

MONITORING AND MAINTENANCE OF HIGHWAY BRIDGES USING WIRELESS SENSOR NETWORKS

ABSTRACT:

Usage of wireless sensor network increasing and becoming cost effective now a days. Many real time applications using this network system. One of the example for such application is monitoring a highway or railway bridges which plays an important role in transportation. Many bridges in world collapse due to some internal and external factors, those factors must be monitored in order to avoid this collapse. This paper proposes automatic bridge monitoring system using wireless sensor networks. The proposed system consists of three sensors to monitor the bridge condition continuously i.e. Accelerometer to detect the jerks in the bridge or in pillar, flex sensor to detect the bend or orientation in the bridge, load cell to detect the overload on the bridge. This data from the sensors will be processed by controller (PIC18) and is transferred to the receiver node at the management center using the transmitter node at the transmitter end whenever the fault occurs. CC2500 module is used as a wireless node in this paper. At the receiver side raspberry pi is used to monitor the received data which can also store the database in it. Through the GSM an alert message is also sent to the operator along with the exact location where fault occurred in bridge. The proposed system can be used efficiently with low cost.