Testla: Water Quality Detection Drone

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Introduction

Drone has been utilized in variable fields. It lowers the cost, increases working efficiency and flexibility, and extend work field to places that humans cannot reach. In east Asian agriculture, pH value of water is vital to the growth of crops. Extreme change of pH value causes unrecoverable damage to crops, so a reliable consistent autonomous pH value detector is necessary,

Project Goal

- GPS navigator
- pH sensor implementation
- Drone assembling
- Controlling and timing system
- Data log system

Approach

- Drone works as a carrier of sensors
- GPS module gives location as the information for controlling system
- pH sensor returns analog voltages which are transferred to computable digits.
- ultrasonic sensor gives height of drone above water surface

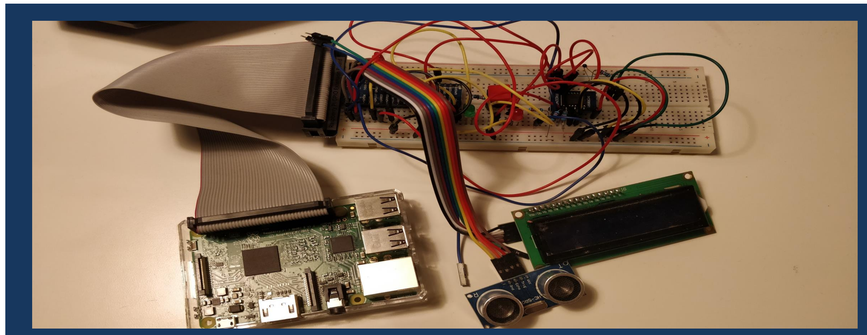


Figure 1. Breadboard and Raspberry Pi

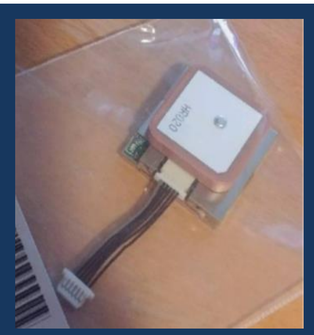


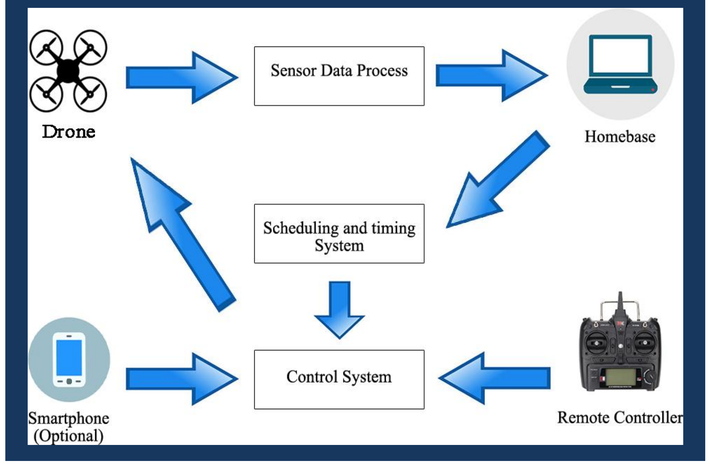
Figure 2. GPS sensor

Figure 3. pH sensor by Paul Marsh

Current Progress

- An email is able to be sent from the CPU to a designated email address
- Ultrasonic sensor works properly
- Understand how a pH sensor works and generate transfer formula

Project Diagram



Time Line

Quarter 1:

Week 1 - 4: Design the project organization and requirements
Week 5 - 6: Set up the Raspberry Pi and ultrasonic sensor
Week 7: Test and debug the ultrasonic sensor
Week 8 - 9: Set up the pH sensor and GPS module
Week 10: Test and debug the GPS module

Quarter 2:

Week 1 - 3: Assemble the aero drone and control system
Week 4 - 5: Attach sensors on the drone
Week 6 - 8: Test and debug the performance of the drone
Week 9: Prepare document of project report

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