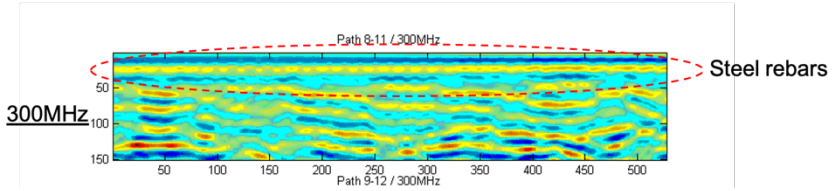


UTC Project Information	
Project Title	C11 – Development of a system-level distributed sensing technique for long-term monitoring of concrete and composite bridges
University	University of Massachusetts Lowell
Principal Investigator	Tzuyang Yu
PI Contact Information	Tzuyang_Yu@UML.EDU / (978) 934-2288 Department of Civil and Environmental Engineering University of Massachusetts Lowell Kitson Hall Room 200-T One University Avenue Lowell, MA 01854
Funding Source(s) and Amounts Provided (by each agency or organization)	Fast-Act (Federal): \$83,141 (Y1) UMass Lowell: \$83,163 (Y1)
Total Project Cost	\$166,304 (Year 1)
Agency ID or Contract Number	ORCID.org ID Number: 0000-0001-7532-3574
Start and End Dates	01/01/2021 ~ 12/31/2021
Brief Description of Research Project	<p>The problem we are trying to solve is the long-term monitoring problem of bridges (e.g., concrete and composite bridges), using multiple modes of sensing technology including distributed fiber optic, video motion, conventional strain gauge, and electromagnetic sensors. This synergistic research will lead us to the development of bridge health monitoring systems with better practicality for and better accuracy on structural health management in transportation infrastructure.</p>
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	<p>We selected the Grist Mill Bridge in Hampden, ME, as a target bridge for instrumentation. We installed distributed fiber optic sensors and conventional strain gauges on three composite bridge girders on Oct. 6, 2020 at AIT Bridges (Hampden, ME). We also developed a baseline dataset (FOS, radar, video camera sensor) on Dec. 30, 2020. We have also identified three highway bridges in MA for future inspection and instrumentation.</p> <div style="text-align: center;">  </div>



Impacts/Benefits of Implementation (actual, not anticipated)	<p>This project will enhance the transportation infrastructure durability as follows:</p> <ul style="list-style-type: none"> • Practicality of instrumented distributed sensors on composite bridges for short-term structural response and long-term health monitoring. • Correlation among various sensing modes to achieve sensing redundancy in the sustainability of data collection.
Web Links <ul style="list-style-type: none"> • Reports • Project website 	<ul style="list-style-type: none"> • We have submitted our quarterly progress report for September 30, 2021.