A Synopsis on

IOT Enabled Water Monitoring System

Submitted in partial fulfillment of the requirements
of the degree of

Bachelor of Engineering

in

Information Technology

by

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CERTIFICATE

This is to certify that the project Synopsis entitled ***"IOT Enabled Water Monitoring System "*** Submitted by ***"Krutika Pawar (18204012),Deeksha Kadam (18204007),Nakul Gagare (18204013)"*** for the partial fulfillment of the requirement for award of a degree ***Bachelor of Engineering*** in ***Information Technology.***to the University of Mumbai,is a bonafide work carried out during academic year 2019-2020

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Date:

Declaration

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Date:

Abstract

Water is one of the essential parts of life. Water quantity is one of the big problems to the world. In order to ensure the safe supply of the drinking and useful water for different purposes ,the water should be monitored. The system is designed to monitor the supply of water to a particular area which can be detect the quantity of water supplied through that pump. This system design a real time monitoring of the quantity of water in using some sensor and software. The system having of several sensors is used to measuring physical of the water. The parameters flow sensor of the water can be measured. The measured values from the sensors can be processed by the controller. The Arduino model can be used as a controller.Finally, the sensor data can be shown on internet using WI-FI system. A system was configured as data analysis.

Introduction

Throughout the years, the world is facing water crisis that leads to water shortage due to the climate change, population increase, improvement in living standard and also increasing of industrial demand . The amount of water consumption suggested by World Health Organisation (WHO) is 165 liters per capita per day, however average of water consumption in Malaysia is higher than the recommended amount which is 210 liters per capita per day . As the country grows, water consumption among public community will also grows too. Water wastage can be avoided if consumer use water prudently.Hence, one of the solutions is to limit unnecessary usage of water in their daily chores. The daily ,yearly as well as Monthly water consumption can be monitored and triggered by Water Department head.Looking at Current situation , Our World is of full of technologies the water is the basic and most important need to our lives.Currently, the water department is using the water pump to measure the supply of water to particular area and societies. In which, the pumps are fitted on the ground and according the measure is counted as per month . But in process the officers has to personally visit the area to take the reading of the meter. By using this technology ,we can send the reading to the authorized officer without personally visiting the area. The report can be generated the usage of water and the quantity of water consumed in a day.The water company can also utilize the system to automate polling the meter reading for monthly billing of water consumption in their client houses. This help to prevent late and inaccurate manual billing due to human error.Hence, obtaining information of daily water consumption is vital in order to control and analyze water supply and usage.

Elastic Stack Monitoring Service:

The Elastic Stack Monitoring service extends our commitment to improving product usability and quality of support by providing you with a dedicated monitoring cluster to host your Elastic Stack monitoring data.

Why this service?

1. Gathering various cluster information to diagnose the problem. And also needs to get a snapshot of your historical cluster monitoring data, and then manually restore it to diagnose the issue.

2. Now, with the Elastic Stack Monitoring Service, has direct access to your historical-monitoring data as well as other relevant cluster information. This streamlines thediagnostic process and allows us to jump right into the more in-depth questions.

3. The Elastic Stack Monitoring Service, you will no longer need to create and manage a dedicated monitoring cluster on your own, which can greatly simplify your daily workflow and management.

How will this service work?

By opting in for this service, the Elastic Support team will create an Elastic Cloud cluster, and then send you the instructions for configuring your production Elasticsearch cluster to send its monitoring data to the Elastic Cloud cluster. With this service, it's as simple as logging into the hosted Kibana instance for both you and the Elastic Support team a new monitoring journey awaits.

Objectives

1. Developing the ecosystem for smart water supply.
2. Get the quantity of water supplied to area and analysis the water level present in tank.
3. All the reading can analysis and helpful to water department to the problem of water scarcity in the town.
4. By analyzing this, the report can generate which can tell usage of water.
5. By using Elastic Stack designing the dashboard for the department end user

Problem Definition

1. We observed that for the most part the employment is manual and requires a sensible technology to give organized distribution.
2. To convert the manual water supply reading system to a automated sensor used dash board.
3. Get the accurate reading and mapping of the supply of water in the town.
4. No officer can change the reading which leads to corruption.
5. By using this we can future analysis the wastage of water.

Literature Review

1.IoT based water management :

Published in: 2017 International Conference on Nextgen Electronic Technologies: Silicon to Software (ICNETS2)

Authors :

1. Chanda Rajurkar
   Embedded System, VIT Chennai Campus, 600127, India
2. S R S Prabaharan
   School of Electronics Engineering, VIT Chennai Campus 600127, India
3. S. Muthulakshmi
   School of Electronics Engineering, VIT Chennai Campus, 600127, India.

