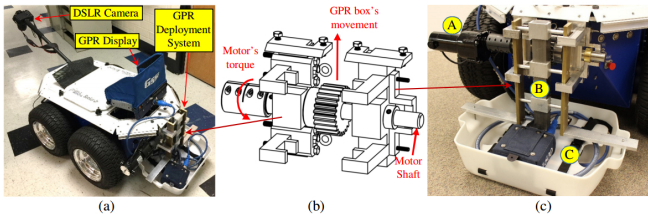


Spotlight on robotic system for bridge inspection

7 May 2017, by Nancy Owano



Autonomous robotic system for bridge deck inspection: (a) System overview; (b) Schematic of GPR deployment system; (c) Details of GPR deployment system: A - Motor, B - Gear shaft, C - GPR box. Credit: arXiv:1704.04663 [cs.RO]

(Tech Xplore)—Nothing lasts forever as the saying goes and that pretty much pertains to our bridges. Deterioration is a problem. Materials age, and the environment contributes its share of wear and tear. In some cases there may also be a problem of inadequate maintenance.

In the United States alone, here are some American Society of Civil Engineers notes. According to the 2017 Infrastructure Report Card, the U.S. has 614,387 [bridges](#), almost four in 10 of which are 50 years or older. 56,007—9.1%—of the nation's bridges were structurally deficient in 2016, and on average there were 188 million trips across a structurally deficient [bridge](#) each day.

A robot helper has been designed to help [check](#) bridge conditions.

A four-[wheeled robot](#) has been created to check bridges for dangerous defects.

The robot helper has potential to be a cost-effective, accurate way of detecting problems.

The University of Nevada, Reno team designed the robot to inspect conditions such as corrosion. They

authored a paper, which is on arXiv. "Autonomous Robotic System using Non-Destructive Evaluation Methods for Bridge Deck Inspection" describes their work.

The authors made the point that "Bridge deck condition assessment is the most important part for bridge health maintenance"; that is what the robot sets out to do.

The authors wrote that the system was capable of "performing real-time, cost-effective bridge deck inspection, and is comprised of a mechanical robot design and machine learning and pattern recognition methods for automated steel rebar picking to provide realtime condition maps of the corrosive deck environments."

Reasons to focus on a robot helper for bridge-condition assessments are clear when considering scenarios involving human efforts.

Alice Klein on Friday in *New Scientist*: "Surveying a bridge used to involve drilling into the road to check the concrete and steel structures underneath. Although radar has simplified the work since the 1980s, sending out teams of people to check bridges is still expensive and can require extended road [closures](#)."

Klein added, "Human inspections aren't immune to error either."

The wheeled robot can shuffle back and forth in the course of its mission. *The Daily Mai*

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