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LANDSLIDE WARNING SYSTEM USING GSM

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ABSTRACT – *Landslide is an important and very natural calamity which occurs unexpectedly due to large amount of rainfall. This is really a big threat to human life and property. We cannot stop this natural disaster but still we can predict whether this disaster will come or not. Landslide will come mainly in the areas of hilly regions surrounded by many mountains. These mountains will be mostly a tourist places with lots of houses and shops and many people from outside place will come and go. In hilly areas the rainfall will be very high. Because of this the landslide may happen at any time. So to predict the early stages of landslide we are going to design a wireless sensor network. This wireless sensor network will have sensors such as soil moisture and rain sensors. These sensors will be connected to a microcontroller which will collect the data from these sensors. A GSM module is also connected to microcontroller which will send sms which the value of the sensors crosses the threshold value. Thus the life and property of humans can be saved.*

Keywords- *Cloud, sensors, analyze, monitoring, data collection, disaster.*

I. INTRODUCTION

From several decades many people go to tourist places like mountains to spend and enjoy their timing for a vacation. This hilly areas will be always be very crowded with shops and guest houses. Due to the large content of load in vehicles, increase water level or pressure, heavy rain fall lands may get damaged which causes to disaster like landslide. The identification of damages caused in land is very difficult task. If manual methods are used to find the damages or cracks in the lands it needs a lot of time and difficult to find the inner side damages. Due to the improvement of sensor techniques the automatic landslide prediction and monitoring systems are developed. Using this system the constructing engineers can easily monitor the early prediction of landslide automatically. Already Japan and Korea acquire landslide monitoring approach. But these landslides monitoring system is more complicated and increase the overall cost. In this system can use large numbers of sensors are used to monitor the current data, costly optical cables and data management center. The implementation of this automatic system is also very difficult.

II. LITERATURE SURVEY

Jatin Chaudhari et al., developed a new architecture for landslide monitoring and management. The three tier architecture is used to construct the proposed frame work. This structure includes survey, data collection node and local controller. Data collection node contains four channels [1].

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Anand Kumar Jha et al., proposed a new system for monitor the landslide with efficient and cost effective manner. This system consumed very low energy and provides the warning message earlier [2].

Ashwini R et al., introduce a system used for monitor landslide structure and railway tracks for keep away any type of accidents. This proposed system identify the cracks on the lands and defects on the railway tracks , send the information to cloud through the IOT technique [3].

Digambar. A. Jakkan et al., proposed a new system to monitor the landslide. This system helps to find the condition of the landslide and inform to the central controller. Based upon the current real time data with condition of values make a alert message to the controller before any type of hazards are occur[4].

Amrita Argade et al., et al, designed a new system for landslide monitoring In this system contains weight sensor, water level sensor, wifi system and Arduino microcontroller. This proposed system is used to find the bundles of the vehicles and water level pressure. If the values cross the threshold values this system produce an alert message via buzzer [5].

N.W.Dangare et al., constructed a system for landslide monitoring. This system is importance to health condition of bridges and flyovers. Based upon the results this proposed system is stable and working effectively [6].

Varsha Kusal et al., proposed a new system for landslide monitoring. The main aim of this system is collect the real time data from the lands through sensors and analyze the data. After giving the alert message to the controller the life will be saved. If necessary actions are needed the administrator will give the task to the employees for maintaining the bridge [7].

Gaurav Agrawal et al., designed an IoT based landslide monitoring system using WSN technology. The technological devices are used to avoid disaster and recovery immediately. In this system uses various WSN sensors, different types of data (weather conditions), quality of the air. The main objective of this proposed system is to avoid accidents and hazards of bridges and flyovers [8].

Atharva Kekare et al., built a cheap landslide monitoring system only for developing places [9].

Divya et al., developed a secure level architecture for landslide monitoring system. This proposed system considers different type of attributes involved in the health condition of the lands [10].

III. PROPOSED SYSTEM

The following figure shows the block diagram of proposed system. This system consists of Micro controller, LCD for display, and sensors like soil moisture and MEMS sensors. Using this system the engineers can monitor the landslide at real time. The various sensors are fitted in different parts of the hilly areas. The sensors are used to collect the data and store the information’s and incase of danger the information’s is sent through GSM. The values are going to beyond the level this system give the alert message to the central controller.