Review :

This project focuses on monitoring of use of water, consider, by one block of house in a flatsystem, where at the partition of pipeline from where the water gets diverted to various part of a block. Methods/Statistical analysis: Water places a vital role for living beings in their day to day lives. The earth's 71 percentage is covered by water is a ubiquitous fact. Among which Oceans has approximately 96.55 percentage and 3 percentage is considered to be freshwater, again out of which only 0.08 percentage is accessible direct to human use and rest is preserved in tundra regions and in different form on and in the earth surface which is very difficult to abstract for the human purposes. From this it states that only 0.08 percentage is available as fresh water for human being to make use for drinking, domestic purposes, sanitation, manufacturing, leisure, agriculture etc which gets recharged by rain and snowfall 1. Findings: According to scientists and organizations as IPCC (Intergovernmental Panel on Climate Change), state has come, since a long time, where water management as such implies to maximizing use of water and minimizing the wastage of water and thus preventing the domino effect cycle arises as wastage of water. The sensors will sense the flow of water to each pipe which ultimately tells the usage of water at one block ideally. This water usage data would be sent to cloud using the IOT (Internet of things) space. This cloud data would be sent to the concern resident's person's mobile app (application) reporting the water used and alerting the user to limit the water use if it gets extended to the limit usage set by municipal government or corporation. If the limit gets extended the user have to pay accordingly. This will be real time operation. The objective of doing so is for limiting and minimizing the usage of water for an average of per person. And secondly, the cloud data will be used as statistic data for use of water at every seasons that is winter, summer and monsoon so that measuring steps for water management can be taken with the appropriate statistics, yielding an avenue for predictive measure. Improvements/Applications: To appraise the IOT based water management, it can be ramified as diligent, frugal for water management in a symbiotic parity way, which will constrict the water resource evenly according to the in situ factors.

2. Monitoring of Industrial Water Usage by using Internet of Things.

Published in: 2018 International Conference on Information , Communication, Engineering and Technology (ICICET)

Authors:

1.Sourabh Jadhav
Center for P.G. Studies, Visvesvaraya Technological University, Belagavi

2.Sneha Vijay Patil
Center for P.G. Studies, Visvesvaraya Technological University, Belagavi

3. T.C. Thanuja
Center for P.G. Studies, Visvesvaraya Technological University, Belagavi

4. M.P. Shivu
FluxGen Engineering Technology, Bangalore

5. Ganesh Shankar
FluxGen Engineering Technology, Bangalore.

Review:

This paper focuses on monitoring the amount of usage of water in the milk processing unit and generates report of the daily water usage in each processing section. The system keeps track of the purchased water, water in reservoir and overall usage of water in the milk industry. The flow sensors will sense the flow of water in each pipe which ultimately tells the usage of water at one block ideally. The level sensor senses the level of water into the reservoir and tells the availability of water into the reservoir. This water usage data would be sent to the cloud using the Internet of Things (IoT) space. The cloud data is computed and generates pattern of the data input and provides a detailed water consumption chart on the desktop as well as smart phones.Industrialization impacts directly on the development of country. Water is essential for industries.The industrial water usage keeps on rising and in the year 2025 to 2050 it will reach around 8.5 and 10.1 percent of the total freshwater . Use of water in the industries for many purposes such as fabricating, washing, cooling, processing, diluting, or product transportation; take in water into a product etc . Compare to other industries, consumptions of water is high in the food sector. One of the major food industries in India is Dairy industry and India is at first rank in the list of maximum major milk producing nation . Dairy industries need high quality and a reliable supply of water. Large volume of water is used in milk processing unit, mostly in pasteurization, homogenization of fluid milk and the production of dairy products such as butter, cheese, milk powder etc. Most of the milk processing unit use “Clean In Place” (CIP) system which pumps cleaning solutions through all equipments. At modern dairy processing plants, the milk: water ratiois 1:2.5 liters. However, the expected ratio is 1:0.7 liters . Thus, to achieve such a low consumption not only advanced equipments are required, but also very good housekeeping and awareness among both employees and management is also required. Monitoring water use is the regular collection of information about the total amount of water drawn from all sources for any use during a given period. For the water consuming industries it is important to monitoring usage of water for planning for minimize and awareness of water use .

3. Smart Water Monitoring System using IoT.

Published in: International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 Volume: 05 Issue: 10 — Oct 2018.

Author:

Gowthamy J, Chinta Rohith Reddy, Pijush Meher, Saransh Shrivastava, Guddu Kumar.

