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A LOCATION-AIDED FLOODING MECHANISM IN COMMUNITY BASED IOT NETWORKS

Prof. Ramya S Pure[1], Vanishree Chikurte[2], Samprita[3],Soumya Gangu[4], Shiwali[5]

[1,2,3,4,5]Dept Of Computer Science and Engineering,

Guru Nanak Dev Engineering College,Bidar, Karnataka, India

ABSTRACT :

Floods strike without warning. Every year thousands of people die because of this. The result of damage can be minimized by alerting the people about the occurrence of natural calamities i.e., like floods. For this purpose, we use advanced technologies like GSM (Global System for Mobile communication technology).

Here's a GSM-based seismic alert system that could warn before an floodoccurs. The resulting damage can be minimized and lives can be saved if people living in the flood occurred area are already prepared to survive the strike. This requires a warning before strong ground motion from the arrival of flood.

The warning signal from the flood epicenter can be transmitted to different places using satellite communication network, fiber-optics network, pager service, Cell phone services or a combination of these. The satellite-based network is ideal when an alert system has to cover a large country like India. For flood-prone states in india, a seismic alert system using the global system for mobile communication network spread throughout the state is proposed here. This system does not try to find the epicenter or fault line caused by the natural calamities. It simply monitors the water vibrations and generates alert signal when the level of water vibrations crosses a threshold.

In this project we can alert the people who live in flood prone area by using MEMS technology. In this we have two sections. One is Node section and another section is monitor section. When the flood is going to occur, MEMS observe the motion and that values are given to microcontroller. This information is transmitted to the monitor section using Zigbee. At monitor section Zigbee receives this data and that is given to microcontroller. If the motion values increases from its threshold level then automatically buzzer will on at the monitor section.

INTRODUCTION

Flooding is a suitable strategy to meet the previous demand of delivering sensing data in the local community. In a naive implementation of flooding , every wireless node simply broadcasts a newly received data packet in a multi-hop way and the packet will reach all nodes in the area (assuming that there is no separation). Therefore, it is easy to be implemented in resource-constrained social infrastructures like vending machines or smart meters and is also adaptive to their deployment topology. However, it has been realized that this kind of simple flooding mechanism suffers from a phenomenon named "flooding storm" , i.e., the duplicate packet transmissions occur collisions in the wireless medium and can lead to serious network congestions. Consequently, this mechanism proposes an effective flooding mechanism to disseminate local sensing data in the community-based IoT networks.

Evaluation results have validated that the proposed flooding mechanism not only improves the success ratio of data delivery, but also reduces the delay of data delivery significantly. This proposes a location-aided flooding mechanism to disseminate data in community-based IoT networks.

Inspired by two heuristics obtained from the

analysis of optimal flooding problem, the proposed mechanism allows wireless nodes to cancel a duplicate packet transmission in a distributed way when all of their neighbors have received that packet in advance. Extensive evaluations have been done in

two different scenarios, i.e., a random uniform distribution of wireless nodes and a real distribution of wireless nodes in the Sumida ward of Tokyo. It has been validated that the proposed mechanism is not only able to increase the success ratio of data delivery, but also capable of reducing the delay of data delivery significantly, e.g., in the best case, the proposed mechanism improves the success ratio of conventional mechanisms by 47.3% and reduces the delivery delay by 92.0%.

SYSTEM METHOD

EXISTING METHOD:

- The floods are monitoredto detect and alert the system i.e short distance communication based detecting.
- The floods are detected on the basis of water level, the data then is send to the zigbee transmitter to near base section or monitoring section.
- This system is usedfor the data in short distance transmission,when flood is recognized people can be moved to safe place.

PROPOSED METHOD:

- The method proposes a location-aided flooding mechanism to disseminate data in community-based IoT networks.
- The proposed mechanism allows wireless nodes to cancel a duplicate packet transmission in a distributed way in the Zigbee communication and IOT.
- The different areasare placed with the sensor within the water i.e river etc to detect and monitor floods.

BLOCK DAIGRAM DESCRPTION

Power Supply: This section is meant for supplying Power to all the sections mentioned above.Basically it consists of a Transformer to step down the 230V ac to 9V ac followed by diodes. Here diodes are used to rectify the ac to dc. After rectification the obtained rippled dc is filtered using a capacitor Filter. A positive voltage regulator is used to regulate the obtained dc voltage.