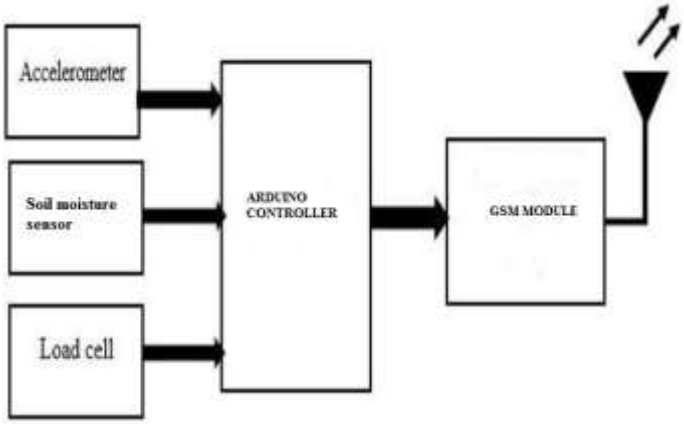

Figure 1: Automatic landslide Monitoring System

The following figure shows the flow diagram of this proposed system.

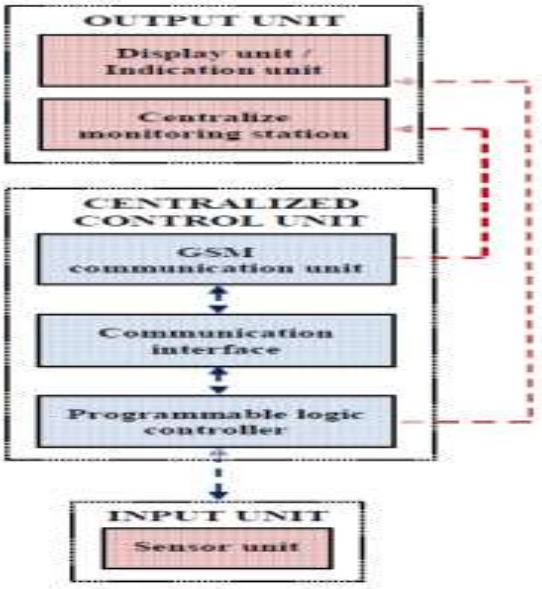

Figure 2: Flow Chart of landslide Monitoring

The time and the date are saved using push buttons. This device is continuously monitored the real time and the setup time. When the real time matched with the setup time LED device is going to blink & buzzer will make a sound.

IV. RESULTS AND DISCUSSIONS

In our proposed system we have designed a landslide prediction monitoring model in order to save the life and property of humans. The system is designed over a microcontroller and time is been fixed to make the system to continuously monitor the data's. The soil moisture sensor which is fixed to the microcontroller will help in monitoring the moisture content in the land caused due to heavy rain and the MEMS sensor will check for

the vibrations caused due to moving of vehicles. All the values if crosses threshold value SMS will be sent to the corresponding person.

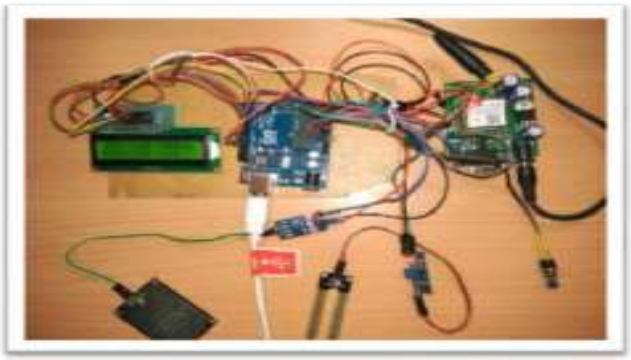

Figure 3: Hardware Proposed system

Figure 4: GSM alert message

V. CONCLUSION

This proposed landslide and railway track monitoring system is used easily identify the damages on the lands easily. The inner side's damages are not founded by the traditional methods. But this proposed method is used to easily identify the inner side damages within the limited time. The system is constructed by using various types of sensors. The sensors collected the data from the bridges and stored and sent through GSM. Depending on analyzed data this system will produce the alert message.

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