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IOT BASED FLOOD ALERTING SYSTEM

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Abstract— Automatic flood alert system is used for alerting the users register to the system about the flood occurred in the region. The system consist of three divisions. 1. Sensor node: Sensor node will receive the data from the flood data. By using the flood data received by the sensor, it alerts the sink. 2. Sink is another category: Sink node receives the data from the flood sensor node by using the wireless sensor. This wireless sensor transmit the data from the sensor to the sink node. Sink will receive the data and sink will intern transmit the data to the server. In the sink, it consist of a wireless device which will receive the data that is coming from the sensor node and then it will process and send the data to the server by using the wireless device. 3. Server: Server will have all the database that is who are all register to the system accordingly wherever the flood occurs it will intimate the data to the all the users in the region. The node consist of a sensor, microcontroller and wireless device. Sensor receives the flood data and microcontroller process the data and wireless device will transmit the data to the sink. Sink will have the two wireless device which will receive the data from the sensor and transmit the data to the server. Server will have the one wireless device which will receive the data from different sink and that data is fed to the cloud. By using this data the server will send the SMS to the corresponding users who are all register to the system from the particular region by using the GSM modem. The GSM modem connected to the server. By using the GSM modem the SMS is send to the registered users corresponding to the data received from the node via sink to the server.

Keywords— Keywords – Hydrostatic pressure level sensor , Flood Detection, GSM Module, ESP 8266 controller, arduino microcontroller, RF module.

I. INTRODUCTION

Flood occurs when water overflows from the river, lake or from heavy rainfall and it can happen at any time of the year. Flooding can be very dangerous, when floods happen in an area that people live, the water carries along objects like houses, cars, furniture and even people. It can wipe away property, trees and many more heavy items.

A. Causes Of Flood:

A flood occurs when a river bursts its banks and the water spills onto the floodplain. Flooding tends to be caused by heavy rain: the faster the rain water reaches the river channel, the more likely it is to flood.

B. Incidents:

Heavy rains in Nov-Dec 2015 resulted in flooding of Adyar, Cooum rivers in Chennai , TamilNadu resulting in financial loss and human lives. Following heavy rain in July 2017, Gujarat state of India was affected by the severe flood resulting in more than 200 deaths.

II. LITERATURE REVIEW

[1] "A location-based incentive mechanism for participatory sensing systems with budget constraints" .Year : 2012 Publish: IEEE Author: L. G. Jaimes, I. J. Vergara-Laurens, and M. A. Labrador. In this system, they use Greedy incentive Algorithm to reduces the collection of unnecessary (redundant) data, while maintaining the same number of active users in the system and spending the same budget. [2] "Spread, a crowd sensing incentive mechanism to acquire better representative samples" Year : 2014 Publish: IEEE Author: L. G. Jaimes, I. J. Vergara-Laurens, and A. Chakeri. In this system, they use incentive assignment mechanism for crowd sensing variable phenomena (e.g. Temperature) that balances the goal of maximizing coverage of the area of interest while at the same time staying within a budget constraint. [3] "A simple scheme for pseudo clustering algorithm for cross layer intrusion detection in manet," Year: 2015 Publish: IEEE Author: A. Amouri, L. G. Jaimes, R. Manthena, S.D.Morgera, and I. J. Vergara- Laurens**.** In this system, they use pseudo clustering algorithm and twofold approach for energy efficient and has a high degree of intrusion detection with low overhead.

