

Plantwatch Summary and Manual

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Background on the project

This project has been an adventure. It started off with a general idea of wanting to make a product that would combine Cellular IOT with something involving species and the issue of invasiveness.

I've had a great time learning about organizations like the IUCN and other interesting platforms and products that already exist. Apps like iNaturalist and Plantsnap are advanced in their ability to identify species. Plantsnap can identify at an accuracy percentage of 90 and can identify around 320,000 different species. Although I wasn't aware of these products at first and this resulted in pivoting the idea several times, the intention remained to make something useful.

Existing products will not be allies. Why should a man working in his room part time consider competing against corporations who already have a great version of a product already made.

I'll keep going but please skip if you're not in the mood for a story. Another point of pivot was switching from addressing invasive species to invasive plants. Why? Because the general public can't catch anything other than worms and turtles. We need to take the easy win if we want to be successful with our goal of better managing our ecosystems. The entire scope of the project is better suited for our current technology and knowledge. Although we have all this information on plants and animals, unless we are methodical and respectful of nature we may do more harm than good. Talking with one of my most outgoing friends Jenna I brought up the idea. It was depressing to hear about cases where people end up poisoning an entire river to deal with an invasive species of fish.

What is PlantWatch?

Shortest Version: Like a pokedex for Plants. Also a tool to be used later on as a way for dealing with invasive species.

The problem is helping maintain the balance of our ecology. The problem is complex and there are many steps. PlantWatch was made to fit into to solve some those needs.

Setting up local environment for Developing in IONIC 4

1. **Download Node.js for either Windows or Mac**

<https://nodejs.org/en/>

2. **Download Java JDK**

Create an Oracle Account to be able to download:

<https://profile.oracle.com/myprofile/account/create-account.jspx>

Download Link:

<https://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>

3. Install Cordova
in your command-line on Windows:

```
c:\> npm install -g cordova
```

In your terminal on Mac OS X/Linux:

```
$sudo npm install -g cordova
```

4. Install Ionic

```
npm install -g ionic
```

5. (Optional): If you would like to test directly on your phone please Download Android Studio and XCODE for iOS.

<https://ionicframework.com/docs/v3/intro/deploying/>

AWS setup

Once the local environment is setup we can make new Ionic projects and test them on our browsers. However we will need to download more packages.

1. Download Amplify

Complete guide: <https://aws-amplify.github.io/docs/js/tutorials/building-ionic-4-apps/>

2. Create AWS account:

https://signin.aws.amazon.com/signin?redirect_uri=https%3A%2F%2Fportal.aws.amazon.com%2Fbilling%2Fsignup%2Fresume&client_id=signup

3. Download aws-amplify & aws-amplify-angular

Run this code in your command prompt inside the project folder

```
npm install aws-amplify
```

```
npm install aws-amplify-angular
```

Additional setup

1. Download geolocation plugin. Please read all of links description

<https://ionicframework.com/docs/native/geolocation>

2. Create a firebase account. Need this for using services provided by google. For us it will be image searches

3. Setup for Google Maps API

<https://developers.google.com/maps/documentation/javascript/tutorial>

Also run `npm install @types/google-types` inside your terminal once more. You will need this for google maps to work properly.

App Schematic

Login & Signup: All of the heavy lifting is taken care of by AWS amplify. If you would like more information please check out.

<https://aws-amplify.github.io/docs/js/tutorials/building-ionic-4-apps/>

Sign in to your account

Username *

Password *

SIGN IN

No account? [Create account](#)

[Reset Password](#)

Create a new account

Username

Password *

Email *

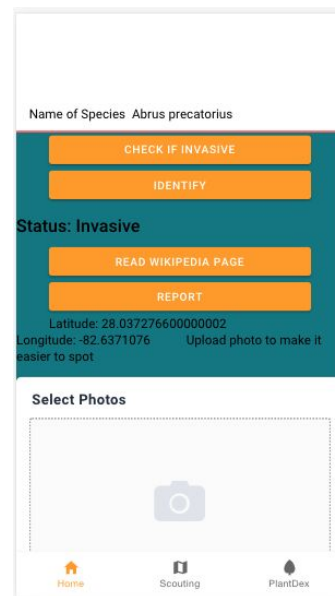
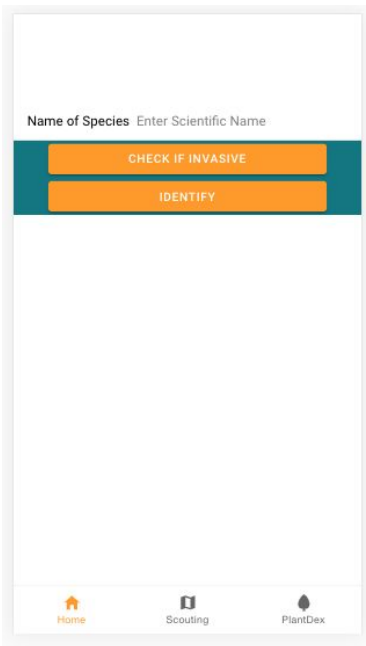
Phone Number *

