

IoT based Monitoring System for Advertising Board

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Abstract - With the increase of enormous outdoor advertising boards, the problems of public safety raised by the collapse of out of doors advertising boards have attracted great public concern. During this paper, a wireless sensor network (WSN) monitoring system is intended for the structural health monitoring (SHM) of enormous outdoor advertising boards. By using WSN technology, this method can judge the safety of the outdoor advertising boards and provides early warnings when the boards are being at risk. The monitoring system consists of two subsystems, one is that the WSN structure system supported Zig-Bee wireless sensor nodes with a 6-axis MEMS motion sensor integrated to capture the movement information, and therefore the other is that the monitoring center system controlled by ARM microcontroller for processing and long-distance wireless communications with a foreign server through a GPRS module. The simulation model of the outdoor advertising board is additionally built to research the deformed shape of the advertising board structure under wind load, and also the early warning judgment standard is proposed. The performance of the monitoring system is evaluated through several experiments under the condition of a laboratory in several aspects of the comparison experiments. With the rise of enormous outdoor advertising boards, the problems of public safety raised by the collapse of outside advertising boards have attracted great public concern. During this paper, a wireless sensor network (WSN) monitoring system is meant for the structural health monitoring (SHM) of enormous outdoor advertising boards. By using WSN technology, this technique can judge the safety of the outdoor advertising boards and provides early warnings when the boards are being in peril. The monitoring system consists of two subsystems, one is that the WSN structure system supported Zig-Bee wireless sensor nodes with a 6-axis MEMS motion sensor integrated to capture the movement information, and therefore the other is that the monitoring center system controlled by ARM microcontroller for processing and long-distance wireless communications with a foreign server through a GPRS module. The simulation model of the outdoor advertising board is additionally built to research the deformed shape of the advertising board structure under wind load, and therefore the early warning judgment standard is proposed. The performance of the monitoring system is evaluated through several experiments under the condition of a laboratory in several aspects of the comparison experiments.

Keywords: Software-Defined Networking, Internet of Things, Quality-of-Service, Routing.

1. INTRODUCTION

Now a day, large outdoor advertising boards are widespread within the prosperous area of a city, or along the most road and also the highway. These outdoor advertising boards are at risk of tilt or maybe collapse as time goes on because of their large size and long exposure within the complex outdoor environment (such as heavy rain, strong wind, earthquake, and other factors), thereby posing a heavy threat to the general public safety. Therefore, the relevant departments have to be compelled to track, in real-time, the condition of out of doors advertising boards. However, at the present, monitoring outdoor advertising boards mainly relies on the common manual inspection and video surveillance administered by the relevant government departments. It's evident that the lean risk can't be effectively identified at the sooner stage only by these visual inspections and straightforward physical measurements.

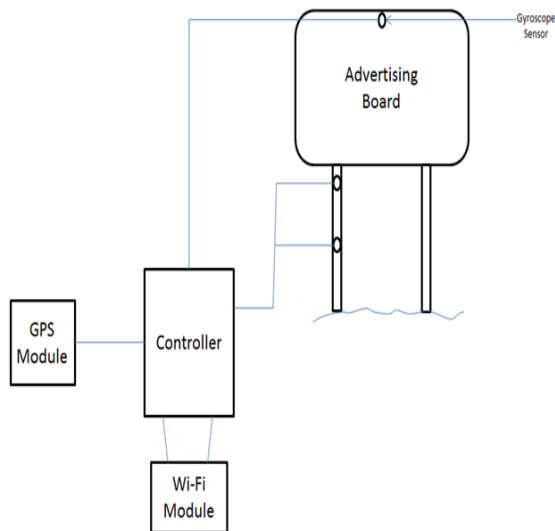
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2. PROPOSED SYSTEM

In this system, we try to search out the condition of the board. during this system, we are using Arduino UNO and Wi-Fi Module to create it IoT. During this system, we also are using the Gyroscope Sensor to sense the change in angle. At the side of that, we also are able to find the condition of iron rod with the assistance of electrical Conductivity. We passing the electrical current through an iron rod, in order that depends on current conductivity we are able to measure either it's forged iron or Rust Iron. The simulation model of the outdoor advertising board is additionally built to investigate the deformed shape of the advertising board structure under wind load, and also the early warning judgment standard is proposed. The performance of the monitoring system is evaluated through several experiments under the condition of a laboratory in numerous aspects of the comparison experiments.