III. THE PROPOSED WORK

[1] Collecting data from sensor node to sink node :

The liquid level sensor detects the flood level which is in one user's parking lot before entering the flood into the

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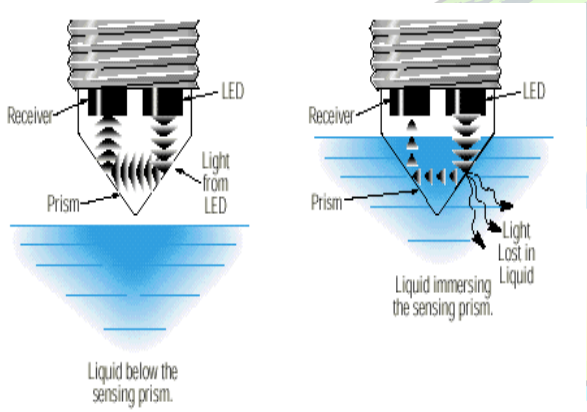
street. After receiving the data into microcontroller node, which is converted into digital data. This user node is placed on balcony of client's home. Using Microcontroller, RF transmitter will send that data to the RF (Radio Frequency) receiver of sink node microcontroller.

Liquid Level Sensor



[2] Send data about flood to system through USB to TTL.

When the data are transmitted into the sink microcontroller, and then RF transmitter send that data to the system via USB cable to Time to Live (TTL) connected the system. Then the flood data is easy to access for further process. This System act as Server(which alert on sound) by master node

[3] Send email alert to user's phone:

The system server will automatically generate email message (which is stored in cloud). Using internet via router, which will send alert user email (notification) through SMTP (Simple Mail Transfer Protocol) to the registered user formatted into the system. And also we use GSM (Global System for Mobile Communication) by calling to alerting the registered user before over flooded.

[4] QT Software Interface:

The Time to Live connect to QT software interface which is the faster, smarter way to create innovative devices and applications for multiple screens. To visualize the data transmitting and receiving in QT multi-platform applications or using QT creator. The sensor nodes are responsible of measuring
flood levels and reporting it to a sink node. The main component for these sensor nodes is the Arduino UNO R3 micro controller unit (MCU). It collects and converts the analog data collected from a Milone eTape liquid level sensor. This sensor is a hydrostatic pressure level sensor; it changes its resistive output depending on the external pressure applied by the liquid. Having a solid state sensor allows us to have a smaller node footprint. When the MCU has the data converted, it sends the gathered data to a sink node using a 2.4GHzXBee Series 1 module (XB24-DMWIT-250). After transmission of the data, the node will go to sleep for a set amount of time.

IV. THE EXISTANCE WORK

The Existing System consists on two main components: a Wireless Sensor Network (WSN) and a Server. The wireless sensor network will be used to constantly monitor the flood levels in the area of interest while the server will receive, analyze, store the data, and sends the alerts when level thresholds are reached. The sensor network defines two types of nodes: Sensor Nodes and the Sink node. Both node types will be powered and charged using a 10W Polycrystalline solar panel with a 1200mAhrechargeable battery pack. They also will be housed in a four inch diameter, five feet tall PVC pipe.

A. Sensor Node

The sensor nodes are responsible of measuring
flood levels and reporting it to a sink node. The main component for these sensor nodes is the Arduino UNO R3 micro controller unit (MCU). It collects and converts the analog data collected from a Milone eTape liquid level sensor. This sensor is a hydrostatic pressure level sensor; it changes its resistive output depending on the external pressure applied by the liquid. Having a solid state sensor allows us to have a smaller node footprint. When the MCU has the data converted, it sends the gathered data to a sink node using a 2.4GHzXBee Series 1 module (XB24-DMWIT-250). After transmission of the data, the node will go to sleep for a set amount of time.

B. Sink Node

The sink node will gather all data from the sensor nodes and send it to the server for processing via GSM. The main component in
the sink node is the Arduino MEGA 2560. It uses the same XBee module (XB24-DMWIT-250) as the sensor nodes for communication with the WSN. Once it has aggregated the sensed data it sends said data via internet using a SIMCOM