Review:

Currently drinking water is very prized for all the humans. In recent times water levels are very low and water in the lakes are going down. So its too important to find the solution for water monitoring and control system. IoT is a solution. In recent days, development in computing and electronics technologies have triggered Internet of Things technology. Internet of Things can be describe as the network of electronics devices communicating among them by the help of a controller. The IoT is a collection of devices that work together in order to serve human tasks in a efficient manner. It combine computational power to send data about the environments. These devices can be in form of sensors, appliances, embedded systems, and data analysis microchips. This paper present a low cost water monitoring system, which is a solution for the water wastage and water quality. Microcontrollers and sensors are used for that system. Ultrasonic Sensor is used to measuring water level. The other parameters like pH, TDS, and Turbidity of the water can be calculated using different corresponding sensors. This system use the flow sensor which can measure the water flow and if the necessary quantity of water flow through the pipe then water flow can be stopped automatically. The calculated values from the sensors can be processed by the Microcontrollers and uploaded to the internet through the Wi-Fi module (ESP 8266). Analysis we can do by this process, how much water is used in certain time, in a day or in a month.

Proposed System Architecture/Working

Architecture:

Figure 1: Architecture of IOT Enabled Water Mointering System

Working:

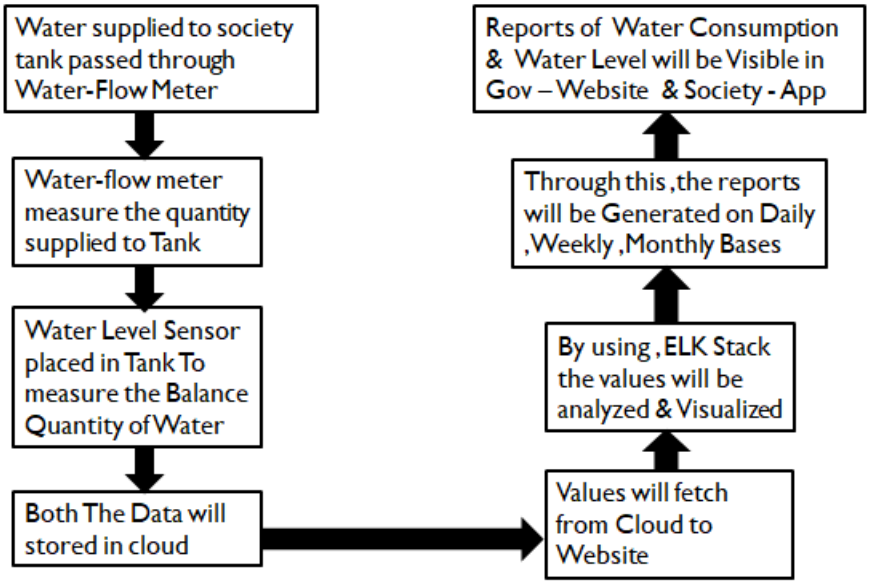

Figure 2: Working of IOT Enabled Water Mointering System

Design and Implementation

Working:

