



Bridge Monitoring System

Prachi Avhad¹, Srushti Wadekar², Samruddhi Naralkar³, Dhvani Bhanushali⁴, Meena Talele⁵

^{1,2,3,4}Final Year Student, Department of Computer Engineering, Vivekanand Education Society Polytechnic, Chembur, Maharashtra, India.

⁵Senior Project Mentor, Department of Computer Engineering, Vivekanand Education Society Polytechnic, Chembur, Maharashtra, India.

ABSTRACT

Bridge monitoring systems provide the information required to support a safe transportation system. By continuously monitoring movements, vibrations and structural changes of bridges it is possible to identify potential failure modes. And, as infrastructure ages, maintenance is more critical to keep the bridge viable, a monitoring system will improve safety and reduce operations costs by optimizing the maintenance cycle. Bridge monitoring system is significant to health diagnosis of bridges and flyovers. Bridges and flyovers are critical in many regions, being used over several decades. It is critical to have a system to monitor the health of these bridges and report when and where maintenance operations are needed. The sensors installed on various parts of the bridge monitor the bend, traffic, weight of the vehicles etc. At any point of time if any of these parameters cross their threshold value the communication system informs the management centre giving an alarm for taking precautionary measures. Real-time information and alerts ensure people safe.

Keywords: Php, Real time software

I. INTRODUCTION

Man's imagination and creativity has led to the construction of vast framed structures of very complex nature. Due to their unique design and construction, the problem with their structures has been increased. Nowadays health has become an important issue not only for human beings, but also for civil infrastructures. Bridge collapses often result in a large number of casualties, as well as negative social and economic consequences, as it has been seen recently in the rainy season. Many of the bridges in cities built on the river are subjected to deterioration as their lifetime has expired but they are still in use. They are dangerous to bridge users. Due to heavy load of vehicles, high water level or pressure & heavy rains these bridges may collapse which in turn leads to disaster that is loss of human life.

II. LITERATURE SURVEY

Bridge Monitoring System

Developing this project for better usage and experience becomes very important considering the scope of this project going live. In order to develop this project efficiently, we communicated with our project guide and also a couple of corporate developers who are known to us. By discussing with them, we intended to understand how a website/mobile application is developed in the actual corporate world and what procedure we should follow to have a smooth development of the project. Understanding everything and having internal discussion with the team members, we planned our project methodology. We would first finalize the features and specifications which shall be implemented in our project. Once we have a clear vision of features to be implemented, we would first design the web app with an intention to have a decent UI UX. UI which stands for User Interface is to design how the user will see the website, what color combinations and buttons our web app will be having, and how every page of the website will look like. UX which stands for User Experience is to design a website keeping in mind the experience of a user. This includes thinking on where the button shall be placed, a click on button should display which page, to summarize in short, it aims to make sure the user has a convenient and efficient user experience so that they wish to revisit the web app. Once we have our design ready and approved from the project guide, we would be starting with development of the actual project.

Application

For which, we shall be using development languages like: HTML CSS, JavaScript, MySQL and PHP. The major thing in our development phase shall be to integrate APIs of planned commute platforms. Once we have our web app developed and ready, we shall proceed with one of the important things of the software development life cycle – Testing. If we want our platform to go live and be of maximum usage to the society, we will have to test the web app to ensure it is bugs free, there is any fault in the project and will not fail. For testing as well, we shall be classifying the process into multiple steps to

