# ABSTRACT

Keeping public safety in mind and to reduce human life loss there is a need to design a system which will continuously monitor condition of bridges. Existing bridge monitoring systems have limitations, including restricted detection capabilities, subjectivity, human error, labor intensive inspections, limited access to remote areas, and high costs. Aging infrastructures pose a critical concern for organizations and government funding policies, showing signs of decay and impending structural failure. To address these challenges, this project proposes an IoT-based bridge health status monitoring and warning system that is wireless, low-cost, durable, and user-friendly. The proposed system builds upon engineering standards and guidelines to classify bridge health status into categories ranging from excellent to collapse condition. It incorporates piezo based energy harvesting system, sensors for vibration and traffic management control combined with IoT. The primary objective is to reduce bridge maintenance costs, extend lifespans and enhance transportation safety through an early warning system.