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Review on IOT Based Smart City Water Supply Management and Runoff Detection System and Continuity Assurance for Water Supply

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ABSTRACT: Water is a very important, vital and limited natural resource for life on earth .Water is used for a variety of purposes. It means that about 150-250 liters of water is used by a person every day in his household activities. . Urban migration and industrialization are considered to be the main cause of water shortages, but apart from these reasons, water leaks are also a major problem facing the water crisis. . According to the Environmental Protection Agency, due to water leaks in infrastructure, approximately 1 trillion liters of clean and waste water is lost annually. Leakage of the structure is considered normal but it is important to understand the causes and methods of prevention. It is therefore important to protect buildings from water damage by using an early leak monitoring system.

I. INTRODUCTION

The development of an appropriate water management system is considered complex and complex due to the limited use of technology and aging infrastructure. In developed countries, high-performance acoustic devices are used to detect the noises and vibrations in the piped pipes and thus leak water leaks while in developing countries, leaks are found only when they are visible above. As a result, much water wasted. To avoid this, a smart water leak monitoring system connected to the Internet of Things (IoT) can be introduced to the world with advanced technology. The Internet of Things is a system, consisting of connected devices, where devices can be anything like an actuator, a sensor, a cell phone and more that can send and receive data through a communication channel. The IoT concept is considered a simple and powerful process. To implement this program, we can develop a smart city concept and costs are reduced. The purpose of this paper is to develop an intelligent and intelligent system, which can make real-time monitoring of leaks in the pipes real-time. This program reduces traffic congestion in a smart city to clean up the environment. To implement this program, we can develop a smart city concept and costs are reduced.

II. IDENTIFYING THE PROBLEM

To protect the economic and social prosperity of India, it is very important that sufficient resources are available to meet the needs of agriculture, industry, and the domestic sector in the years to come. This situation is the result of the environment and human activity. Due to the unknown pressure of the water flowing through the pipe, there is a risk of damage to the pipe and the leakage of the damage section, as it spreads to consumers. Distributors are not easily identified if there are leaks in the resources while delivering.

The project proposes that customers and water supply providers make the best use of the service in terms of priorities and needs by building an Intelligent Controller distribution system. The Smart Controller contains an intelligent communication system that provides means of communication between the customer and the supplier. It has control valve, flow sensor and pH sensor to control the flow of water through the pipe. Managers can be made via IoT. The management office may collect readings at various times that may be used to charge, analyze and approve current and future resources.

III. REVIEW

Global leakage on portable water supply lines exceeds 40% at a cost of ~ US $ 100 billion in revenue and has a significant economic impact. This means that there is a need to develop leaky pipeline monitoring systems to prevent

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water loss. The typical signature of the attractive sound made during a water leak, can be detected by acoustic sensors such as a hydrophone to detect water leaks. In this project a hydrophone based IoT wireless sensor node and a leaky pipeline detection platform was introduced. Leak detection is achieved by recording acoustic signatures from a large number of active hydrophones that are periodically placed in the pipes to take the acoustic signature. Captured acoustic signatures are sent to a central server via a Wi-Fi network for post processing and leak detection [1].

Water is one of the most important resources used in the world. Most people around the world do not have access to clean water that can be used, as only 3% of available clean water can be used. Urban migration and industrial development are the main reasons for the water shortage. Apart from urbanization and industrialization, leaks in water supply pipes are a major problem of water shortages if they are not available in the first place. Leaks can cause serious damage to building structures and also lead to significant loss of water that can be used when supplied by water pipes. In recent years, a number of studies have been conducted to improve advanced water management technology. As a result, a new automated process was introduced, the Internet of Things (IoT) that could connect virtual objects to the Internet. In this paper an attempt is made to demonstrate the use of IoT through a leak detection system and monitoring. This paper emphasis is on how the sensor system can monitor, detect and detect leaks in the plumbing system. This study also aims to develop a limited type of real-time water leak awareness system and verify it through testing. A smart sensor network system consisting of flow sensors and a collection of an active sensor network platform is used to monitor and detect pipe leaks. The flow sensors provided in the pipes collect information related to the discharge of the pipes. Data collected by sensors is processed by a microcontroller- Arduino Uno. Finally, the data used is viewed online using cloud computing [2].

