



| UTC Project Information – Project 3.8 | |
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| Project Title | Bridge Modal Identification via Video Processing and Quantification of Uncertainties |
| University | UMass Lowell |
| Principal Investigator | Dr. Zhu Mao |
| PI Contact Information | Department of Mechanical Engineering University of Massachusetts Lowell 1 University Ave Dandeneau Hall 211 Lowell, MA 01719 Tel: 978-934-5937 Email: zhu_mao@uml.edu |
| Co-PI(s) | |
| Co-PI Contact Information | |
| Funding Source(s) and Amounts Provided (by each agency or organization) | Federal: \$130,798.50 |
| Total Project Cost | \$130,798.50 |
| Agency ID or Contract Number | 69A3551847101 |
| Start and End Dates | 1/1/2019 to 8/31/2021 |
| Brief Description of Research Project | <p>Bridges form a critical category of the U.S. transportation infrastructure, yet the current structural condition is only evaluated at “C+” according to the 2017 ASCE Infrastructure Report Card. In addition to the fact that 9.1% of the bridges in U.S. are structurally deficient, the bridges in New England are especially experiencing the burden of busy traffic and harsh wintery weather. There is a variety of factors that may affect the bridge dynamics and deteriorate the structures, such as creeping, corrosion, cyclic thermal loadings and accidental damages, and identification modal properties provides a global evaluation capability with rich physical meaning. However, this complicated scenario brings up the demanding in conducting the heterogeneous data acquisition and in-situ modal analysis, as well as quantifying the enormous amount of uncertainties that may come across. The problem we are trying to solve is to adopt portable video cameras and by processing the acquired videos, bridge dynamic systems, especially full-field mode shapes will be extracted to enhance the status awareness. The challenges exist while dealing with the rapidly changing environments and traffics, so that the statistical modeling is needed when interpreting the extracted information.</p> |
| Describe Implementation of Research Outcomes (or why not implemented) | This project is in its initial research phase. Implementation of Research outcomes will be reported upon completion of initial research. |
| Place Any Photos Here | |

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| Impacts/Benefits of Implementation (actual, not anticipated) | The research is in the initial research phase and implementation of research outcomes will be reported upon completion of this phase. Refereed conference paper has been accepted. |
| Web Links <ul style="list-style-type: none">• Reports• Project website | https://www.uml.edu/Research/tidc/ |