**2.1 Requirements and Constraints:**

Requirements

Physical requirements:

* Sensors + microcontroller package ideally should fit in the palm of the user's hand.
* Complete setup, including water/fertilizer disbursement system and sensor/microcontroller setup.
* Must fit within most soil pot sizes.

Power Requirements:

* The device can be powered by a battery or small solar cell for multiple days.

UI Requirements:

* On the app, the user must be able to access sensor readings for individual plants in both graphical and numeric formats. i.e. graphs detailing a sensor reading vs time, as well as current readings of individual sensors.
* Additionally, users should have individual profiles that can be logged into, which are connected to a list of various plants belonging to them.

User Experiential Requirements:

* The device should be able to be turned on and forgotten for long periods of time not having to be recharged or refilled often.
* Sensor readings for all devices should be updated at least once a day.
* The app should be stable and be able to quickly and easily communicate with the server.

Constraints

Size:

The water reservoir must be 1+ gallon(s) to accommodate multiple days of watering.

Power:

The device should be able to run without a charge for at least three days.

Cost:

The total material cost of the device should not exceed $300.

**2.2 Engineering Standards:**

* 802.11ac WiFi Standard: Most devices that communicate via wifi today utilize this standard. In our project, this will include the wifi module on the Raspberry Pi, which communicates with the server, the server itself, which will communicate with the user on their phone, and the phone which will contain our app.
* IP54 or better dust and water resistance on device enclosure.