

Flood Alert System Using IoT

S. Vandana^{1*}, D. Deepak Raj², B. Rushika³, V. Mano Venkatesh⁴

^{1,2,3,4}Dept of EIE, VNR Vignana Jyothi Institute of Engineering & Technology, Hyderabad, Telangana, India

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Abstract - Majority of Dams are physically observed and are sending information with ordinary modes. Dam professionals need dam parameters information for their examination. In need, citizens are unconscious about dam parameters such as dam water level and entryway status. Due to the entangled and tedious process in a manual framework, a model for Remote Monitoring and Controlling of Dams is recommended that utilizes remote control innovation, connected to the web innovation, to accomplish extraordinary achievement in observing and controlling water levels in overseeing dams. To take care of these issues we are proposing framework which incorporates GUI programming at dam site. This innovation is utilized as a part of the water control and administration frameworks, where numerous specialists utilize manual frameworks for water control and administration.

The purpose of our project is to monitor the level and flow of a dam using IoT in which the real time things are interconnected to the web employing Raspberry-pi.

Key Words: Remote monitoring, GUI, IoT

I. INTRODUCTION

The Internet of Things (IoT) is the network of physical objects—devices, vehicles, buildings and other items—embedded with electronics, software, sensors, and network connectivity that enables these objects to collect and exchange data. Consequently, large numbers of data are being generated, and that data is being processed into useful actions that can “command and control” things to make our lives easier and safer—and to reduce our impact on the environment. The IoT allows you to automate and control the tasks done on a daily basis, avoiding human intervention. Machine-to-machine communication helps in maintaining transparency. It also leads to uniformity in the tasks. It can also maintain the quality of service.

In India, the greater part of the Dams are observed physically. The data sending is additionally finished with customary modes which needs the particular information. Dam scientists require dam parameters information for their exploration Ordinary citizens are not familiar about dam parameters i.e. dam water level, entryway status. Thus they need to confront the staggering impacts of sudden floods. To take care of these issues we are proposing framework which will screen the water level of dam and further alarm the nationals utilizing piezo-ultrasonic sensor and sirens. Essentially our framework is intended to decrease the human mediation in the dam checking and enhance the administration quality for the additional normal conditions, for example, overwhelming downpours, wind, temperature and so forth.

Due to overwhelming precipitation, there is a sudden increment in water level at that point dam experts need to open entryway. In such condition typical individuals are uninformed and they confront sudden calamities like surge. At the point when dam back water increments over a specific level (i.e. dam peril water level) it might make harm firms of agriculturists and in addition different things. The origination abaft by this framework is to build up a web portal which will help in checking dam parameters like water level and Flow inlet of the dam A system based on cloud-based real-time modeling system for supporting decision makers in assessing flood risk is designed using Amazon Web Services (AWS) which automates access and pre-processing of forecast data, execution of a computationally expensive and high-resolution 2D hydrodynamic model was designed. This work presents a preliminary calibration of the model, but additional work is needed to calibrate and evaluate the model across multiple historical flooding events. This calibration simply was not feasible before this work given the long model runtime and this model has only been tested for Hurricane Sandy [1]

A system for mobile android application will be able to help the drivers know where the flooded areas are in order to avoid those routes so that they won't get stranded on a flooded area in case their vehicle can't handle the height of the flood. The proposed system aims not only to help the vehicle drivers, but also be able to help government agencies identify flooded areas for them to come up with a solution for traffic and flood [2]

A new system for flood alert detection system integration in android application was designed to provide real-time information about the increase of drainage nearest and provide an alert notifications system to end user. The objective of this paper is to present a software tool for mobile device applied to the warning system aiming to disseminate real-time information generated by CEOPS thus enabling information and flood warnings to people quickly and easily through text messages. [3]

An IoT approach that known as flood alerts system with Android application to monitor the potential drainage usually occur flooding and share the info in real time to people nearby. Besides that, this system needs to upgrade the user interface design to make more interactive and also user-friendly to end user. Moreover, collection data using advanced sensor is needed to ensure a high accuracy of data measure. [4]

A paper describing the emerging role of the Global Flood Partnership (GFP), a global network of scientists, users, private and public organizations active in global flood risk management which share results from their experiments, developed to predict and monitor where and when flooding is taking place in near real-time and also provide complementary information to support and improve current global flood risk management for large scale catastrophes. [5]

