ECET 430 - Prototype Plan

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Purpose

This document shows planned prototyping steps for the Smart Plant Care project. This project is a part of the ECET 430 class project. We plan to create three prototypes, starting with installing the temperature, soil moisture, and light sensors. A fourth prototype may be added later to integrate and test everything if needed.

Prototype I

Temperature Sensor

Goals

The purpose of this prototype is to monitor the functionality of the temperature sensor in detecting and recording ambient temperature changes. We want to demonstrate that the sensor can provide accurate readings and communicate effectively with the microcontroller. We prioritize the temperature sensor.

Type

Is this a: Proof-of-Concept prototype, a looks-like prototype, a works-like prototype, an engineering prototype

- *Works-like prototype*

Scope

- *Microcontroller: Arduino UNO*
- *Temperature Sensor: DHT11 Temperature and Humidity Module*
- *Power Supply: 3.7V Li-ion 14500 battery with voltage regulator*
- *OLED Display*
- *Data logging for temperature readings*

Timeline

When are you planning to have this ready?

- *in 2 weeks*

Prototype II

Soil Moisture Sensor

Goals

The goal of this prototype is to assess the performance of the soil moisture sensor in order to detect varying soil moisture levels and also trigger alerts. This prototype should collect accurate data to guide watering decisions.

Type

Is this a: Proof-of-Concept prototype, a looks-like prototype, a works-like prototype, an engineering prototype

- *Works-like prototype*

Scope

- *Microcontroller: Arduino UNO*
- *Soil Moisture Sensor: LM393 3.3V-5V Soil Moisture Sensor*
- *Power Supply: 3.7V Li-ion 14500 battery with voltage regulator*
- *OLED Display*
- *Buzzer for low-moisture alert*

Timeline

When are you planning to have this ready?

- *2 weeks after finishing prototype I*

Prototype III

Light Sensor

Goals

This prototype will be used to test the ability of the light sensor to measure light intensity and determine conditions under which best plant growth occurs. We are testing to ensure compatibility with microcontroller response accuracy.

Type

Is this a: Proof-of-Concept prototype, a looks-like prototype, a works-like prototype, an engineering prototype

- *Works-like prototype*

Scope

- *Microcontroller: Arduino UNO*
- *Light Sensor: APDS-9306 Digital LDR Photosensitive Light Sensor*
- *Power Supply: 3.7V Li-ion 14500 battery with voltage regulator*
- *OLED Display*

Timeline

When are you planning to have this ready?

- *2 weeks after finishing prototype II*