

# INTELLIGENT SOLUTION AND PREDICTION ANALYSIS FOR THE WATER SCARCITY USING IoT

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## ABSTRACT

This paper breaks down the adequacy of water level control. Water shortage which assumes a fundamental part in Tamilnadu Municipality . Our principle Moto is to screen the Government water tanks in every territory and examination the utilization and as per that providing the poor water to that specific zones. We are utilizing pH meter which gives the attention to the nature of the drinking water. These days every one of the subjects are paying the fixable water charge however they were utilizing water unnecessarily or not. Putting our pack in the drag valve which gives the data about the use and potential of hydrogen(pH) . As per the utilization the duty sum may differ to individual nationals which achieves the mindfulness the water accessibility for the future era. This likewise predicts the future water shortage. The water level in the tank is detected utilizing water level sensor. The level detected is bolstered to the arduino. Water level is implied .pH level is likewise insinuated by the assistance of thingspeak. pH esteem is bad in water, it will naturally release from the water tank. The stream of water is controlled by solenoid and furthermore, it will check the stream of water in the pipe. In consistently the water streaming will be checked and appropriated to a specific territory.

*Index Terms— Arduino, pH sensor, float sensor, relay, solenoid valves, pump motor and discharge motor*

## I INTRODUCTION

In general the water scarcity is one of the most jarring problems in Tamilnadu. Because of the water scarcity most of the things are affected in the Tamilnadu. The water scarcity is nothing but the missing of the water at right time. It is not that there is no water available in the ground level, but the ground level of water gets lowered down due to the usage of water by the people. There are also many other external reason for the water scarcity in Tamilnadu. The prediction of future water scarcity is also implemented in this project.

Recently, contaminant accidents in water environment and water distribution system happen occasionally. Therefore, the establishment of water quality early warning system is highest priority now. Water quality early warning system is a system which is able to predict sporadic or long-term water pollution events and assist relevant functional departments in making decisions through techniques as real-time monitoring. Hence, how to monitor and analyze the water quality in a distribution system quickly and effectively is a technical problem which needs to solve instantly, and it's also the key of a water quality early warning system. For the purpose is knowing water quality to the awareness of people

## II.EXISTING SYSTEM

The work presented by has developed a Prepaid Water Meter System for prepaid billing of water consumption through remote monitoring without any human intervention. This system promises fast and accurate billing of water as well as preventing any misuse of it. However, developed a water meter reading using Global System for Mobile communication (GSM) network that suitable for remote places to monitor the water meter reading before any billing process. This could reduce the use of human resource for reading the meter and issuing a bill. There was also a work on monitoring of electrical meter reading using GSM network done by .The system was capable of monitoring the meter reading and sent an Short Message Service (SMS) to the authorized center for billing purpose. This could reduce the number of estimated reading when the authorize person unable to reach the meter. Another work presented by using wireless text messaging system to send early warning SMS messages to users advising them to proactively reduce their power consumption before system capacity is reached and systematic power shutdown takes place. This could increase cost-effective wireless distributed load shedding system for non-emergency scenarios. In smart home application, the work presented by was a design on a system to control home appliance remotely and provide security when the owner is away from the place. The similar work presented by which designed and developed a smart home application system. The system allows the homeowner to be able to monitor and control the house

appliances via a mobile phone set by sending commands in the form of SMS messages and receiving the appliances status.

### III. PROPOSED SYSTEM

This paper analyzes the effectiveness of water level control. Water scarcity which plays a vital role in Tamilnadu Municipality corporation. Our main Moto is to monitor the Government water tanks in each area and analysis the usage and according to that supplying the needy water to that particular areas. We are using pH meter which gives the awareness of the quality of the drinking water. Nowadays all the citizens are paying the fixable water tax though they were using water excessively or not. Placing our kit in the bore valve which gives the information about the usage and pH. According to the usage the tax amount may vary to individual citizens which brings the awareness about the water availability for the future generation. This also predicts the future water scarcity. The water level in the tank is sensed using water level sensor. The level sensed is fed to the arduino. Water level is intimated .pH level is also intimated by the help of thingspeak. pH value is not good in water, it will automatically discharge from the water tank. The flow of water is controlled by solenoid and also, it will check the flow of water in the pipe. In every day the water flowing will be checked and distributed to a particular area. Water suppling is based on the priority which is already designed.

### IV. BLOCK DIAGRAM

Water quality analysis technologies in urban water supply were widely studied, the qualitative or quantitative analysis of water quality in distribution system was mainly realized. Reference analyzed the variation of water quality parameters with different contaminants, and the value of variation was classified, also a linear fit was done between the changes of pH value.

