

REALTIME AQUACULTURE MONITING USING IOT

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ABSTRACT:

Aquaculture is the farming of fishes and aquatic cultures for commercial and edible purpose. Aquaculture is one of the fastest growing industries. So, the aquatic organisms are continuously monitored for their healthy growth as parameters varies continuously with time and surrounding should also monitor. In this paper we designed and developed a low cost IOT based real time aquaculture monitoring system with an automatic feeding system. This system consists of several sensors like temperature, salinity and turbidity sensors. These sensors are used to measure physical and chemical parameters in and around water. Using IOT, the farmers or owners can continuously monitored and through the internet over long distance. This wireless monitoring system reduces the stress of the aquaculture owners, reduction on labor work, and intensity improvement of aquatic products and protection of aquaculture environment.

Keywords: Internet of things, wireless sensors, cloud computing, microcontroller, Automatic feeding.

1.INTRODUCTION:

Water is fuel of life and no life exist without water on this earth. In this paper we intend to present that the IOT & Remote sensing techniques are used in different areas of research for monitoring, collecting and analyzing data from remote location. The water has to be monitored periodically for aquaculture and this has done using IOT. With the help of sensors and IOT we can reduce its work and fish farmer or the owner need not required to check the water parameters periodically. The system consists of parameter sensors which are used for measuring physical and chemical parameters of water. Here the parameters such as temperature, Turbidity and salinity can be measured. Using this system a person can detect the parameters of water anywhere in the world and an alert can be sent to mobile phone which helps in the survival of fish.

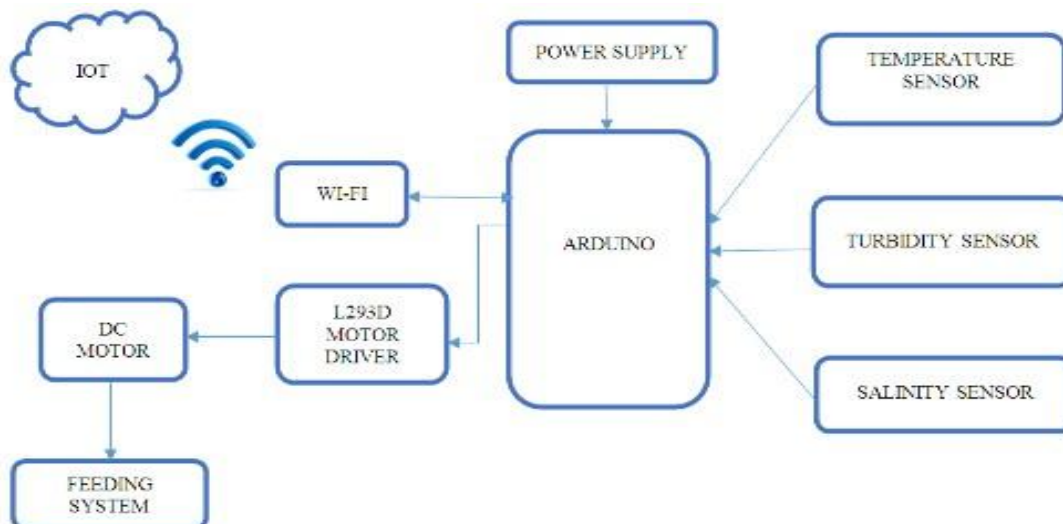
2.EXISTING METHOD:

The monitoring of aquaculture includes continuously measuring of water parameters. They only measured the conditions for the survival of fishes by measuring the parameters of water not included the feeding system for the fishes as food is the important factor to live. So

the food has to be feed to the fish by manual method. So it requires the external factor to feed the food. The existing system measured the parameters like Ph, temperature, turbidity etc using different modules like zigbee, GSM, Bluetooth. The Ph sensor has drawback that they have to clean periodically and have to be calibrated frequently.

3.PROPOSED METHOD:

In this paper, we have designed a low cost model for the monitoring of aquaculture using IOT and an automatic feeding system is used which also works under it. The parameters which are measured are salinity, turbidity and temperature of the water and its surroundings. An automatic feeding system is used as both food starvation and over feeding leads to death. The arduino board is used as it is low cost and the interface for the sensors are required is less. The microcontroller used is ATmega328, which is an 8 bit RISC based microcontroller. An L293D motor driver is also interfaced for the automatic feeding of food for the fish.



