

REGULAR SURVEILLANCE OF HIGHWAY BRIDGE USING SENSOR

¹k. vamsi, ²P. Jagadeesh

ABSTRACT -- *The main purpose of constructing bridges are connect two locations which separated by naturally like sea , water, railway tracks, low lands etc. If any cracks are damages are occur in the bridges it leads to severe problems. Because huge number of vehicles are using the bridges and flyovers daily so monitoring has to be done accordingly in order to increase the life time of bridge. The bridge or flyover transportation structure is rapidly damaged. Bridge engineers want to continuously monitor and maintain the bridge for ensuring the safety of the public. In olden days traditional method visually checking was used. These methods lead to a expensive and time consuming process. The quality of the bridges are measured based on outer appearance. The internal damages are not found out by using traditional methods. In this proposed system is used to monitor the bridges continuously by using current communication technologies like GSM. The main advantage of this proposed system is easily identifying the cracks or damages occur in inside and outside of the bridge*

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

I. INTRODUCTION

From several decades bridges, flyovers and railway tracks are censorious in many locations. Due to the large content of load in vehicles, increase water level or pressure, heavy rain fall bridges may get damaged which causes to disaster. The identification of damages in bridges is very difficult task. If manual methods are used to find the damages or cracks in the bridge takes lot of time and difficult to find the inner side damages. Due to the improvement of sensor techniques the automatic bridge monitoring systems are developed. Using this system the bridge constructing engineers can easily monitor the bridge automatically. Already Japan and Korea acquire automatic bridge monitoring approach. But this automatic bridge monitoring system is more complicated and increase the overall cost. In this system can use large number 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 bridge 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].

¹BE Scholar, Electronics and communication engineering, korlavamsi@gmail.com, saveetha school of engineering, kuthambakkam, chennai

²Assistant professor , electronics and communication engineering, jagadeeshp@saveetha.com, saveetha school of engineering, Kutha, bakkam, chennai

Anand Kumar Jha et al., proposed a new system for monitor the bridge 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 bride structure and railway tracks for keep away any type of accidents. This proposed system identify the cracks on the bridges 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 bridges. In this system help to find the condition of the bridge 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 bridge 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 Bridge 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 bridge monitoring. The main aim of this system is collect the real time data from the bridges through sensors and analyze the data. After giving the alert message to the controller. If necessary actions are needed the administrator will give the task to the employees for maintaining the bridge [7].

Gaurav Agrawal et al., designed a IoT based bridge 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 bridge monitoring system only for developing places [9].

Divya et al., developed a secure level architecture for bridge monitoring system. This proposed system considers different type of attributes involved in the health condition of the bridge [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 flex, Mems. Using this system the engineers can monitor the bridges at real time. The various sensors are fitted in different parts of the bridge. 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.

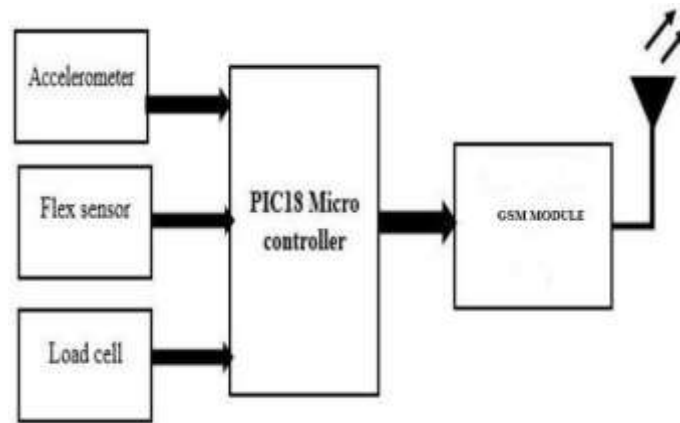


Figure 1: Automatic Bridge Monitoring System

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

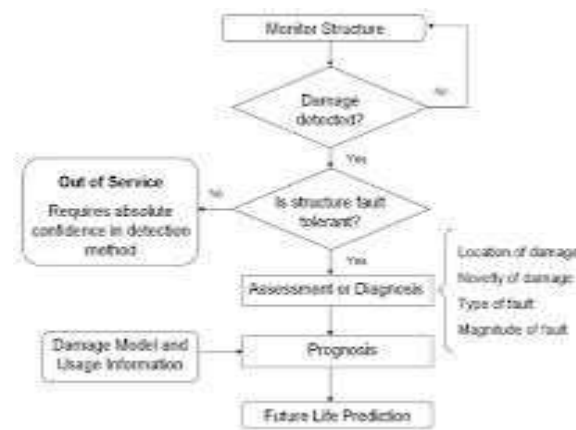


Figure 2: Flow Chart of Bridge Monitoring

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 automatic bridge monitoring model in order to increase the life time of bridges. The system is designed over a microcontroller and time is been fixed to make the system to continuously monitor the data's. The flex sensors which is fixed will help in monitoring the stretch or bending of the bridge 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.



Fig 3: Hardware Proposed system

V. CONCLUSION

This proposed bridge and railway track monitoring system is used easily identify the damages on the bridges easily. The inner sides 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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