Microcontroller: This section forms the control unit of the whole project.Basically it consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written

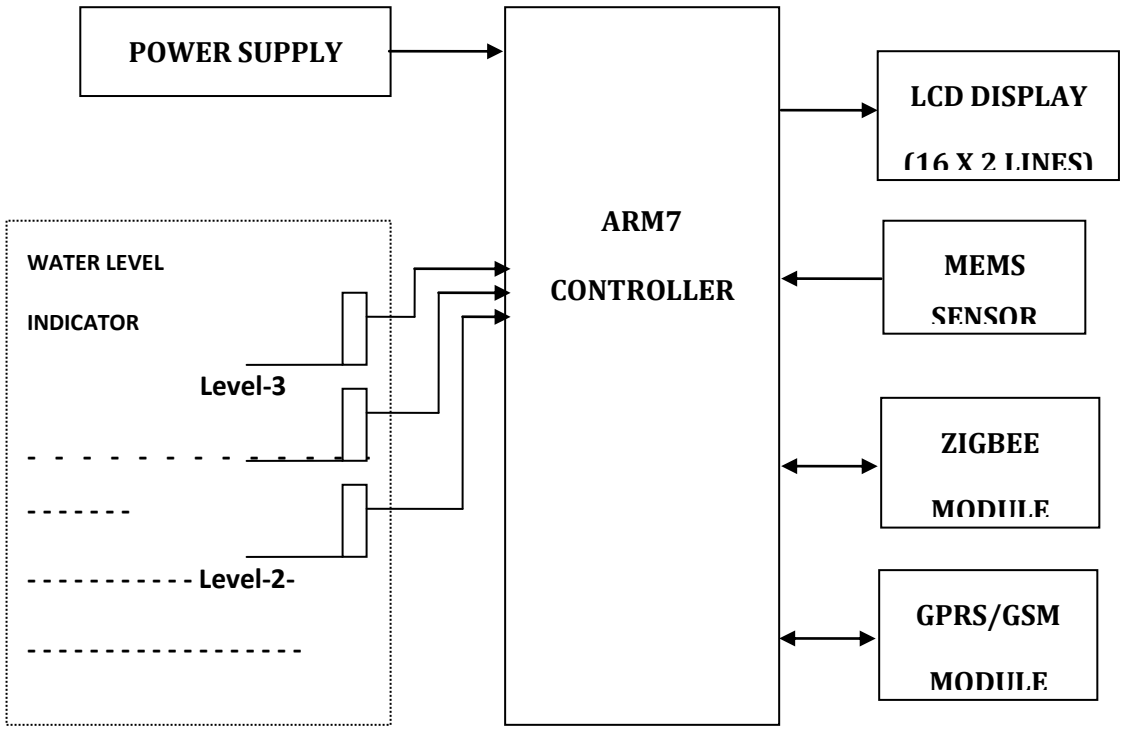
LCD Display: This section is basically meant to show up the status of the project. This project makes use of Liquid Crystal Display to display / prompt for necessary information

ZIGBEE: Zigbee is new wireless technology guided by IEEE 802.15.4 Personal Area Network standard. It is primarily designed for the wide ranging controlling applications and to replace the existing non-standard technologies. It currently operates in 868MHz band at a data rate of 20Kbps in Europe, 914MHz band at 40kbps in USA, and the 2.4GHz ISM bands Worldwide at a maximum data-rate of 250kbps.