IoT-based Water Monitoring System for Smart Buildings. Water is an important natural resource for sustaining life. Leaks and misuse of this precious resource contribute to water shortages in many parts of the world. Remote monitoring of water use and leak detection, warning users and allowing disruption of water supply can play a significant role in reducing costs and preventing the destruction of this valuable natural resource. The Internet of Things (IoT) paradigm can make a significant contribution to this goal. Subsequently, the paper proposes the development, construction, and validation of a smart system for remote monitoring of water use, leakage and disruption to water distribution. It is characterized by intelligent architecture and can easily be used in other related areas. The proposed solution follows an IoT-based approach and can be easily integrated into an intelligent IoT solution. It has been tested, demonstrated, validated, and ready for use [3].

Water supply is usually provided by underground pipes. Monitoring groundwater pipes is much more difficult than monitoring groundwater pipes in the open. This condition will cause permanent loss if there is a leak in the pipe such as a leak. Pipe leaks can be caused by a number of factors, such as the age of the pipe, improper installation, and natural disasters. Therefore, a solution is needed to find and locate the damaged area where the leak is. The leak location detector will use liquid equipment and kinematics physics based on flow water measurement data obtained using a liquid flow sensor and Arduino UNO as a microcontroller. The results show that the proposed method is effective in detecting a two-meter leak, and is able to determine the leak as close as possible with a flow rate of approximately 10 liters per minute [4].

Water is a vital resource for each individual and its existence. Nowadays, the population of cities is increasing rapidly, thanks to a certain number of people moving from rural to urban areas. To meet the demand for water, its distribution and quality testing, a new IoT (Internet of Things) approach is proposed. The proposed system has various sensors such as flow sensor, pH sensor, water control valve and microcontroller. The water control valve is controlled using a web interface based on the amount of water flow sensor to ensure an equilibrium water supply for each connection (end point) The pH sensor is used to measure water quality. A pressure sensor is used to measure the flow of water and the leakage of a pipe leak is also measured. Water distribution and piped water management can be controlled in this paper [5].

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IV. PROPOSED RESEARCH METHODOLOGY

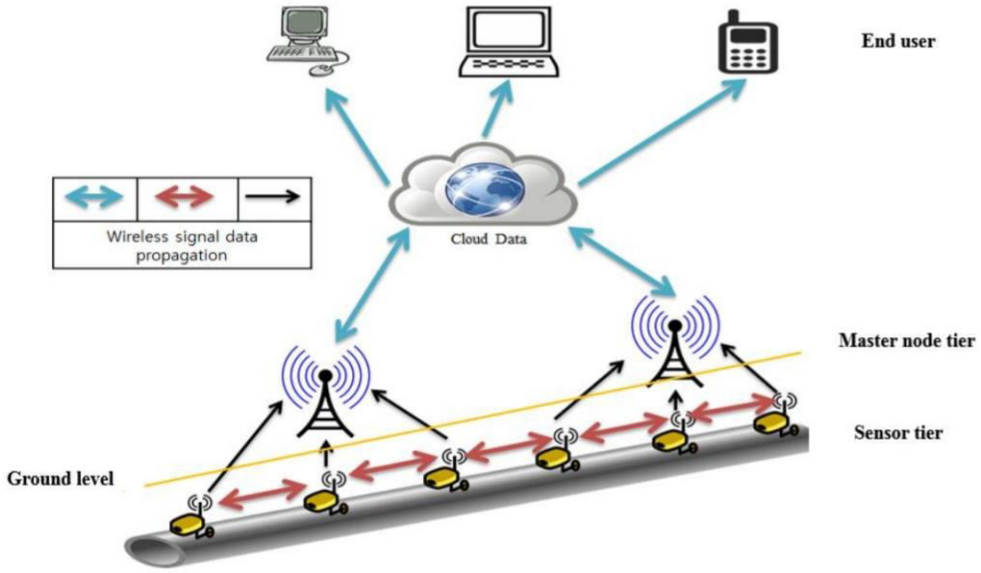

Figure 01: Proposed system

The system mainly consists of sensors of water flow and the provision of hydraulic power supply. The IoT integrated water leak monitoring system is designed to save a single drop of water, which is wasted by leaking pipes in the building. The data used in this study are the level of flow from the sensors provided in the entry and sales phase. Two water flow sensors are used to detect the flow rate. Each water flow sensor is connected to individual pipes. Water pressure sensors will provide water pressure data to the IoT module (Node MCU). On the other hand, the user is connected to the cloud via an MQTT broker .This data is sent to the Node MCU with the ESP8266 Wi-Fi module. So that an authorized person can send a garbage truck only when the dustbin is full. This reduces the total cost of the garbage truck trip and thus reduces the operating costs associated with garbage collection.
Expected Outcome: In this project, a model water monitoring system is introduced using IoT. In this case, sensors are used. Data will be sent to the cloud server via NodeMCU ESP8266. Data collected from all sensors will be used for analytical purposes to find better solutions to water problems. This application will therefore be a major challenge to the real-time monitoring and control system and is used to solve all water-related problems.

