# Sprint 2 Design Document

CSCI 492 - AR Tour Guide
Ethan Blight, Cole Goodnight, Nick Vyvyan, Danny Inga

## Admin Panel / MongoDB Database | Ethan Blight & Cole Goodnight

Context/Overview:
We have added functionality to the administrative web panel we started last sprint, and integrated it with a backend database for integration into the mobile app.

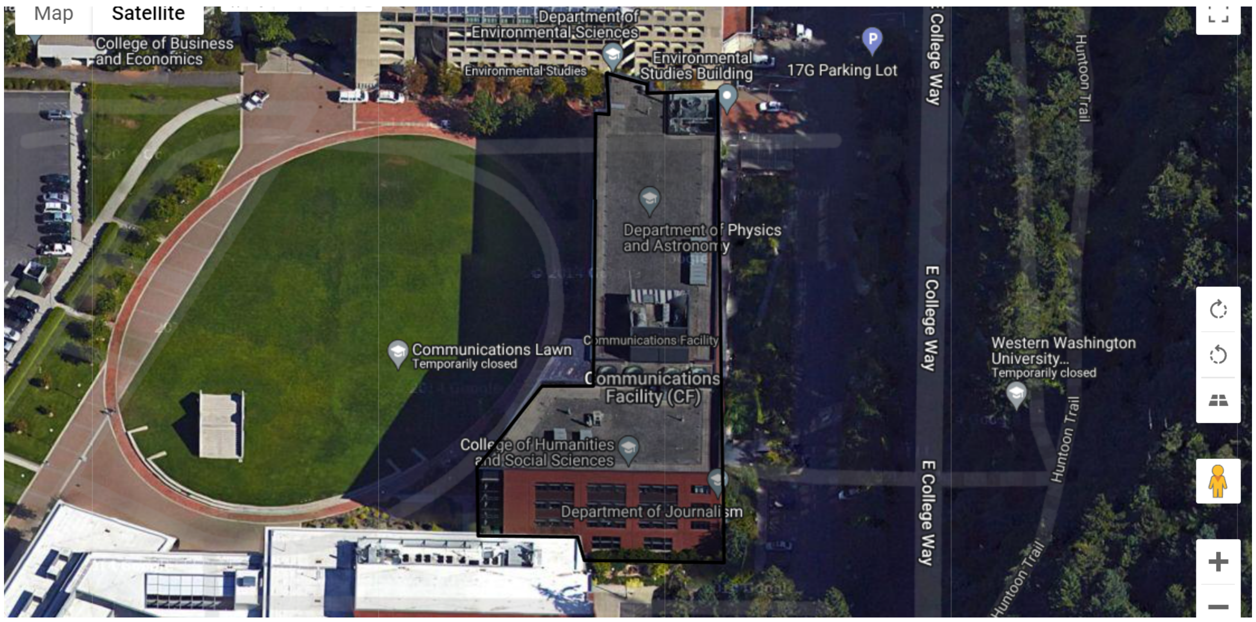
Primary functionality includes:
- Administrators can now draw on an integrated Google Map in order to outline their specific structure on campus, and these coordinates are saved.
- Buildings and landmarks can be added via the web interface, and admins can edit the data scraped from the website before properly submitting said data.
- Added structures can be deleted from the homepage after being added, with all of the structures being present in a list.
- The structure data is saved to the database in JSON format, which can be easily parsed by our mobile app to display to our users.

Stretch goals/future functionality:
- Uploading audio/additional data on given structures for accessibility purposes and interaction.

Libraries/APIs:
- React JavaScript framework for the web panel
- Google Maps JavaScript API to outline structures and retrieve coordinates.
- MongoDB for the external database consisting of data submitted from the web panel.

Web Scraping:
Our JavaScript scraper returns structure data in a JSON format, with each object field matching an input field that will be present on the page once the user clicks Submit. Our app iterates through this object to know which fields are present or not present, so this approach will work for any scraped page, and is in no way hard-coded.

<u>Map Drawing:</u>


Map
Satellite
College of Business and Economics
Department of Environmental Sciences
Environmental Studies
Environmental Studies Building
17G Parking Lot
E College Way
Huntoon Trail
Department of Physics and Astronomy
Communications Facility
Communications Facility (CF)
Communications Lawn
Temporarily closed
College of Humanities and Social Sciences
Department of Journalism
Western Washington University...
Temporarily closed

Using our Google Map integration, an admin can outline a structure using the included polygon tool in order to save the coordinates, along with the scraped data from the included website, to our external database. This information will then be retrieved by our mobile app via an API.

## GPS / Compass Data | Nick Vyvyan & Danny Inga

<u>Context/Overview:</u>
The app now tracks user location, finds a list of buildings within a set radius (currently 200 meters), then filters that list down to the buildings you are faced towards.

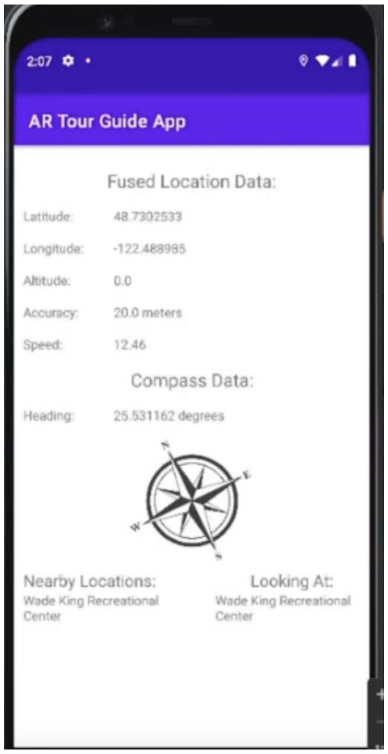
<u>Primary Functionality:</u>
- Users will see a list of buildings that are "nearby" and a filtered list of buildings within (currently) a 90 degree cone from their current device orientation. The available buildings are currently hard-coded for verification of functionality, but next sprint should be integrated with the external database.

<u>Libraries/APIs:</u>
- FusedLocationProvider - gets location updates via GPS/WiFi/cell towers.
- SensorManager, Accelerometer, Magnetometer - combines to give us device orientation.

<u>Sensors/Classes:</u>
- We have implemented a "MeasurableSensor" abstract class that is independent of android and has a public method to set an event listener handler for sensor data processing.
- "AndroidSensor" is another abstract class that implements MeasurableSensor and uses its constructor to bind itself to an Android-provided sensor type and receive updates from it.

- Accelerometer and Magnetometer are implementations of the AndroidSensor class and gather the sensor readings needed to calculate current orientation and magnetic heading of the device.
- All sensors can start/stop receiving updates at any time.
- All sensors can be given custom methods by the using class for handling updated data.

<u>Demo UI:</u>



AR Tour Guide App

Fused Location Data:

| | |
|---|---|
| Latitude: | 48.7302533 |
| Longitude: | -122.488985 |
| Altitude: | 0.0 |
| Accuracy: | 20.0 meters |
| Speed: | 12.46 |

Compass Data:

Heading: 25.531162 degrees

Nearby Locations:
Wade King Recreational Center

Looking At:
Wade King Recreational Center

Simple display of sensor data and filtered building list.