IOT BASED FLOOD DETECTION AND ALERTING SYSTEM

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Abstract : Floods are common natural disasters that cause severe devastation of any country. They are commonly caused by precipitation and runoff of rivers, particularly during periods of excessively high rainy season. Due to global warming issues and extreme environmental effects, flood has become a serious problem to the extent of bringing about negative impact to the mankind and infrastructure. To date, sensor network technology has been used in many areas including water level fluctuation. However, efficient flood monitoring and real time notification system still a crucial part because Information Technology enabled applications have not been employed in this sector in a broad way. This research presents a description of an alert generating system for flood detection with a focus on determining the current water level using sensors technology.

Index Terms:

I. INTRODUCTION

An Embedded system is a special-purpose system in which the computer is completely encapsulated by or dedicated to the device or system it controls. Unlikea general-purpose computer, such as a personal computer, an embedded system performs one or a few predefined tasks, usually with very specific requirements. Since the system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product.Personal digital assistants (PDAs) or handheld computers are generally considered embedded devices because of the nature of their hardware design, even though they are more expandable in software terms. With the introduction of the OQO Model 2 with the Windows XP operatingsystem and ports such as a USB port both features usually belong to "general-purpose computers". Physically, embedded systems range from portable devices such as digitalwatches and MP3 players to large stationary installations like traffic lights, factory controllers, or the systems controlling nuclear power plants.In terms of complex embedded systems can range from very simple with a single microcontroller chip, to very complex with multiple units, peripherals and networks mounted inside a large chassis or enclosure.

II. LITERATURE REVIEW

In 2017, Tibin Mathew Thekkil, Dr.N.Prabakaran [prabakaran, n.d., 11] . Advantages :Remote monitoring can identify any environmental threats before it occurs. The mobile clients can examine the data, sight the condition of the monitoring area by browsing, mails & short message service . This system is economic, user friendly programming . It uses low power. Disadvantages : Climatic changes. Network connectivity. In 2019, author Arjun N, Prof. Nikhil Binoy C, Keerthi C, Sreerag S and Ashwin H Nair [nair, n.d., 4] have searched about the water levels at two different places that are Dam and Canal. The accuracy of this model is 78%.

In 2020, Mohamad Nazrin Napiah, Ismail Ahmedy, Mohd Yamani Idna Idris, Md Asri Ngadi [ahmmedy, n.d., 10].Advantages :This system gives a warning to the user in real time regarding the flood disaster and also gives other information.When there is danger, it gives notification to the user with an alarm on the mobile phone.

III. EXISTING METHOD

Researchers and engineers in the world have taken various approaches to the design of a flood management system. since in our case, we use wireless electronic gages, with a wireless communication module capable of transmitting acquired data to our flood management dedicatedserver through a custom data queue service. This not only helps reduce the cost of implementation, but also enhances maintainability due to the low power requirement of on-field sensor module. Through, this approach allows the sensors to be deployed at any desired location,the system developed in this project has low power requirements, is more maintainable, and is extremely low-cost. Our system does not follow a multi-tiered approach which should lead to lower latency, and requires lesser resources.

fIg: Architecture of existing system

IV. PROPOSED SYSTEM

In the proposed system we are using Ultrasonic senor, flow sensor, DHT11, and raindrop sensor to measure the parameters like Level of water, Temperature of the environment, flow of the water, Atmospheric pressure and also rain intensity. If any of the value exceeded message will besend to authorities using GSM and Buzzer alerts will be given along with LED's glowing.
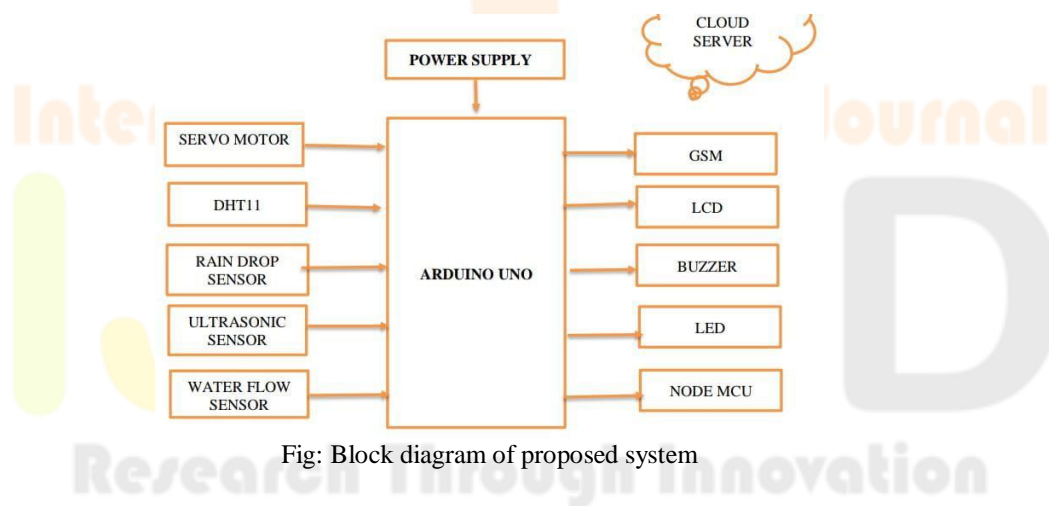