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3. OBJECTIVE AND MOTIVATION

- We are developing an IOT based advertising system which will be very useful and helpful to users. Because there is no such system available.

4. ADVANTAGES

- Government friendly system to determine the condition of Advertising Board.
- Remotely check condition of Board.
- Module can send the notification to the government in case of critical condition of Board.

5. UML DETAILS

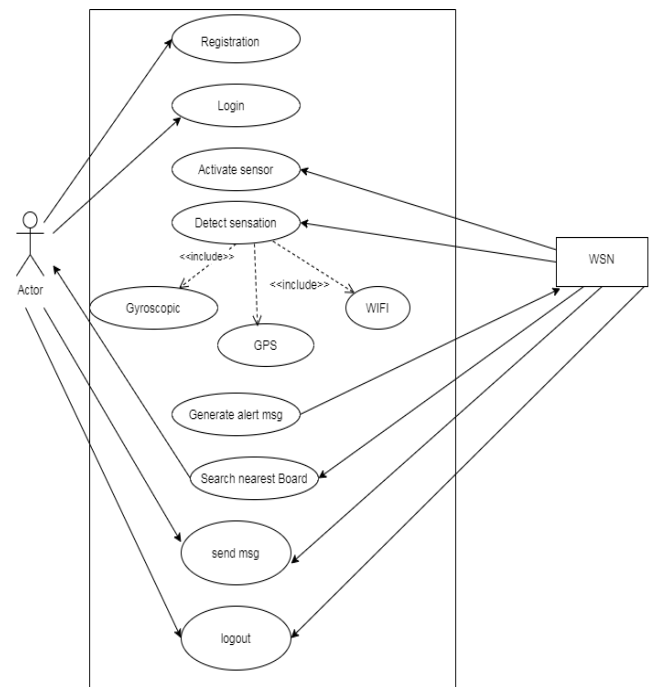


Fig.6.1 Use Case Diagram

Here we are Define a use case diagram, which is indicating the whole project history. In the diagram, there are many actors and cases are involved. Each case represents a unique function of project like registration, Sensor Activation, Notification etc. Here we focus on real time sensor like Gyroscopic, GPS, WIFI etc.

6. TECHNICAL DETAILS

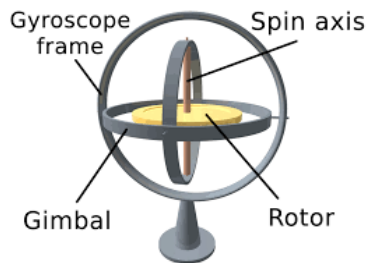
- Arduino UNO



- ✓ The operating voltage is 5V.
- ✓ The recommended input voltage will range from 7v to 12V.
- ✓ The input voltage ranges from 6v to 20V.
- ✓ Digital input/output pins are 14.
- ✓ Analog i/p pins are 6.
- ✓ DC Current for each input/output pin is 40 mA.

- ✓ DC Current for 3.3V Pin is 50 mA.
- ✓ Flash Memory is 32 KB

- Gyroscope



- ✓ Recalibrate the gyro
- ✓ start a loop
- ✓ read angle
- ✓ check angle greater than equal to 0
- ✓ check angle less than 0
- ✓ OR outputs of steps 4 and 5
- ✓ If the output of step 6 is true, exit loop

7. OUTCOMES

- ❖ Monitoring Advertising Board
- ❖ Avoid Health Disaster
- ❖ Digitalized the Information using Board

8. CONCLUSION

IoT Based monitoring system supported IoT and Gyroscope sensor for the big outdoor advertising boards is intended. within the system, multiple 3-axis Gyroscope sensors are placed round the key load points on the massive outdoor advertising board, and that they all report back to one node called the coordinator. At each sensor node, an information fusion algorithm supported the measured data is employed to get an accurate and stable angle. The ZigBee network between the sensor nodes and coordinator allows the system to control with low power dissipation. Eventually, the embedded monitoring platform judges the state of the boards and generates early warnings with the assistance of a predictive analytics algorithm.

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