USA (+1) Phone Number

CREATE ACCOUNT

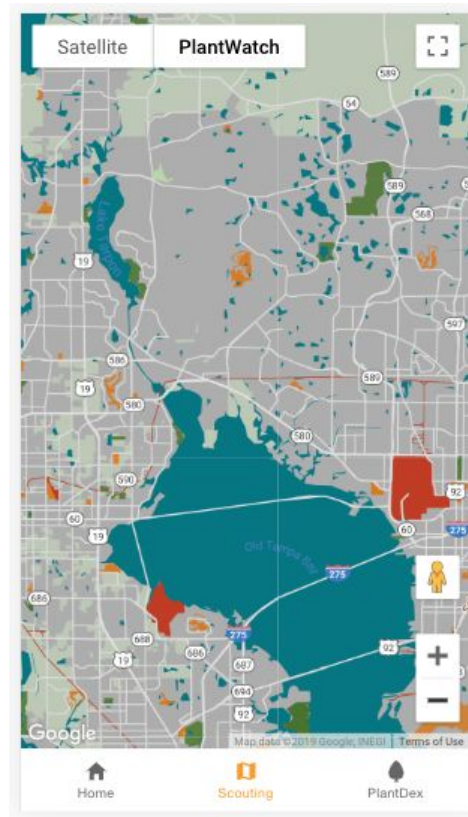
Have an account? [Sign In](#)

Have a code? [Confirm](#)



Home Page: This page is the groundwork for allowing people to report invasive species of plants. They are suggested to use iNaturalist or Plantsnap if they need help identify.

Users can read reports on the plant and check if the current species that was inputted is considered invasive. This feature is limited to users in Florida.

