Robot invented by NTU scientists to help speed up building inspection

SINGAPORE — Meet QuicaBot, which has a special talent in finding fault. This new robot, invented by a group of four scientists from Nanyang Technological University (NTU), is able to inspect indoor spaces using laser scanners and high-tech cameras, to help detect defects and uneven surfaces faster and more thoroughly than humans.
By Iliyas Juanda -
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Accompanied by a human inspector, it can finish checking a 200 sq m room in 20 minutes, compared to the 45 minutes two building inspectors may spend to do the same.

Research into the QuicaBot (Quality Inspection and Assessment Robot) — co-developed by national industrial developer JTC and a Singapore start-up, CtrlWorks — is backed by the National Research Foundation. The robot was unveiled at a media event on Wednesday (Sept 21).

Mr Koh Chwee, the director of the technical services division of JTC, said: “The use of such automation in construction projects can go a long way in raising the quality of inspections and alleviating the manpower crunch faced by the construction industry.”

QuicaBot can move autonomously and use a combination of five different scanners and cameras to inspect for evenness, squareness (set at a 90-degree angle), and cracks in the walls, ceilings and floors.

Standard manual inspection using human effort rely on tools such as set squares and metal rods. While human inspectors may make sampling errors due to the limited number of checks they can do and the fatigue experienced, the QuicaBot will be able to check a room more comprehensively and accurately.

After scanning, the robot can produce a 3D map of the space with the defects highlighted, and the information can be uploaded online for access by building owners and inspectors, who can then inspect critical and complex defects.

Calling this a “laudable initiative by NTU”, the Building and Construction Authority (BCA) told TODAY that the QuicaBot was developed based on the internal finish assessment standard of its Construction Quality Assessment System (Conquas).

“At its present R&D phase, there is still potential for the QuicaBot to be fully automated and improved with enhanced reliability and efficiency in the inspection of buildings,” its spokesperson said.

Development of the robot started in July 2015 and will end next January, with the team now working on fine-tuning the algorithm for the cameras and inclinometer.

In the first quarter of 2017, it will be deployed for test-bedding at JTC Space @ Gul in Tuas, a facility being developed for manufacturing companies.

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