### V. PROCESSOR

The Broadcom BCM2835 SOC used in the first generation Raspberry Pi is somewhat equivalent to the chip used in first generation smartphones (its CPU is an older ARMv6 architecture),<sup>[14]</sup> which includes a 700 MHz ARM1176JZF-S processor, Video Core IV graphics processing unit (GPU),<sup>[15]</sup> and RAM. It has a level 1 (L1) cache of 16 KB and a level 2 (L2) cache of 128 KB. The level 2 cache is used primarily by the GPU. The SoC is stacked underneath the RAM chip, so only its edge is visible.

The Raspberry Pi 2 uses a Broadcom BCM2836 SoC with a 900 MHz 32-bit quad-core ARM Cortex-A7 processor (as do many current smartphones), with 256 KB shared L2 cache.<sup>[16]</sup>

The Raspberry Pi 3 uses a Broadcom BCM2837 SoC with a 1.2 GHz 64-bit quad-core ARM Cortex-A53 processor, with 512 KB shared L2 cache

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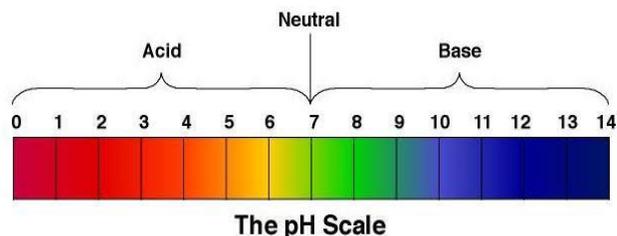
This sensor is interfaced with "arduino" the output of the sensor will be in analog value. But in this case, we are using arduino the value is automatically converted into digital values to find out the more accurate value. In getting of value pH sensor , there would be more acid or more base the water automatically drain from the tank , transfer that water into other tank to make reuse or other purpose .The draining of water are done by Discharge pump motor .The ON/OFF discharge pump motor is done by relay using the help of arduino.

Float sensor is used to detect the liquid level in the tank. This sensor is used in measuring petrol tank, chemical tank, water tank etc. In this case, we are using this sensor only for measuring the value of water level in tank. This sensor is interfaced with "arduino" the output of the sensor will be in analog value. But in this case, we are using arduino the value are automatically converted into digital values to find out the more accurate value.

Float sensor in an electrical ON/OFF switch, which operates automatically when liquid level goes up or down with respect to specified level. The signal thus available from the float

FIGURE 1- PH RANGE

sensor can be utilized for control of a motor pump like Relays. Float sensor contain hermetical sealed reed switch in the stem and a permanent magnet in the float. As the float rises or falls with the level of liquid the reed switch is activated by magnet

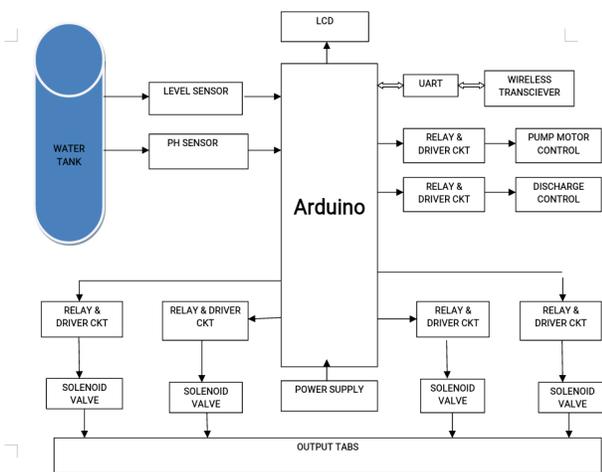


in the float. The process ON/OFF pump motor done in digital pin arduino using of program of C language

The values of the sensors are monitor my IOT in help of think speak, The Internet of things (IOT) is the inter-networking of physical devices ,vehicles (also referred to as “ connected devices “ and “ smart devices”), buildings, and other items – embedded with ectronics , software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data.

Thingspeak is an open source Internet Of Things (IOT) application and Application Programming Interface (API) to store and retrieve data from things using the HTTP protocol over the internet or via a Local Area Network. Thingspeak enables the creation of sensor logging applications, location tracking application, and a social network of things with status updates. Thingspeak has a close relationship with mathworks, all of the thingspeak documentation is incorporated into the mathworks matlab documentation site

