

World

Robot inspector to assess building quality in Singapore



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A team of robotics researchers has developed a high-tech robot to speed up building inspection and assessment processes in Singapore.

The robot, armed with laser scanners and cameras, has been built to detect the smallest cracks and defects in a building's structure. Named [Quality Inspection and Assessment Robot](#), or QuicaBot, the machine was created by engineers from Nanyang Technological University, alongside local industrial developer JTC and startup CtrlWorks.

A year in development, the robot can move autonomously, scanning entire rooms in minutes using a collection of sensors and cameras. The devices include a small laser scanner for navigating and mapping; a bigger laser scanner for detecting surface irregularities; an inclinometer to inspect the levelness of the floor; a thermal infrared camera for checking for hollow sections; and a small standard colour camera for capturing evidence of damage and disrepair.

The developers claim that their robotic solution offers a more accurate, reliable and consistent service than a manual human inspection, which relies on spirit levels and set squares. The team said a typical inspection may miss potential problems, which the robot would not overlook. The machine also does not tire, with 36-hour of operation on a single two-hour charge.

The engineers propose that the inspection robots could work as a team, uploading 3D scan data for humans to further inspect complex defects. Supporting processes in this way, the bots free up human inspectors so that they can focus on areas that require more attention.

Project lead, mechanical and aerospace engineer Erdal Kayacan noted that the main goal of the research is to automate and speed up building inspection in line with standards set by

'Visual inspection of a new building is an intensive effort that takes two inspectors, so we have designed a robot to assist a human inspector to do his job in about half the time, save precious time and manpower,' said Kayacan.

Tested successfully in a lab environment, QuicaBot will now enter real-life test beds at numerous JTC construction sites from the beginning of 2017.