Fig: Block diagram of proposed system
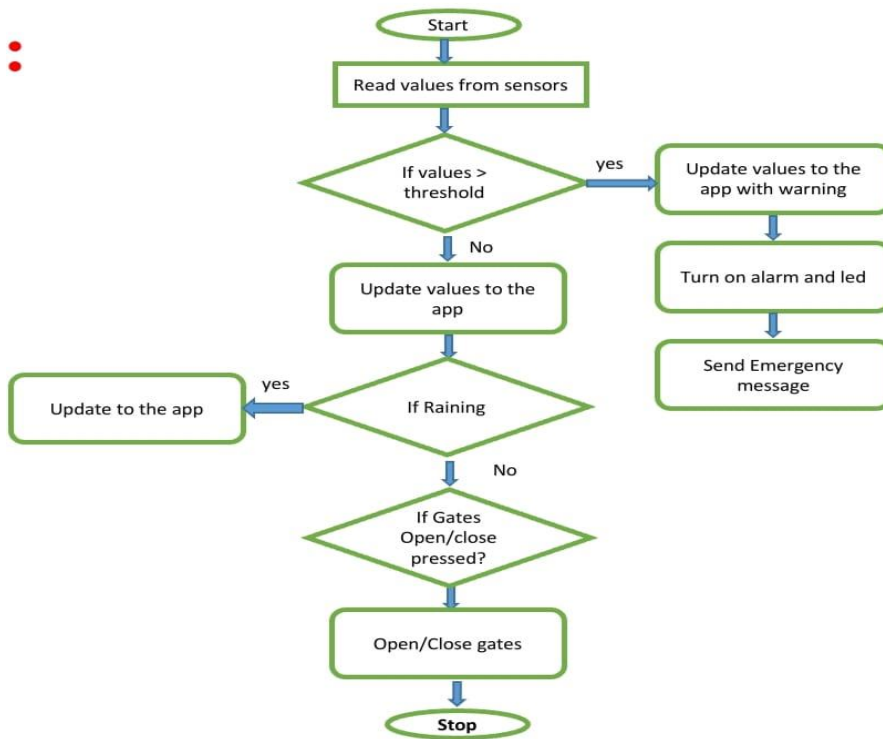
Fig: Flowchart of proposed system
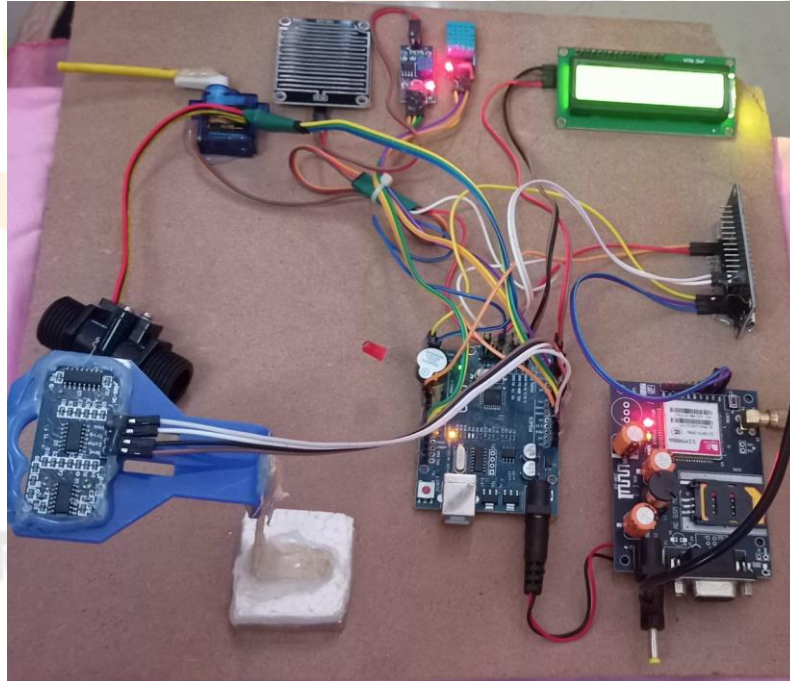
V. HARDWARE RESULTS

