

IoT and Agriculture Justin Kim, Junning Li, Tram Lam, Efai De Leon Professor Stuart Kleinfelder Department of Electrical Engineering and Computer Science

Project Goal

- Against unpredictable external factors, such as rising climate change, farmers face much difficulty in efficiently managing their farms.
- Therefore to reduce waste and increase yields, IoT technologies can be used to evaluate the conditions of their land and inform farmers of any discrepancies.

Current Progress

• Firmware:

- Successfully set up circuit with DHT11 sensor and extracting the temperature and humidity
- Successfully enabled WiFi from the ESP8266 nodeMCU
- Established HTTP Connections with AWS server
- Established mesh network with other nodes
- Back End:
 - Successfully sent extracted data to MySQL database and create tables to organize info.
- Front End:
 - Successfully set up a web page for displaying data and connected database to web page.
 - Currently working on improving the web page layout and creating interactive graphs.

[2]

Diagrams



• Overview Diagram



Graphs About Contact

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Graphs Page

• [1] Circuit Diagram, [2] Current web page / User Interface

Milestones & Future Work

- Getting website online: Achieved
- SQL and Website communication: Achieved
- Wifi synch with server by 1st Quarter
- Mesh Network by 1st Quarter.
- Power Management by 1st Quarter.
- Node Communication by 2nd Quarter.
- SQL support and communication with backend data by 2nd Quarter.
- Data analysis by 2nd Quarter.

Materials

- Node modules are build on multiple ESP8266 NodeMCU which provides good HTTP protocols.
- The node modules contains a DHT11 sensor which returns the current temperature and humidity
- An AWS server is used to provide a reliable server to connect to anywhere.

Reference

- "Monitoring Vineyard Irrigation Performance with Internet of Things" by Davit Hovhannisyan · Reinier van der Lee · Justin Haessly · Ahmed Eltawil · Fadi Kurdahi
- Topology Adaptive, Resilient and Scalable (TARS) IoT for Irrigation CPS by Irvine, CA



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