



UTC Project Information – Project 3.8	
Project Title	Bridge Modal Identification via Video Processing and Quantification of Uncertainties
University	University of Massachusetts Lowell
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Funding Source(s) and Amounts Provided (by each agency or organization)	Fast-Act (Federal): \$150,558 UMass Lowell: \$112,830 (match)
Total Project Cost	\$263,388
Agency ID or Contract Number	69A3551847101
Start and End Dates	01/01/2019 - 12/31/2020
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) Place Any Photos Here	This project is in the initial phase of research. Implementation of research outcomes will be reported upon completion of research objectives.
Impacts/Benefits of Implementation (actual, not anticipated)	This project is in the initial phase of research. Impacts and benefits will be reported upon completion of the implementation phase.
Web Links <ul style="list-style-type: none"> • Reports • Project website 	Project website is under construction and will be completed by the end of February 2019.