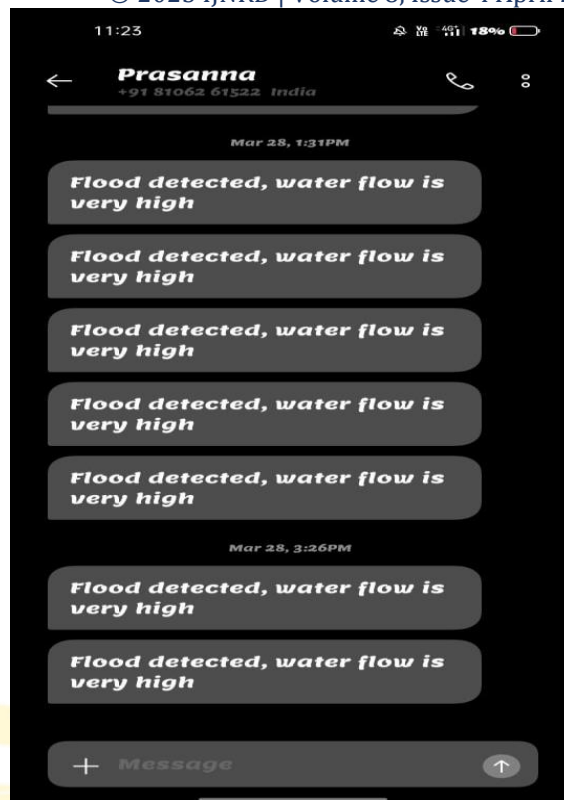Fig: 5.1.Hardware architecture of flood detectiom system

Fig: 5.2. Alert messages through GSM module
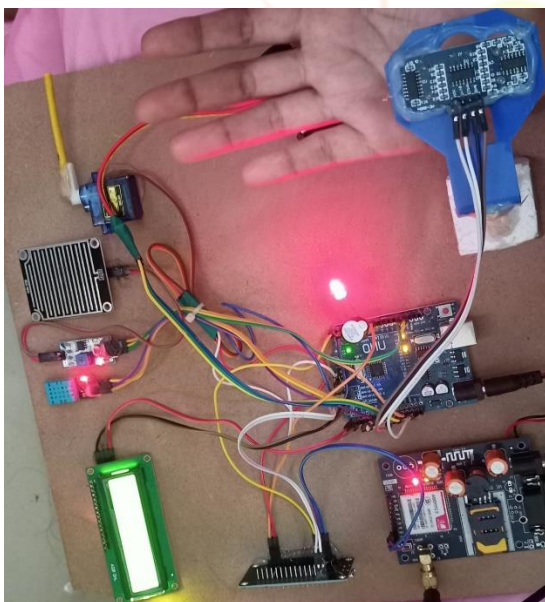

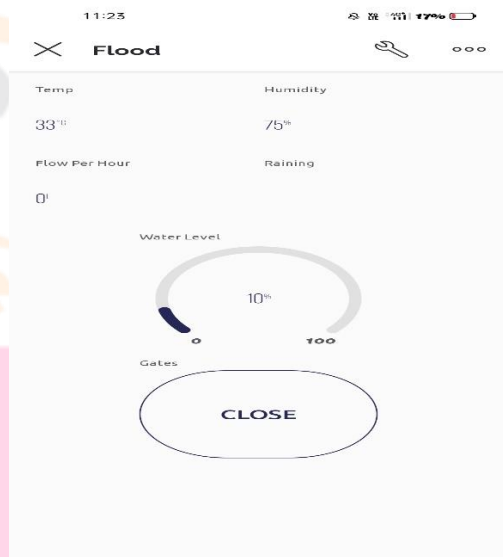Fig: 5.3. Implementation of flood detection

Fig: 5.4. Displaying of results in Blynk App

VI. CONCLUSION

Nowadays the Internet Of things (IoT) is broadly used in worldwide, this system will display the data of the water level measured on lcd display. This project can be very helpful to the Meteorological Department to continuously monitor the dams and river beds water level and control dam gates using mobile application. With this project it can save many people lives by giving alerts when the water level crosses beyond the limit. This project is very cost-effective, flexible and productive in areas where flood conditions happens everytime.

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