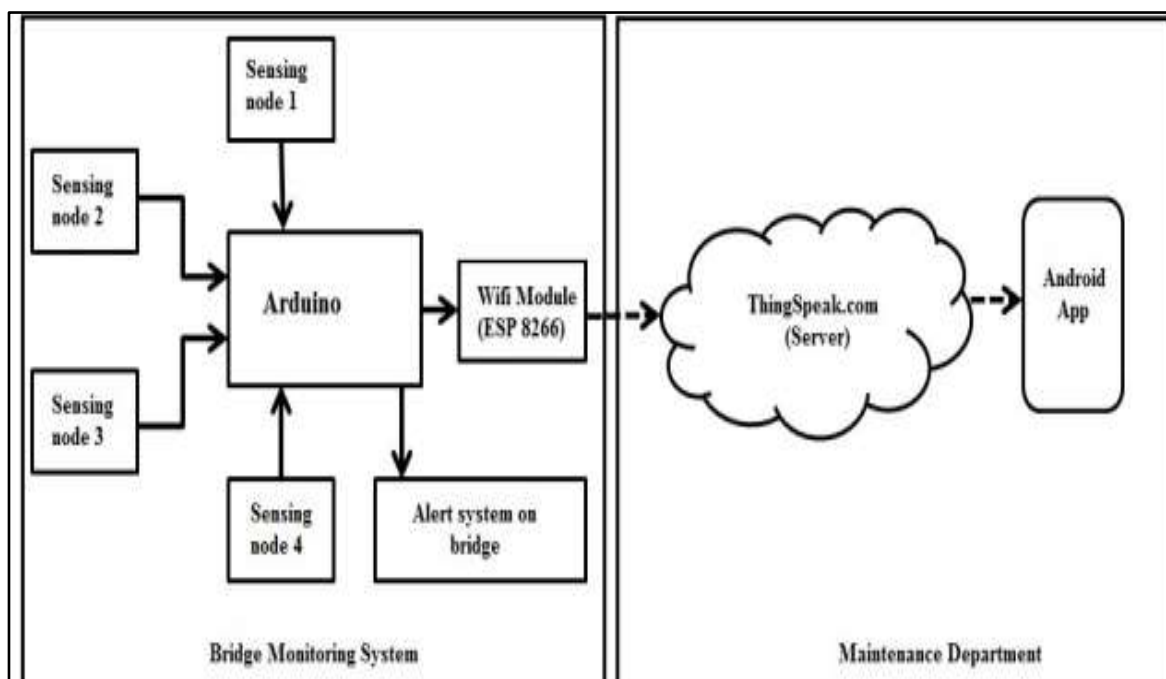
ensure it is tested as much as possible. Once the testing is done, we intend to make this project go live. So far, we have planned to inculcate this methodology of our project, but there might be certain changes in case of any unavoidable interference.

III. MODELING AND ANALYSIS

The main focus of the modeling and analysis is to provide a detailed report on the modeling of the report. In this section we present the graphs and charts to show the analysis and the glimpse of our research work. This contains very useful information regarding the modeling of the research. In this we have made a app named Bridge Monitoring System.

Many of the bridges in cities are subjected to deterioration as their lifetime has expired but they are still in use. They are dangerous to bridge users. Many systems have been proposed for the Bridge Safety Monitoring System. Here are the few techniques which were implemented.

1. Image Processing Technique
2. Optical Fiber Sensor Technique
3. Wireless Sensor Network



IV. CONCLUSION

Structural health monitoring system is used to monitor as well as detect the structural health. By using the four sensor nodes we have to collect information about the bridge health. The advantages of wireless sensor networks are improvement in data transmission packet loss rate, high sensitivity, ultra low frequency. The accelerometer sensor is used to detect the deformation in the structure of the bridge. Water level simultaneously measures the water level below the bridge. Load cell measures the strain on the bridge and the vibration sensor measures the vibration on the pillars. Structural health monitoring systems are used in military applications, machine monitoring, medical monitoring, smart spaces, air pollution, water monitoring, agriculture etc. By uploading sensor data to the server this data is read by the application which indicates the safety of the bridge. The main purpose or aim of this project is to reduce the bridge damages which cause threat to human life.

V. REFERENCES

- [1]. 'Bridge Monitoring System', Mr. Anand Kumar Jha, International Journal of Innovative Studies in Sciences and Engineering Technology.
- [2]. 'Bridge Monitoring and Alert Generation System Using IOT', Varsha Kusal et al, International Journal of Advance Research, Ideas and Innovations in Technology.
- [3]. 'A Survey: Structural Health Monitoring of Bridge Using WSN', Y.R.Risodkar, A.S.Pawar, 2016 International Conference on Global Trends in Signal Processing, Information Computing and Communication (ICGTSPICC) 300 350 400 450 VIBRATION RANGE TIME VIBRATION

-
- [4]. 'Bridge Monitoring System Using IOT', Ms. Arohi. D. Sonawane, Ms. Pooja. P. Vichare, Mr. Shubham. S. Patil, and Mr. Nitin. P. Chavande, Journal of Advances in Electrical Devices
- [5]. 'Automatic Recognition and Real-time Alarming of Earthquake Induced Vibration of a Tied Arch Bridge', Yi Li, Yuan-Feng Duan, Yi-Qiang Xiang, 2011 International Conference on Multimedia Technology
- [6]. 'Application of Damage Detection for Bridge Health Monitoring', Zrelli, A., Khlaifi, H., & Ezzedine, T. (2017). Application of damage detection for bridge health monitoring. 2017 International Conference on Internet of Things, Embedded Systems and Communications (IINTEC).