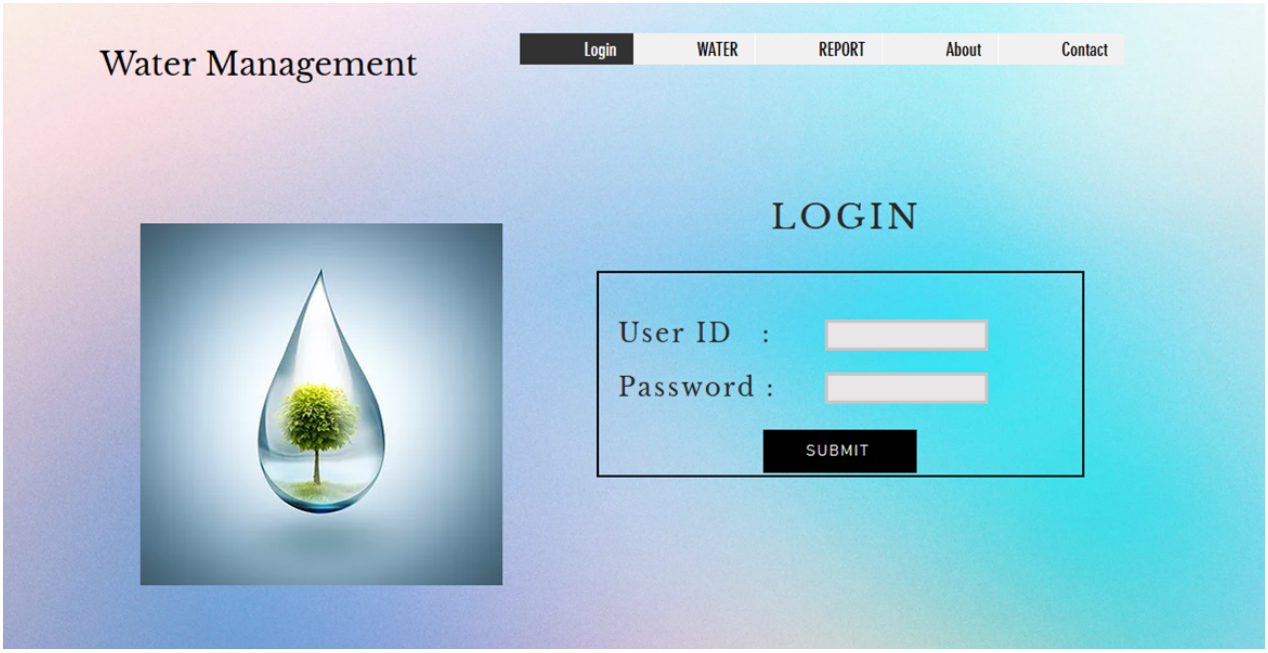

Figure 3: Website for Admin

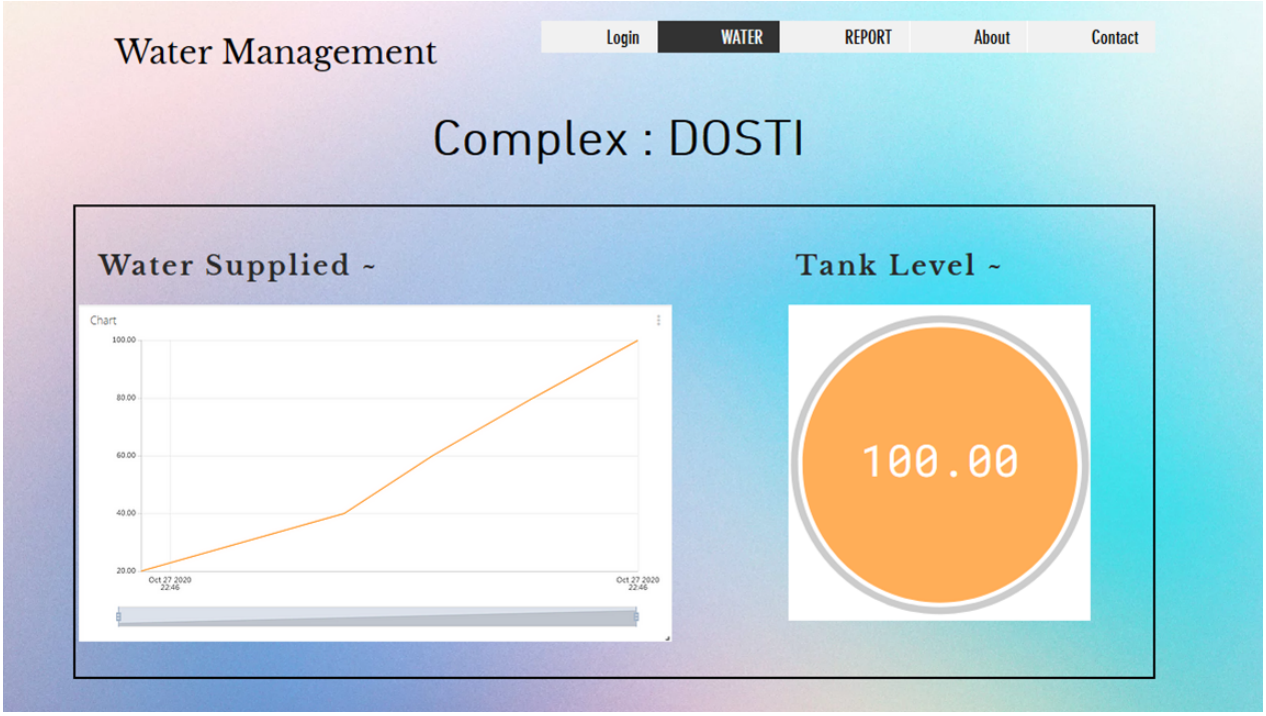

Figure 4: Website for Admin :-Dashboard

Summary

The system realizes the remote intelligent control to the room equipment through the Internet. It improves the operational efficiency and system application flexibility by using the wireless sensor network instead of the traditional wired network, and at the same time reduces the manpower cost. The environment data of the water can transfer reliably, and the control instruction is sent timely. This design realizes remote intelligent monitoring and control of water, and it will be helpful to future building, organization.

References

[1] An iot-based water supply monitoring. 2017 International Conference on Nextgen Electronic Technologies: Silicon to Software (ICNETS2) Maruthi H V,Lakshmi Priya,Lavanya A R,Meda Manideep,Laxmi Jayannavar

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