A protective and reliable model which helps in alerting civilians during flash floods is designed. The main reason behind development of flood alert system is the intimation of flood well in advance so that human losses can be controlled by evacuation of people to safe places and also protects valuable properties.[6]

An advanced river flood monitoring, modelling and forecasting approach which extends the traditional approach based on modelling river physical processes by integration of different types of models and technologies such as input data clustering and filtering, digital maps of a relief and riverter- rain, data crowdsourcing, heterogeneous data processing, hydrological models for time scale modelling water flows and geo-simulation, inundation visualisation and duly warning on flooding was introduced.[7]

A Smartphone technology to reduce the time required to alert and to protect population; to enhance information observed by any people at local scales; to built automatic vigilance based on these “citizens-sensors” to improve knowledge on flash floods actually available after damaged events; to use geo-location of transmitter sources to alert people located at 5 km around.[8]

A paper presenting a real time Wireless sensor network based early flood detection and control monitoring system

designed with a function of real time monitoring ,guaranteeing connectivity in low cost. This system collects data as images from CMOS image sensors through wireless sensor nodes which transmit these images to remote monitoring centre via Zigbee network and GSM network. The remote centre will process the data by analyzing it and give necessary alert to clients.[9]

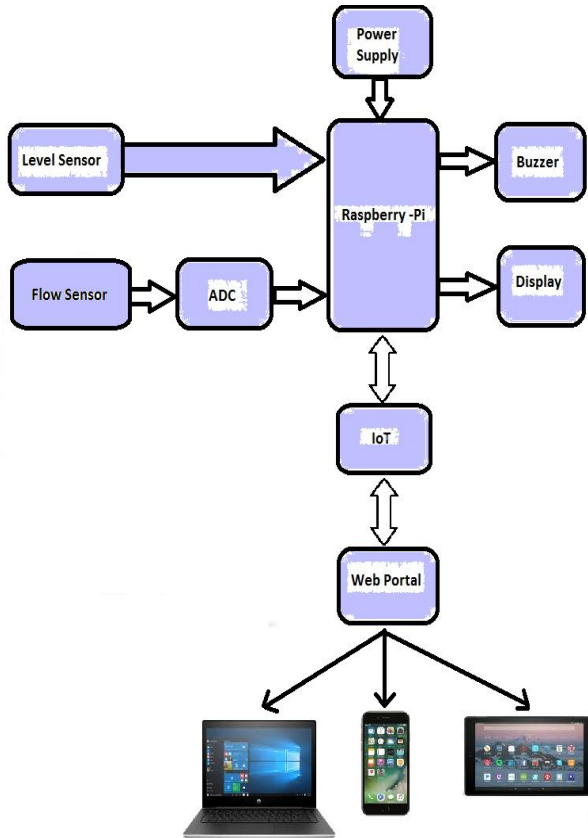
A paper based on the design of ZigBee based wireless sensor network for early flood monitoring and warning system is designed. The Flood alert system ensures to provide the water level information to the public in their mobile application even without network connectivity and help them reach a safer place through stored images.[12]

The paper is organized as follows Section I gives the brief introduction of IoT and the existing work .Section II offers the main objective of the proposed system. Section III and IV discusses about the results and conclusion. Section V gives the future scope of the work.

II. METHODOLOGY

The main objective of the system is to monitor the level and flow of a dam using IoT employing Raspberry-pi. The Raspberry-pi checks the input given to it and uploads the status on the web. By this project each and every variation in the dam is informed to the control room through internet and nearby people or areas can be informed to save lots of lives from Floods

The Level and Flow sensors are placed in the dam to sense the level and flow of the dam and forward the status to the Raspberry-pi. The Raspberry-pi checks the input given to it and uploads the status on the web. By this project each and every variation in the dam is informed to the control room through internet and nearby people or areas can be informed to save lots of lives from Floods. This procedure is executed utilizing The Raspberry Pi 3 Model B in which Cayenne programming is utilized. Cayenne is the world's first intuitive IoT venture manufacturer that engages designers, architects and specialists to rapidly model and offer their associated gadget ventures. A level sensor and a YF-S201 flow sensor is embedded on the Raspberry Pi. With the proposed framework it will enable the client to control and screen the dams remotely which it is sparing a great deal of endeavors, decreasing the cost and furthermore expanding the observing quality as the clients will utilize robotized framework as opposed to utilizing of manual framework.



