SYSTEM STUDY

Existing System

In the existing system, there is inadequate methods to ensure the safety of a bridge or any such structures. By checking the recent issues, we can see that we only get to know an accident happened after it took place. It takes a lot of human effort built a bridge or any such large structures. And then suddenly to see that all the efforts went to vain is such a disappointment. All the labour and hard work to be resulting in a failure, it not only affects the people who made it, but also all the normal living people. An accident may result in many causalities. Therefor a monitoring system is necessary for all such large structures. It is also to let the people be aware of the conditions of the bridge they are using for daily purposes. Better to be aware of the conditions than repent on it after it took place.

Limitations

* Not being aware of the safety of the structure.
* No monitoring system to ensure safety.
* Lack of sensor technology
* Lack of real time monitoring system.
* Unnecessary occurrences of accidents
* All labour works ending in failure

Proposed System

The proposed system proposes an IoT based bridge safety monitoring system. Which includes various sensors such as tilt sensor for measuring the tilt in multiple axes of a reference plane. Tilt sensors measure the tilting position with reference to gravity. Vibration sensor for measuring the changes within acceleration, pressure, temperature, force otherwise strain by changing to an electrical charge. This sensor is also used for deciding fragrances within the air by immediately measuring capacitance as well as quality. Soil moisture sensor is one [kind of sensor](https://www.elprocus.com/accelerometer-sensor-working-and-applications/) used to gauge the volumetric content of water within the soil. With the help of all these sensors the system continuously monitors the bridge condition. All sensors get the real time value and send it to the server. There will also be a buzzer to alert if any normal conditions of the bridge changes. LCD display is attached to show the real time conditions of the bridge. Database is provided to store all the data related to the bridge. It also monitors the weather conditions to anticipate and reduce the impact of floods. Wireless networks also make it more cost efficient.

Features of Proposed System

* Being aware of bridge conditions may lead to less accidents
* A real time monitoring system
* Uses different types of sensor technology
* Able to reduce accidents related to weather conditions
* IoT based monitoring system

REQUIREMENTS SPECIFICATION

System analyst tasks to a variety of persons to gather details about the business process and their opinions of why things happen as they do and their ideas for changing the process. These can be done through questionnaires, details investigation, observation, collection of samples etc. As the details are collected, the analyst studies the requirements data to identify the features the new system should have, including both the information the system produces and operational features such as processing controls, response times, and input output methods.

Requirement specification simply means, “Figuring out what to make before you make it”. It determines what people need before you start developing a product for them. Requirement definition is the activity of translating the information gathered in to a document that defines a set of requirements. These should accurately reflect what consumer wants. It is an abstract description of the services that the system should provide and the constraints under the system must operate. This document must be written for that the end user and the stake holder can understand it.

The notations used for requirements definition should be based on natural languages, forms and simple intuitive diagrams. The requirements fall into two categories: functional requirements and non-functional requirements.

The requirements of specification of the proposed system are as follows:

* Embedded C
* Atml 328 MC
* Sensors

**OPERATING ENVIRONMENT**

* 1. **HARDWARE REQUIREMENTS**

Sensors : Vibration, Tilt, Soil moisture, ultrasonic

Display : LCD

ATML board : 328 MC

* 1. **SOFTWARE REQUIREMENTS**

Operating System : Windows 10

Language : Embedded C

RDBMS : Dataset