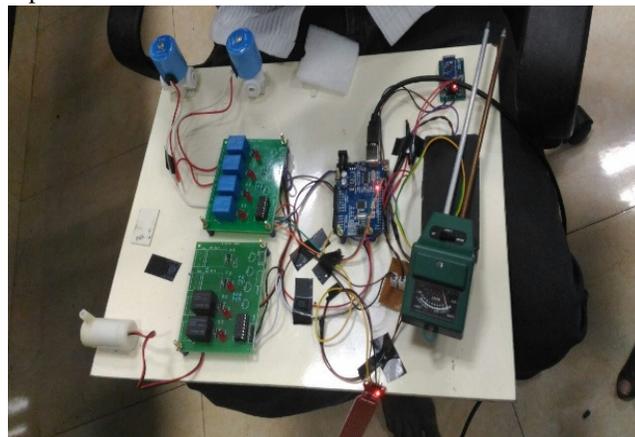
and even enabling registered mathworks user accounts as valid login credential on the thing



**FIGURE 2 -BLOCK DIAGRAM**

Data are transmitted by using Ethernet shield; the arduino Ethernet shield 2 connects your arduino to the internet in mere minutes. Just plug this module onto your arduino board, connect it to your network with an Rj45 cable. Operating voltage is 5V, Ethernet controller: W5500 with internal 32k buffer, connection speed: 10/100Mb, connection with arduino on SPI port. The Wiznet W5500 provides a network (ip) stack capable of both TCP and UDP. It supports up to eight simultaneous socket connections. Use the Ethernet library to

write sketches that connect to the internet using the shield. The Ethernet shield 2 connects to an arduino board using long wire-wrap headers extending through the shield. This keeps the pin layout intact and allows another shield to be stacked on top of it



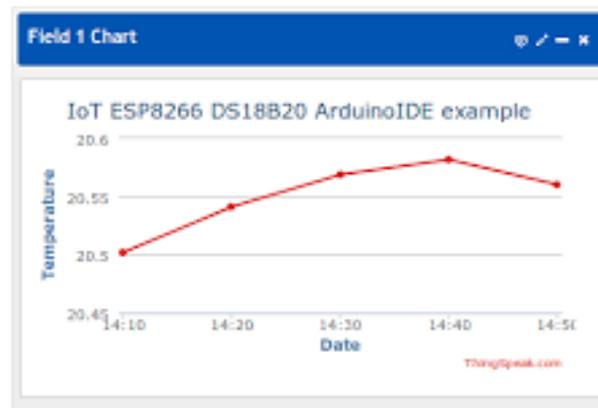
**FIGURE 3- PROTOTYPE DESIGN**

Using of SPI protocols for communication, Serial Peripheral Interface (SPI) is a synchronous serial data protocol used by microcontrollers for communication with one or more peripheral devices quickly over short distances. It can also be used for communication between two microcontrollers with an SPI connections there is always one mater device which controls the peripheral devices.

For water usage of specified area

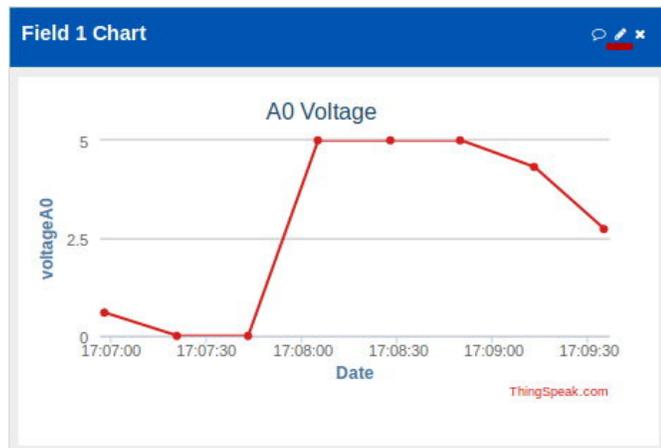
### Channel Stats

Created **a day ago**  
Updated **2 minutes ago**  
6541 Entries



**FIGURE 4 -PH SENSOR GRAPHICAL REPRESENTATION**

Using solenoid we are founding in each area the processes Of water flow calculating how much of water used. In particular area. In two areas the water has been distributed and then when the water arrives the priority has been given to the remaining areas.



**FIGURE 5- LEVEL SENSOR GRAPHICAL skin. This effect**

#### REPRESENTATION

This graph represents value of pH sensor, A0 is analog pin of arduino the pin voltage A0 and operating voltage will make the graph.

#### V.CONCLUSION AND FUTURE WORKS

We present about of water quality and prediction of water scarcity for the usage of water in that specified area and making awareness of water quality through visualize in thingspeak in that making of graph prediction of next arise days and monitoring of overall government water tanks and making the calculation of water flow through solenoid valves takes individual home to calculation tax for purpose of if person makes high usage of water and other person makes low usage of water but they pay same amount of tax . we adding Bluetooth to make easier for controlling the motor for which area needs water .

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