4.SPECIFICATION:

ARDUINO: Arduino board uses the ATmega328 microprocessor which is a CMOS 8 bit microcontroller based on RISC Architecture. In a single cycle the throughputs is 1MIPS per MHz. It has 28 pins in which 23 I/O pins. They use PWM technique for getting analog results from digital pins. It has two 8-bit timers and one 16-bit timer.

TEMPERATURE SENSOR: The temperature sensor used is LM35. It is a thermocouple or a resistance temperature detector (RTD) that gathers the temperature from a specific source and alters the collected information into understandable type for an apparatus or an observer. It is precious integrated circuit in which output voltage is directly proportional to the centigrade temperature. Temperature sensors used in several applications namely controlling system and AC system environmental controls, medical devices, food processing units, chemical handling, controlling systems, automotive under the hood monitoring.

TURBIDITY SENSOR: The turbidity sensor measures the water quality by measuring the level of turbidity. It uses light to detect suspended particles in water by measuring the light transmittance and scattering rate, which changes with the amount of total suspended solids (TSS) in water. As the TSS increases, the liquid turbidity level increases.

SALINITY SENSOR: The salinity sensor easily and precisely measures the total dissolved salt content in water. It measures water with a wide variety of salinities, from brackish water to ocean water and also in hyper-saline environments. The salt content in water is inversely proportional to the dissolved oxygen content in water.

Parameters	Range
Temperature	0-35
Salinity	0-50ppt
Turbidity	<80ppm

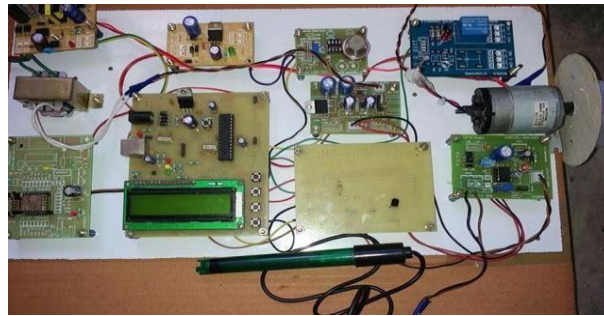
Wi-Fi: The Wi-Fi module used is ESP8266 which uses radio waves for the transmission. A Wi-Fi connection is established using a wireless adapter to create hotspots. It is a type of wireless local area network (LAN) based on 802.11 IEEE network standards. Its operating frequency 2.5GHz- 5GHz.

L293D MOTOR DRIVER: The dc motor driver is used for the feeding of the food automatically. The food is feed at a particular interval of time. The motor driver is an integrated circuit chip which is usually used to control motors in autonomous robots. These ICs are designed to control the 2 DC motors simultaneously. L293D consist of two H-bridge.

LCD DISPLAY: The Liquid crystal Displays are generally used to display data of the corresponding readings. They are used in many electronic devices. It has 16 pins of which 8 pins are data line pin (1 and 16) are ground. pin 3 is used for controlling LCD brightness. This is interfaced with Arduino for displaying the values measured by the sensors and display the status of the motor by stating it as ON /OFF.

5. WORKING MECHANISM:

The working principle of the proposed system is the values that are measured by the different sensors are given to the ATmega328 microcontroller placed in the Arduino board. The analog values are converted into digital values and displayed in LCD display. The same readings are sent to the Wi-Fi unit where it sends the data to IOT server from there the corresponding receiver receives the data continuously. The data values received can be seen from everywhere in the world. It also indicates the status of the motor



whether it is in ON/OFF condition. The motor shows ON state till it pours the food and shows OFF for the remaining time. This can be viewed continuously in mobile or in computer desktop.

6. CONCLUSION:

The outcome of our project is that the aquaculture owners can continuously monitor the condition of aquaculture from their place. This wireless network monitoring system reduces the stress of the aquaculture owners, reduction on labor cost, and intensity improvement of aquatic products and protection of aquaculture environment.

8. REFERENCE:

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