

Project Name: Automation of Shrimp Ponds using IoT

Solution for Industry: Aquaculture

List of Hardware Equipment's to be used:

1. PH Sensor
2. DO Sensor
3. Rain Sensor
4. Temperature Sensor
5. Aerators
6. Servo Motor
7. Wi-Fi Module
8. Microcontroller

Software(s) used:

1. Atmel Studio5
2. Android Studio IDE
3. Android SDK(APIs)
4. Web Technologies(HTML, CSS, JavaScript, JQuery, Bootstrap)
5. MySQL
6. PHP
7. JSON

Current Problem in Industry:

Prawns are very sensitive to the external factors like Dissolved Oxygen (DO), pH Value, Moisture, Temperature, and other factors would matter in farming those. Any negligence in farming leads to the loss in Lakhs.

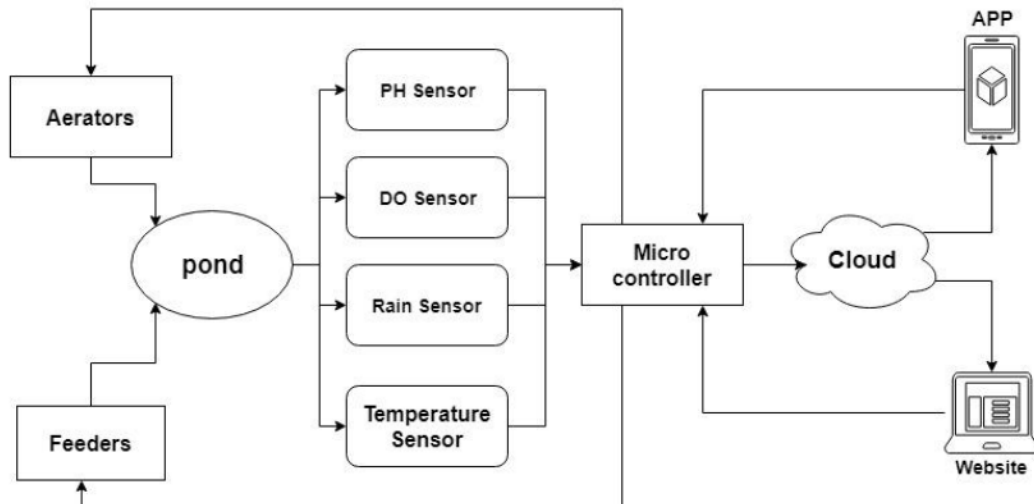
Proposed Solution:

Automating these ponds using IoT would result in tracking the sensor values and making the pond to be suitable for the living of prawns and also for feeding prawns.

Brief Detail Working of Solution with Diagram

Up to 50% of India's workforce accounts for the agriculture and the related industry. Aquaculture in the country is also self-reliant ranking second in aquaculture production, next to China. Prawns have more demand in India than any other marine food.

By using DO Sensor we can track the real-time DO Level and pH Meter to monitor pH value and Rain Sensor to Detect the Rain and Temperature Sensor to detect the temperature in the Pond. By interfacing all the sensors to a microcontroller it can monitor the DO and pH levels and controls the Aerators according to the sensor values. The Minimum DO level in pond required was 5ppm and pH value in the pond has to be around 8. Additionally, we want to connect the Microcontroller to the Internet so that the User would get real-time access to the Sensor values through IoT and can manually control the Aerators from Mobile if required. Here we are presenting user 2 modes – Automatic, Manual. In Automatic, the Microcontroller will take the Decisions autonomously according to the Sensor values. In Manual mode, the user will get an Alert when the Sensor values reach their Threshold limit and he has to switch the aerators from the mobile. Also, we are automating the Feeders so that the food will be given at time basis or By Microcontroller itself.



So automating these ponds using IoT would result in the saving of Power consumption, avoids the huge losses, maintain the pond Hygienic without human intervention.

Management has provided budget to buy below hardware components to develop “Automation of Shrimp Ponds using IoT” projects.

	Quantity Required	Estimated Cost	Total
PH Sensor	1	2500	2500
Rain Sensor	1	150	150
Temperature	1	150	150
DC motors	2	150	300
Servo Motors	1	500	500
Wifi Module	1	250	250
ATMEGA -16	1	1000	1000
DO Sensor	1	3000	3000
Other Materials		2150	2150
Total Amount			10,000