CPP Community Garden Meeting Note

An Pham, Myriam

Calpoly Pomona

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Overview

1. Technical Diffculty of Old Sensors.
2. Establish the goals of the object that may benefit the campus.
3. Broadcast LORA signal.
4. Bill of Material for lab environment.
5. Revisit the Cloud integration for LORA sensors.

Wired version

- Most of Arduino Wire version requrie exposing the wire connector.
- Can be used indoor environment.
- The effective of the sensors relies on the wireless communication.
  - Reliable connection helps to reduce the cost of storing which add power consumption.
  - Pick the right signal sending cycle will help to improve the effectiveness of the sensors.

Technology of Moisture Sensors

subtitle

- There are two type of technology for moisture sensors
  - Time-Domain Reflectometry (TDR probes). Two connectors mounted to the ground, It detects the water condensation in the ground.
  - Capacitance (C-probes, Frequency-Domain Reflectometers).
  - Theses two technology require professional installation. TDR,
  - FDR and C-Probes have all worked well, but have theirlimitations. They read only a small volume of soil surrounding the guides or probes. FDR and C-Probes are also sensitive to air gaps between the access tube and the soil (source: College of Agriculture and Life Science - Methods of Measuring for Irrigation Scheduling)
  - the ECOWITT soil moisture sensor used the Capacitance.

ECOWITT Sensors Kit

- This 8 sensors kit can operate near the building where wifi access is available.
- Try to raise the height of solarbox, this would improve the LORAWAN as well.
- Agriculture water problems deprive from weather and soil moisture.

Both Lora and None Lora Deployment

- Understand the correlation of bandwith and power consumption.
  - sensors are end devices in Lora network.
  - reduce the transmitting size would reduce power consumption.
  - how long does it take to send one message of LoraWAN?
  - Seperate the Sensors Network from the could. The Cloud shoud be last mileage component.

Agenda

- Discuss with Melvin and Myriam regarding DIY gateway solution and Implementing AWS IoT Core
  - IoT can aggregate the signal sent from devices.
  - Address the previous of Melvin's Research on Greengrass.
    - ★ What features we need on Greengrass?
    - ★ Can the functions performed remotely?
- Decide the prototype for Product Demo in Fall 2023 presentation.
  - Outcome: Able to set up LORA soil moisture sensors along with AWS iot Core.

Reference

Sources

- `https://docs.aws.amazon.com/iot/latest/developerguide/connect-to-iot.html` LORA and Non-LORA AWS IoT Core.
- College of Agrigulture and Life Science.