III. RESULTS

The Cayenne software installed on the mobile or PC will indicate the level and flow values. The flow sensor indicates low, medium and high alert depending on the level of water in the dam and also the flow inlet is measured by the flow sensor. This data can be viewed continuously on the webpage created. The following figures are some instances of the different conditions attained by sensors.

The first input image shows that there is no water input to the dam and so the flow sensor is indicating 0 in the software and the output image shows that the flow of water high into the dam and alert will be send to the concerned personnel.



Figure 3.1.1 Input Image

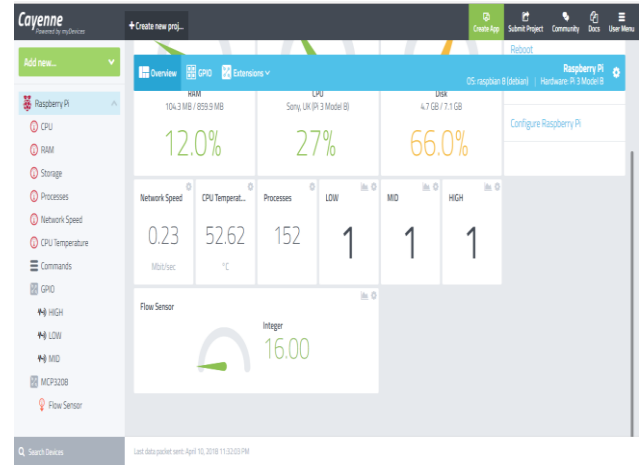


Figure 3.1.2 Output Image

IV. CONCLUSION

Integrating features of all the components used have successfully implemented and tested The project “**FLOOD ALERT SYSTEM USING IoT**” . Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. It will give information gathering framework with the goal that past information will be helpful to Dam expert and in addition Dam scientists. Secondly, it will be useful to warn the public passing in these hazardous areas in advance.

V. FUTURE SCOPE

In future Gate monitoring of Dams can be implemented for better flood management. Email and Alarm ready office for remote expert as water level crosses edge esteem. In future, autopilot mode can likewise be conceivable with the same framework with the goal that manual information passage can be supplanted by an programmed sensor framework and dam robotization is moreover conceivable like programmed entryway opening framework.

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Author's Profile:

S.Vandana did her Bachelors degree in Electronics and Instrumentation Engineering from Sir C.R.Reddy Engineering College, Eluru and obtained her Masters degree in Embedded Systems from Sri Vasavi Engineering College, Tadepalligudem. She has 10 years of teaching experience and presently working as an Assistant Professor in Electronics and Instrumentation Department in VNR VIGNANA JYOTHI Institute of Engineering And Technology at Hyderabad. Her areas of research include Wireless Adhoc Networks and Embedded Systems. She is a life time member in ISOI and she had publications in various International Journals.



D.DEEPAK RAJ did his Bachelor's degree in Electronics and Instrumentation Engineering from VNR Vignana Jyothi Institute of Engineering and Technology. He participated in certificate course on PLC and SCADA, SQL etc. He underwent Industrial Training at Kwaliti photonics industries as a part of Shadow Engineering Program. He has participated in Show and Tell at VNRVJIET



B. RUSHIKA did her Bachelor's degree in Electronics and Instrumentation Engineering from VNR Vignana Jyothi Institute of Engineering and Technology. She participated in certificate course on PLC and SCADA, SQL etc. She underwent Industrial Training at Kwaliti photonics industries as a part of Shadow Engineering Program. She has participated in Show and Tell at VNRVJIET



V. MANO VENKATESH did his Bachelor's degree in Electronics and Instrumentation Engineering from VNR Vignana Jyothi Institute of Engineering and Technology. He participated in certificate course on PLC and SCADA, SQL etc. He underwent Industrial Training at Kwaliti photonics industries as a part of Shadow Engineering Program. He has participated in Show and Tell at VNRVJIET