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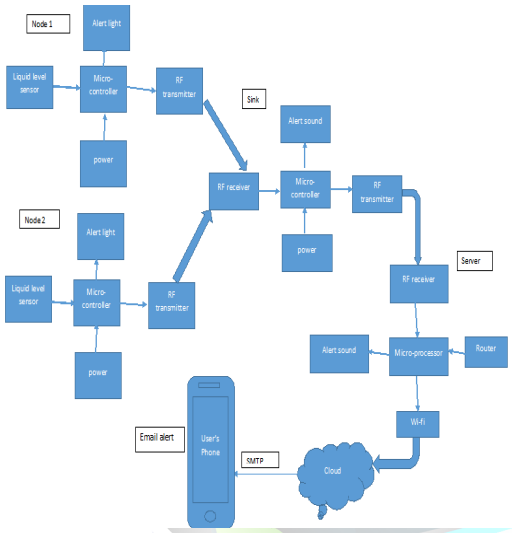
SIM900 GSM Module. Then sink node will also provide sleep coordination for the rest of the WSN.

C. Server: The systems server will be responsible for the processing of the acquired data sent by the sink nodes. Our design allows the server to manage multiple networks located in different locations. This server will keep and updated database with the registered users and the flood data. After it has processed all of the data it will send a text message notification to the registered users in the area when the flood level threshold has been reached. To have a clear understanding on the servers actions upon receiving the data from the network.

In order to register for the service, the users will send a text message with the parking area to the email belonging to the lots network as can be seen on Figure 5. Registered users will be kept on the database for a total of 12 hours before being removed from the alert service. The server will send the text message alerts (SMS) to users via email; letting it be compatible with any phone with an SMS service, not just smartphones. The server will also make the flood data available online.



ARCHITECTURE FOR FLOOD ALERT SYSTEM :

IV CONCLUSION

This paper presents user alert before the over flooded using GSM through Calling alert. Using the 9v alkaline battery (which is adaptable for 3week if it is charged once) for the reduced power consumption. The new ATMEL 328 is used as microcontroller for transmitting and receiving data between user node and master node (sink). The main concepts of project is to visualize the data transmission between sensor -sink node-server.

REFERENCES

[1] E. Kuantama, L. Setyawan, and J. Darma, "Early flood alerts using short message service (sms)," in 2012 International Conference on System Engineering and Technology (ICSET), (Bandung), pp. 1–5, IEEE, 09 2012.

[2] M. S. Baharum, R. A. Awang, and N. H. Baba, "Flood monitoring System (myfms)," in 2011 IEEE International Conference on System Engineering and Technology (ICSET), (Shah Alam), pp. 204–208, IEEE, 06 2011.

[3] P. B. Bedient, A. W. Holder, and B. E. Vieux, "A radar-based floodalert system (fas) designed for houston, texas," in Ninth International Conference on Urban Drainage (9ICUD), 2002.

[4] L. S. T. Molina, E. W. Harmsen, and S. Cruz-Pol, "Flood alert system using rainfall forecast data in western puerto rico," in 2013 IEEE International Geoscience and Remote Sensing Symposium - IGARSS, (Melbourne), pp. 574–577, IEEE, 07 2013.

[5] C. E. Perkins and E. M. Royer, "Ad-hoc on-demand distance vector routing," tech. rep., 2003.

[6] "Wireless mesh networking white paper - zigbee vs. digimesh," tech. rep., 2015.

[7] V. Khedekar, "A review on xbee technology," International Journal of Emerging Technologies in Engineering Research, vol. 4, no. 4, 2016.

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Available online at www.ijartet.com

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[8] V. Mayalarp, N. Limpaswadpaisarn, T. Poombansao, and S. Kittipiyakul, "Wireless mesh networking with xbee," ResearchGate, 10 2014.

[9] R. Faludi, Building Wireless Sensor Networks - A Practical Guide to the ZigBee Networking Protocol. United States: O'Reilly, 1st ed., 01 2012.

[10] S. Saxena, S. Mishra, A. Kumar, and S. Chauhan, "Efficient power utilization techniques for wireless sensor networks – a survey," International Journal on Computer Science and Engineering

