

Water Level Monitoring App using Arduino and Wireless Network

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Abstract

In Today's Era water dearth become crucial problem in the world. By seeing that problem we are trying to develop an application which helps the mankind to save the water and also to protect the Environment. AN Android and IOT based Water Level Monitoring App. With the help of this App the user will get the current level of water and prevent overflowing of water from the water tank. We can also get the statistics report of the uses of the water. This App contain the Arduino Uno kit, Float Sensors, WI-FI Modem, Microprocessor, LED, 12 Volt Relay and Android Application which is used to display the level of water and statistical data of the water uses. In Android Application Pie chart is used to show the current level of water and Bar Graph is used to show the daily complete uses.

Keywords: Android Application, LED, WI-FI Modem, Microprocessor, Arduino Kit.

Introduction

Imagine the situation, when we turn ON the water pump for filling the water tank. But sometimes we forget to turn OFF the water pump due to this the ratio of the water wastage is very high. To overcome from this problem we develop a system that will automatically turn OFF the water pump when it get fully filled and also develop the App to display the current level of water. Today's Era Technology becomes most important part of the human life. Technology are integrating in almost every field like Entertainment, Medicine, Social interaction, Transportation, Home Appliance and many more. The building of the computer and mobile phones are helps to integrate this technology in daily life.

For connecting with this technologies Internet become most common Interface to simplify their life. New Trending technology cloud to store and manage our daily information.

As Smart Phones is now capable to work as a computer and also connect with the Internet for communication with the people and other devices. By seeing these points, we have developed Smart Phone Application to display water level and to store the water uses information. This Application helps you to get the statistical information of daily water uses.

Objective

The objective of this Application is to avoid the overflow of water in urban areas and by calculating

the statistics of water send this supply to the rural areas.

Related Work:

Water plays a pivotal role in every day's life. In today's Era the Internet of Thing (IOT) Technology is very important to develop the humanitarian project. In this paper, we propose an IOT based solution for water level monitoring system which can measure the current water level and statistics of the water in the water tank. As we know that water plays a very important role in the rural areas. So we have developed these Applications.

This paper tells the details about how we Arduino to automate the home. The existing system has the limitations as they can use the Bluetooth device to send the data so it analyses to prove that the Android and Arduino has the better combination. In this system the Android Application acts as a front end. The Microprocessor controls the sensors using the Internet.

This paper describes the real time implementation and design of the wireless water level App.

The present system can be control manually that is the user can go to the water pump to start and stop it. But the proposed system can overcome this problem.

In the proposed system all this operation can be done using the Internet or Wireless Network, The microprocessor can detect the WI-FI Connection using the WI-FI Modem and as soon as it detect the WIFI connection the water pump will start and stop automatically using the Sensors values.

In this paper we can detect the water level using the internet and this data can be stored in the cloud platform.

The proposed system uses the cloud server to store the data for long time. We can use this data for further purpose using this we can find the statistics of the week or month or year.

This paper describe that the water level monitoring App uses the Float sensor to measure the current level of water. We also create the Android Application which is helpful for the user to see the current level of water or to see the statistics of the water. The Application will be the user friendly.

For the creation of this system we use the IOT technique because it is very secure and it can use easily to do the communication between Hardware and Software.

System Flow:

Hardware Requirement:

1. Float Sensors :

This Sensor is used to check the level of water.

2. 12 Volt Relay :

This is used to control the flow of water pump.

3. LED :

It is used to show that the WI-FI device is connected successfully.

4. Microprocessor :

It is used to control the operation of various machines.

5. Arduino Kit :

This kit is used for connecting all the sensors, PCB etc.

6. WI-FI Modem :

It is used to send data to the server and it is also used to connecting with the mobile phone.

Software Requirement:

1. Android Studio :

It is the software which is used to create an Application for Smartphone's or the Android phone. We can use this software to create the Android Application for all the devices.

2. Arduino Software :

We use this software for writing the code of the hardware system. This can use the Embedded C Language for writing the code.

detected than the water pump will start automatically. If the wifi connection is not detected than this process will repeated till the connection was found.

We have uses the two float sensors in this system. First is at level 50(*i.e. middle level*) and second is at level 100(*i.e. Full level*). According to the tank height we can increases the number of Float Sensors. We also want an Android smart phone (*greater than android 4.0 OS*) to show the current level of water After the connection is detected the water machine will start to fill the water tank as soon as the level of water reaches to the sensors the sensors will detected the current level and the current level will show in Android App. As soon as tank get full the water pump will turn OFF automatically using the WIFI Connection. This process is continuing when water level goes to LOW (*i.e. 0*). The Android App is used to see the current level of water and also statistics of the daily uses. This system can save the time of the user. This Application can be access from any location using WIFI connection.

System Flow:

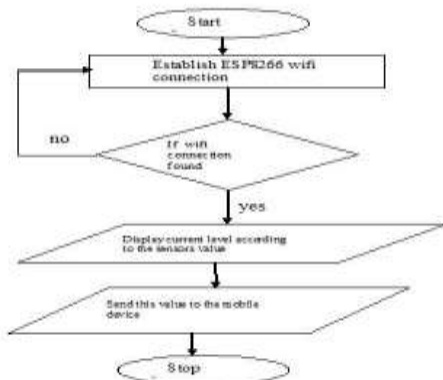


Fig 1: System Flowchart

Working:

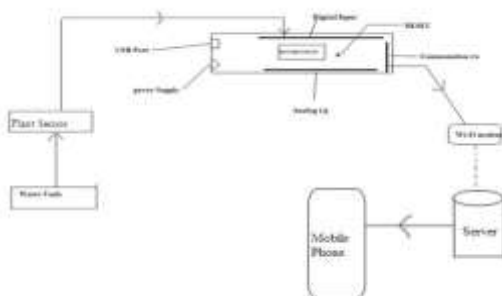


Fig 2: Working System

Figure display the working of the system. The first step is to start the wifi connection. As soon as we start the wifi connection the wifi Modem (ESP8266) which is attach with the arduino kit will detect the connections. If wifi connection is

Observation / Result:



Fig 3: Hardware Setup



Fig 4: Current Level of Water



Fig 5: Daily Usage (Represented in Bar Chart)

Conclusion

The Internet is capable of changing the human life. IOT has Great Potential to increase communication between smarter object. The purpose of this project is very simple it can use to start and stop water pump automatically using Wifi Connection. Using this statistics we can save the water. This statistics can be used to send water in rural areas. The Android Application can show the current level as well as the statistics of water. This system is very cost effective so it is a better way to monitor the level of water.

Further work involve that the statistics can be used for the *public welfare office* using this statistics they can manage the supply of water in a particular areas. This can save the water which is helpful for the mankind and Environment.

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