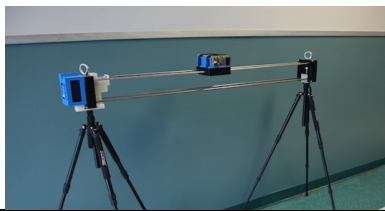
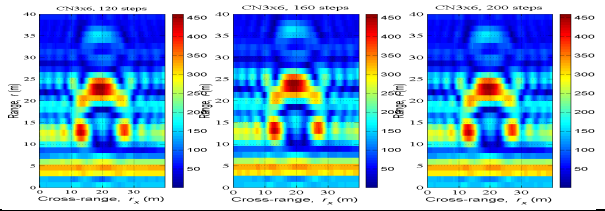


<b>UTC Project Information</b>	
Project Title	Electromagnetic Detection and Identification of Concrete Cracking in Highway Bridges
University	University of Massachusetts Lowell
Principal Investigator	Tzuyang Yu
PI Contact Information	<a href="mailto:Tzuyang_Yu@UML.EDU">Tzuyang_Yu@UML.EDU</a> / (978) 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)	Federal: \$330,495 UMass Lowell: \$399,446
Total Project Cost	\$729,941)
Agency ID or Contract Number	69A3551847101
Start and End Dates	01/01/2019 ~ 12/31/2023
Brief Description of Research Project	The problem we are trying to solve is the structural assessment of aging concrete bridges (reinforced and prestressed) in New England, targeting at concrete cracking and degradation (e.g., carbonation, alkali-silica reaction). The problem is important because that the integrity of concrete cover indicates not only mechanical strength of the cross section but also the level of protection for steel corrosion. Concrete cracking and steel corrosion can occur to any component in concrete bridges. We propose to 1) conduct field radar inspection (using ground-penetrating radar (GPR) and synthetic aperture radar (SAR), and impact-echo) for 2D and 3D radar imaging and to 2) develop a damage detection model for predicting the level of structural damage for concrete bridges.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	<p>We have developed a portable SAR imaging sensor capable of wirelessly transmitting data from the sensor to an adjacent laptop computer. The imaging capability and wireless data transmission have been validated in the laboratory.</p>  
Impacts/Benefits of Implementation (actual, not anticipated)	This project is in its initial research phase. Implementation of Research outcomes will be reported upon completion of initial research.



<p>Web Links</p> <ul style="list-style-type: none"><li>• Reports</li><li>• Project website</li></ul>	<ul style="list-style-type: none"><li>• We have submitted our quarterly progress report for September 30, 2021.</li><li>• Updates of research activities are posted on our project website at <a href="https://www.uml.edu/Research/tidc/projects/electromagnetic-detection-identification-bridge-cracking.aspx">https://www.uml.edu/Research/tidc/projects/electromagnetic-detection-identification-bridge-cracking.aspx</a></li></ul>