Water Level Monitoring System In Real Time Mode Using WSN

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Abstract—**Few years ago, it was not possible to automatic water level monitoring because of that lots of disasters may happen which causes badly affect the on level of water. But automatic water level monitoring is possible with the help of WSN (wireless sensor network) which is an attractive field of environment monitoring. In current system it is not possible to monitor the water level accurately, due to natural disaster water levels increases, and it is hard to detect the actual level and volume of water therefore many problems have to face so to overcome this drawback we have proposed a system which monitors the water level periodically. To help of wireless sensor network and send the notification message to the mobile application user and digital notification board. For that communication we will form zigbee network which has lower energy and real time behavior and it automatically check the water level periodically.**

Keywords: **WSN, Environment monitoring, Zigbee.**

I. INTRODUCTION

Water level monitoring is widely used to avoid the disaster by analysing level of water. It will be used to ensure the safety of peoples who live near the water. Water does not have own shape because of that it can acquire any shape and will cause to damage the area near that. [1]

In previous days man himself had to check the level using handheld devices which is very hard and tedious job for the man. Sensor is an active and automatic device which is very easy to handle, it will do all the work automatically hence human efforts will reduced and accuracy will be maintain. WSN has lots of sensors they sense the level of water and check whether it cross the deadline or not. If it crosses the deadline then shows the error message on the display and it also gives the message to the mobile phone of authorized person. Which is gives the notification to the people that the level of water is in danger.

Let us consider, for sad incidence, Mahad bridge accident from Raigad district in India, where seasonal flooding occurs. So there was an quick need to monitor the water-levels urgently and accurately, but the appropriate Water Department until used field monitoring by people, which is very tedious.

In addition, the safety of the monitoring personnel was threatened by the flood, landslide, and rainfalls, so it was hard to accomplish the water-level measurements. Under such circumstances, a realtime water-level monitoring system could provide synchronized data directly to the concerned respected Department and implements real-time monitoring and provide early warning message of the water-levels of quake lakes. With the help of this we can reduce the no of accident happen by increasing unwanted level of water. And it also saves time and human effort. Due to the use of machines it will shows the more accuracy as compare to old days monitoring.

II. RELATED WORK

Development of proposed system some of the papers are we will refer regarding to GPS that major assets are discussed below: Trusha R. Wagh, [10]. "River Monitoring an Application for Wireless Sensor Network Platform." In this system, it mainly consists of three units: 1. data monitoring, 2. Autonomous monitoring unit and 3. Central processing units. The WSN system is thus suitable for the water containing bodies such as rivers, lakes, dams etc. The system explains the automatic monitoring of the water level and pH value present in a water body. The requirements on a WSN changes very much, because they are used in many application areas, e.g. precision agriculture, environmental monitoring, industrial applications. [1]

Ms T.Deepiga [5] "Smart Water Monitoring System Using Wireless Sensor Network at Home or Office." Water Level Monitoring, is used to avoid overflooding and intimate level of water in the tank. Water level monitoring system implementation makes possible significance in home applications. Water level control systems are widely used for monitoring of liquid levels, silos, and dams, reservoir etc. Any leakage in the pipe can cause financial losses and possible natural damages. Currently, buried pipelines are only monitored at perticular points, which can be spaced several kilometers apart. [2]

S. M. Khaled Reza [9] "Microcontroller Based Automated Water Level Sensing and Controlling, Design and Implementation Issue." water level management and monitoring within the context of electrical conductivity of the water [11]. More specifically, they investigate the microcontroller based water level sensing and controlling in a wired and wireless environment. Water Level management would help in reducing the high power consumption and as well as water overflow. Also, it can indicate the amount of water in the tank including cellular data loggers, satellite [6] data transmission systems for remote water level monitoring system. [3]

III. PROPOSED SYSTEM

A number of software and hardware implementation techniques were used to design and develop the system. A microcontroller, water level sensor and a pair of Raspberry pi and DAS have been used to design the system. The Sensor used to detect the water level, then the data will go to transmit and receive through the Raspberry pi and the whole procedure is then control by this unit.The WSN system is thus suitable for the water source like dam, river, Lake Etc.The system explains the auto monitoring of the water level. The requirements of WSN increases very much, because they are used in a many different application areas sensor generates high frequency sound waves and evaluates the echo from the water level of the reservoirs which is received back by the sensor.[10] At the transmission side, a DAS module has been attached to transmit the sensor data through Raspberry pi . At the receiving side, another Raspberry pi module has been also used to receive the sense data. An integrated Light Emitting Diode (LED) associated with DAS module is also used for real time display of water level sensed data. The Light Emitting Diode (LED) is used to indicate the different level of water and an alarm (beeper) will be active in the case of overflow and empty level.[9][11]
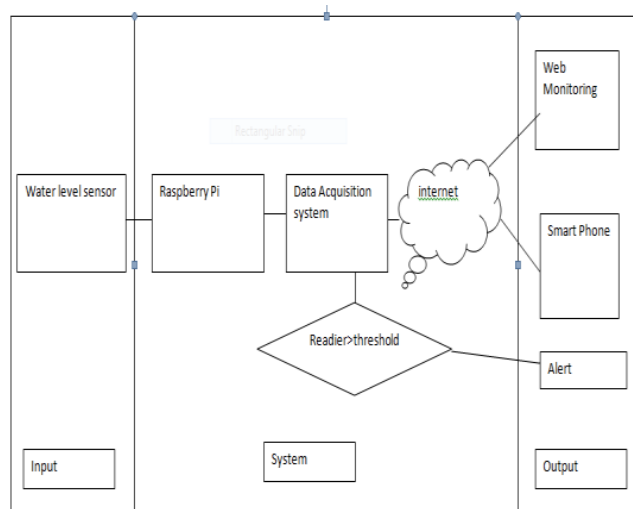

Fig: Architecture of water level monitoring using WSN

Along with alarm it also shows message on smart phone and web portal.

IV. ALGORITHM

Data communication

Algorithm:

Step1: Data acquisition from water level Sensors (WLSi) where i equal to 1,2........5. And WLS could be connected to a Raspberry Pi.

Step2: Data should be taken in fixed time duration. Controlling Raspberry pi should get data via GPIO pins.

Step3: Each of these Pins represents different sensors Activities

Step4: Raspberry Pi should deliver this data via http protocol using GET and Post parameter

Data acquisition and representation

Algorithm:

Step1: Data acquisition server should save the history of data.

Step2: Received Data should be store in buffer and process Stored data to represent in web portal.

Step3: Data could be sending from server via web services.

Step4: Data representation should be in graphical User Interface (GUI) for users viewing and therefore they should have secured access to control raspberry pi. In case of water level indication, notification message could be included in web services.

Remote communication Algorithm:

Step1: Design interactive application software for remote PC and mobile display data in table format or in the graphical user interface for integration of the wireless water level monitoring.

Step2: Display according to availability of local connections and the stored remote connections through the internet. Moreover, Display different data of wireless system by different sort.

Step3: Display the whole network structure for the maintenance user.

V. CONCLUSION

In this study we will develop and evaluate a novel approach for obtaining an energy-efficient resource management in wireless sensor networks. The developed system mainly highlights the functional characteristics with wireless sensor network capacity, sensor hardware compatibility, low cost production and efficient capture. The main aim of this project work is to develop a real-time water level monitoring and warning system for a selected coastal area. The system employs the use of advance sense technology in performing real-time monitoring of water information.

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