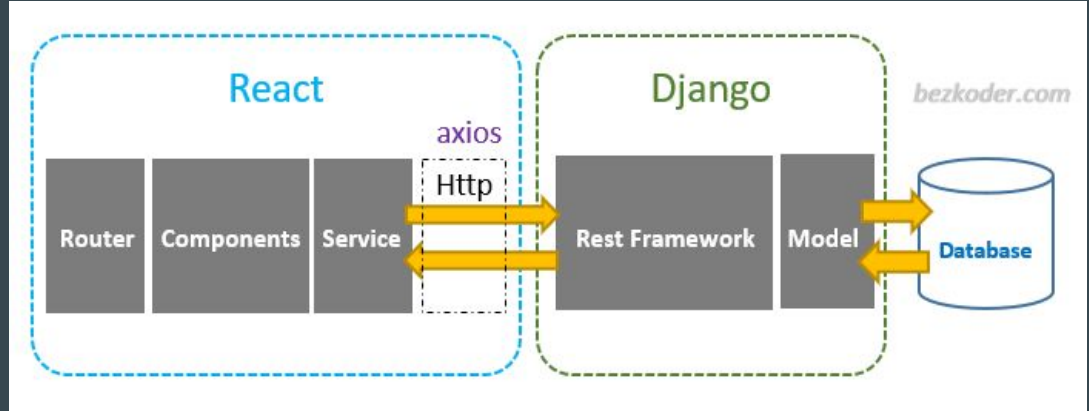
- Develop website interface
- Develop Main Map Interface
- Create Bus Location Visualization
- Display Bus information
- Integrate backend data



# Task Decomposition

## Backend

- Data transfer to frontend
- Connection to UE for data
- Data processing from UE and Machine learning
- Develop MySQL tables



# Milestones



1. A bus location can be displayed on a map given mock data.
2. Data from the UE is retrieved and stored
3. UE data is used to update bus locations
4. When the UE has no signal, predict bus locations

# Evaluation

- The app is lightweight and fast to allow different connections speeds and provide fast updates of bus locations
- The app loads bus locations quickly and accurately from UE data
- The app accurately predicts where a bus is when a UE has no signal



# Risks

- Technical Challenges
  - Communication, Collaboration
  - Reviews
  - Develop a machine learning model
- API Integration Issues
  - Testing, Research + Verification
- Requirement Changes
  - Expectations Change, Collaborate
  - Retrospectives
- UE usage
  - User Equipment may not always be on a running bus in order to get test data

# Risk Management

- Provide clear communication to the client to ensure requirements are being met and that the project is on track
- Communicate with the client to make sure that they have UE's available and on buses for testing