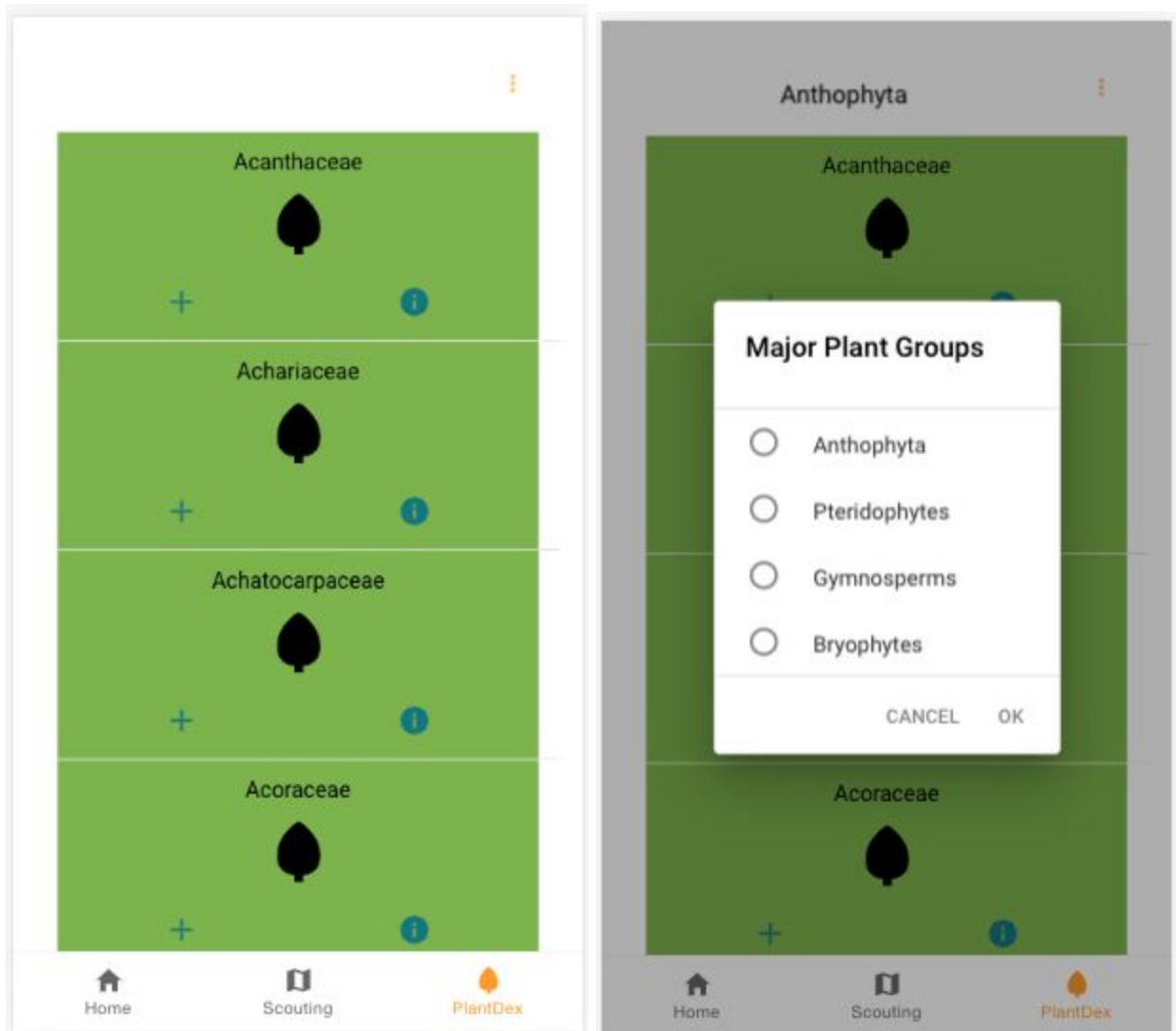


Maps Page: After users have started entering entries into the app they should be able to look up where other users have reported sightings of other plants.

Customization of map style:

<https://snazzymaps.com/style/252890/system>

To update your own style design it on the site provided and replace the style inside tabs2.page.ts



Plant Dex

Special thanks to <http://www.theplantlist.org/browse/>.

This page allows users to start cataloguing their encounter with wild plants.

Park Kiosk

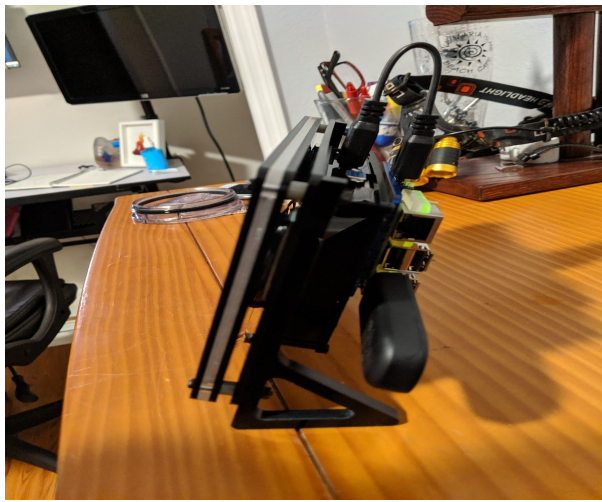
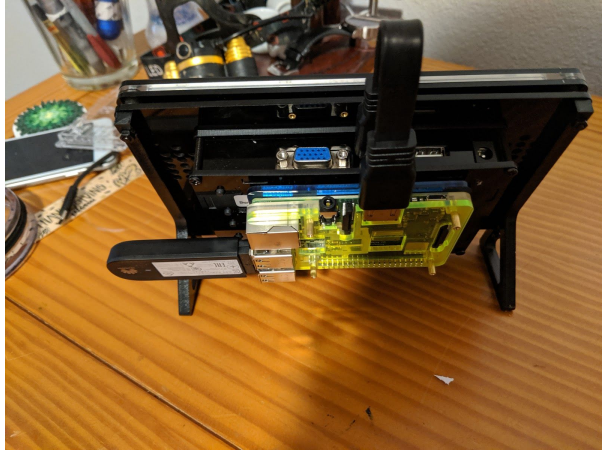
The kiosk utilizes Soracom network to display updates for people going through the park. Slide show shows plants and animals found in the region as well as other interesting pieces of information. The kiosk with future modifications could be used to monitor weather conditions specific to a region or maybe other ideas that could prove to be useful. As of now it works as a marketing and educational tool for local hikers and trail enthusiasts.

Raspberry Pie + LCD Kit + Soracom

https://www.amazon.com/gp/product/B01J51CXU4/ref=ppx_yo_dt_b_asin_title_o01_s00?ie=UTF8&psc=1

https://www.amazon.com/gp/product/B00GF9T3I0/ref=ppx_yo_dt_b_asin_title_o05_s00?ie=UTF8&psc=1

https://www.amazon.com/gp/product/B07BDR5PDW/ref=ppx_yo_dt_b_asin_title_o06_s01?ie=UTF8&psc=1



A Business Perspective

A self-sustaining model with the Kiosks. Please excuse the lack of precision for actual costs and a detailed business model. Time is limited but the general idea is pretty straight forward.

There is very little overhead with this application. Although the cost of storing the images uploaded inside the app by users is to be recognized this should be fractional and can be further evaluated. In addition a large collection of different plant pictures might prove to be valuable later on.

The idea is to make this app free since and give people the option to run X number of ads. The money generated from ad revenues can be used to build more Kiosks and maintenance and further development.

Project Summary Notes:

Because of the impending time limit I will have to make this short. This was a very fun project. The fun was in learning about existing technologies and environmental agencies, and coming up with ideas. I dread that I won't be able to include other thoughts and helpful tips but this report can be made into a tutorial/guide later on.

To test the app please download from the repository

Set up your local environment and download all the necessary modules. Then run ionic serve in the terminal and play with the app in the browser. I did not check this for completeness. Please email me at tkl.development@gmail.com if there are any questions.