Buzzer Section: This section consists of a Buzzer. The buzzer is used to alert / indicate the completion of process. It is sometimes used to indicate the start of the

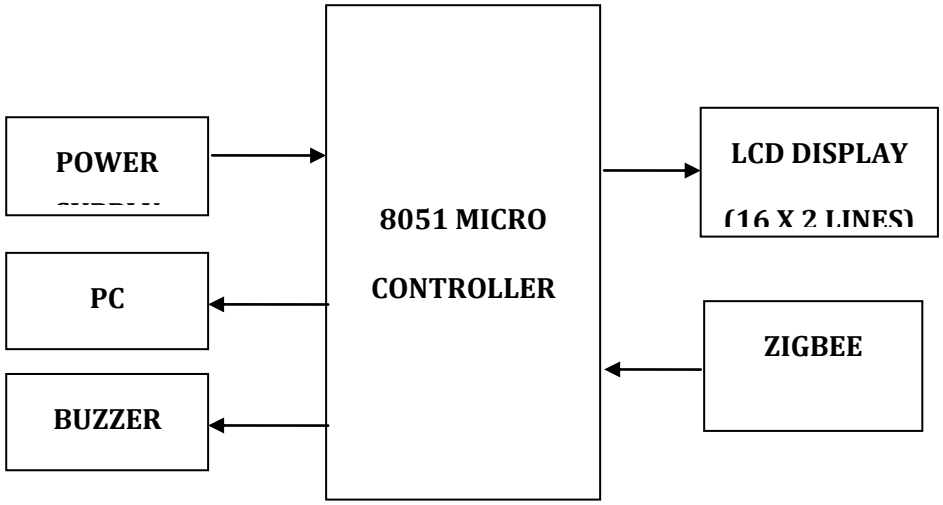
BLOCK DIAGRAM

- **NODE SECTION:**



Node section

- **FORECAST CENTER:**



Forecast section or Monitor section

GPRS: This section consists of a GPRS modem. The modem will communicate with microcontroller using serial communication. The modem is interfaced to microcontroller using MAX 232, a serial driver. The Global Packet Radio Service is a TDMA based digital wireless network technology that is used for connecting directly to internet. GPRS module will help us to post data in the web page directly.

GSM modem Section: This section consists of a GSM modem. The modem will communicate with microcontroller using serial communication. The

modem is interfaced to microcontroller using MAX 232, a serial driver. The Global System for Mobile Communications is a TDMA based digital wireless network technology that is used for communication between the cellular devices. GSM phones make use of a SIM card to identify the user's account.

GPS modem:A GPS modem is used to get the signals and receive the signals from the satellites. In this project, GPS modem get the signals from the satellites and those are given to the microcontroller. The signals may be in the form of the coordinates; these are represented in form of the latitudes, longitudes and altitudes.

MEMS: Accelerometers are acceleration sensors. An inertial mass suspended by springs is acted upon by acceleration forces that cause the mass to be deflected from its initial position. This deflection is converted to an electrical signal, which appears at the sensor output. The application of MEMS technology to accelerometers is a relatively new development.

ADVANTAGES

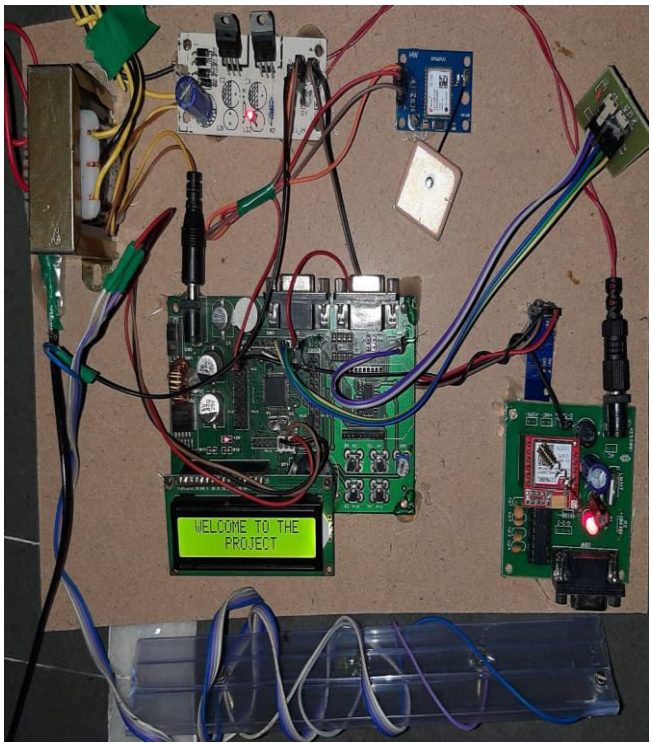
- Low cost, easy to implement.
- Reduces man power.
- More accuracy.