V. CONCLUSION

Water is main resources and basic things for all. But, when using water, user does not know how to maintain properly. Suppose, the user does not waste any water, it leads to the possibility of safeguarding the environment. Water usage may vary based on climate change, water sources, uncontrolled water supply that results inadequate water to users, industries with difficult economy planning and higher investment risks. Thus the proposed system has a cutting edge to the smart city environment in providing the needed water supply to each and every house.

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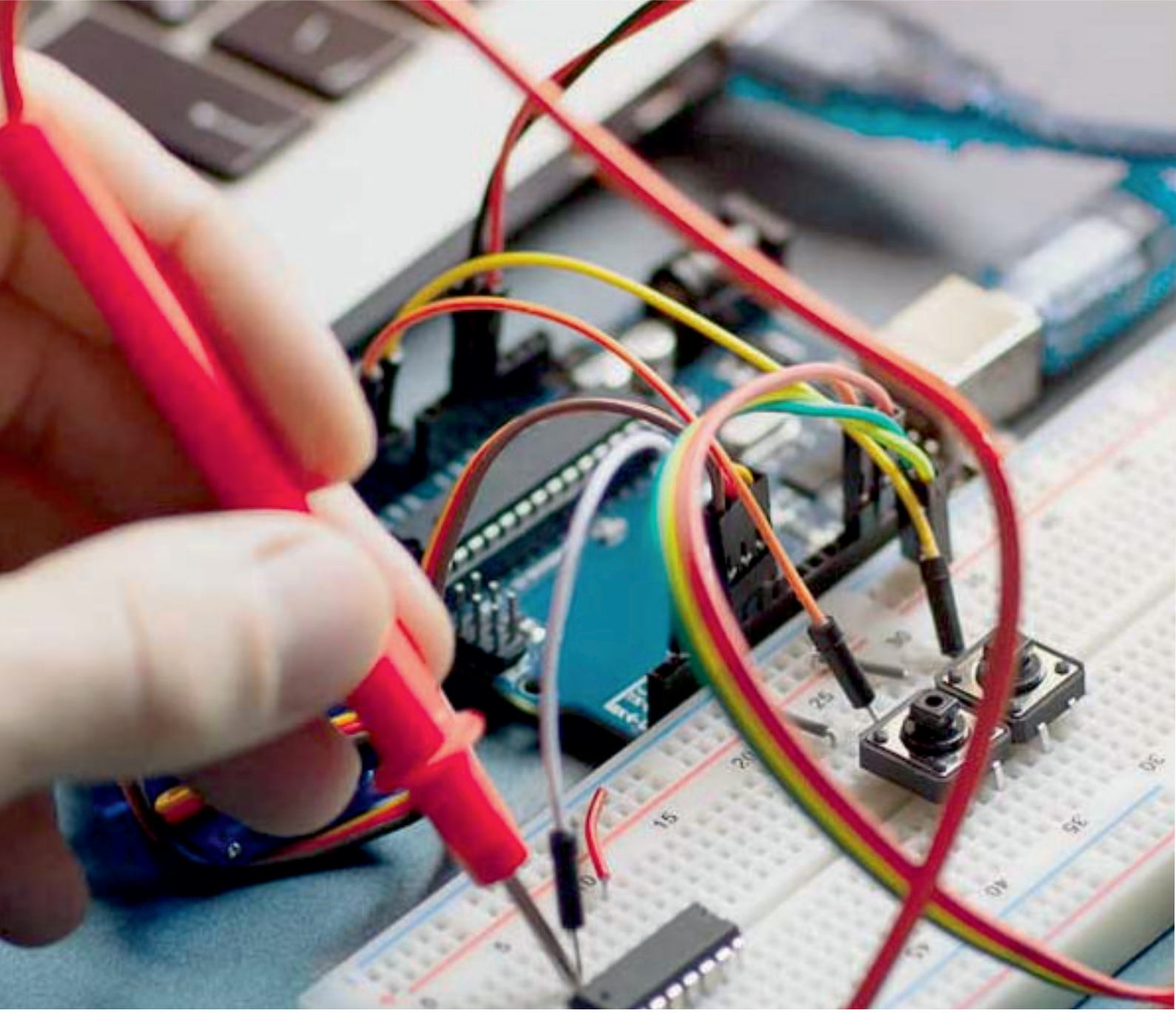

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