DISADVANTAGES

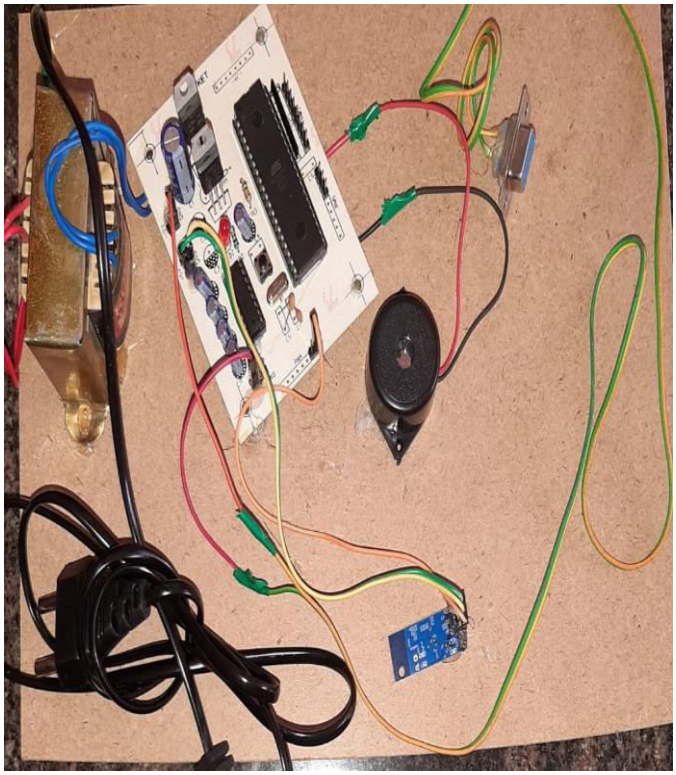
- It ruins the crops and wash away the soil.
- It affects the Physical reliefs of the place.
- Cause human loss and hamper the property.

IMPLIMENTATION:

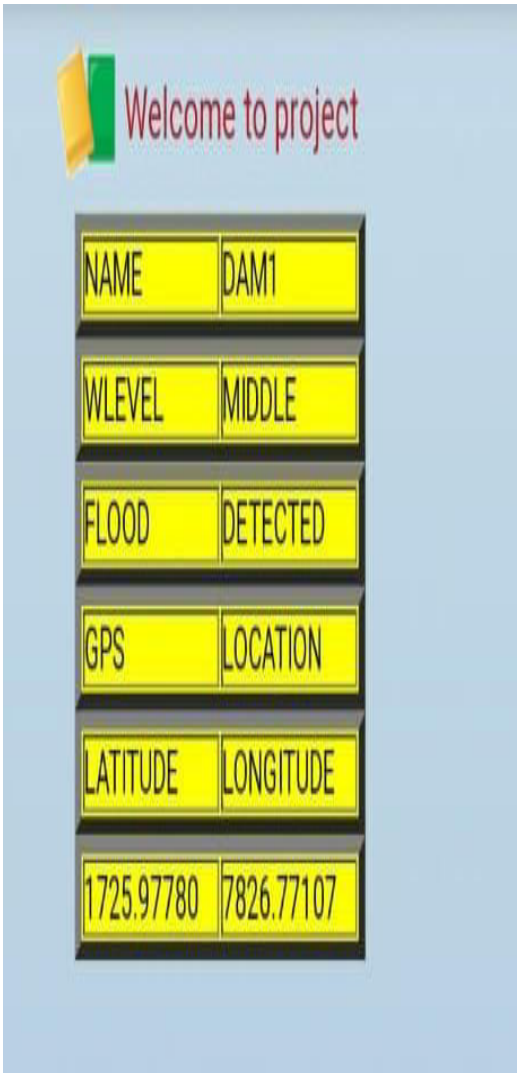
Node Section:



Monitor Section:



OUTPUT



CONCLUSION

The project "A LOCATION-AIDED FLOODING MECHANISM IN COMMUNITY-BASED IOT NETWORKS" has been successfully designed and tested. Integrating features of all the hardware components used have developed it. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Secondly, using highly advanced IC's and with the help of growing technology the project has been successfully implemented.

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