

NTU co-develops world's first automated gondola

OutoBot has a robotic arm that can wash and paint high-rise buildings. It will improve productivity and enhance workplace safety, says co-developer ELID Technology

By Syarafana Shafeeq
muhdss@sph.com.sg

Singapore
NANYANG Technological University (NTU Singapore) and ELID Technology International have co-developed a robotic system named Outobot, which serves to wash and paint high-rise buildings.

OutoBot is an automated gondola system that will improve productivity and enhance workplace safety. The robot is the first of its kind to have wireless controls, and is controlled by a laptop or tablet interface. The system is autonomous and automated, and will halve the manpower needed to operate one gondola. The OutoBot will also save up to 20 per cent of paint, and reduce the

time taken to paint a building by 30 per cent. The quality of the paint job will also be more consistent compared to manual methods. The robot is equipped with a robotic arm that will execute the painting or cleaning tasks, as well as a camera and high-pressure water jets. The user-friendly system also aims to enable workers to continue to work until old age. Dennis Lim, managing director of ELID Technology International, said: "With Singapore's rapidly ageing workforce, we need to find ways to enable our employees to continue contributing despite their advanced years. "Using our new robot, we have shown that a labour-intensive job can

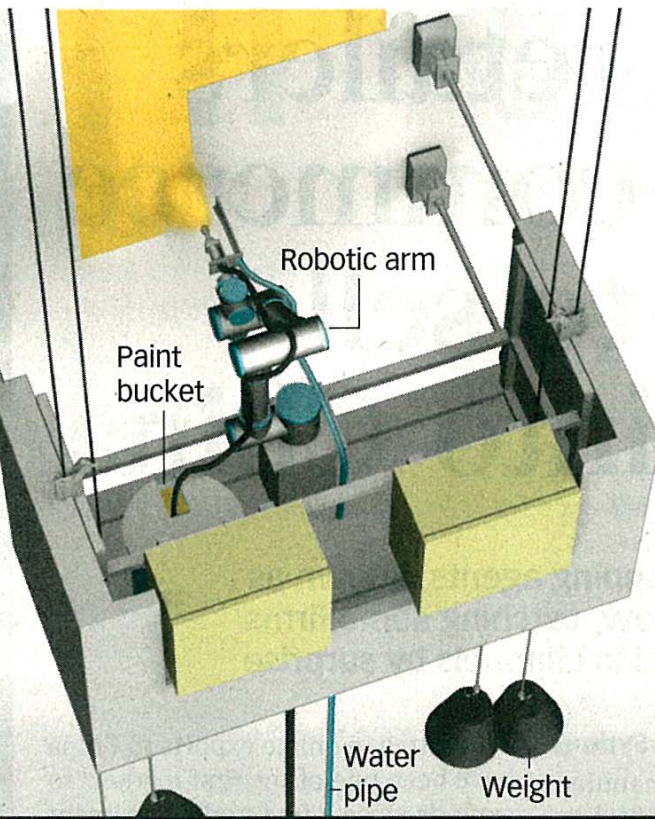
be transformed into one that can be easily done by an older worker, and at the same time eliminating the risk of employees having to work at heights." The project is fronted by a problem statement proposed by the Housing & Development Board (HDB) to automate the painting of external HDB building facades, to enhance worker safety and productivity. The OutoBot has been tested at an industrial building in Ubi owned by Aegis Building & Engineering Pte Ltd. Yeong Wai Teck, managing director of the company, said: "I would like to reduce fall risk for my workers, and automation will enable me to do that. That is why I am keen to work with them (NTU & ELID) by giving

How OutoBot works

First, a camera on the robotic arm will sense the surface. Next, a boundary is created and the OutoBot would work within the area, either spraying it with water for cleaning, or with paint. This process is automatic.

Suction pad

To prevent the gondola from moving in mid-air, suction pads are extended from the gondola to suck onto the wall.



Robotic arm

The robotic arm has six-degrees of freedom. It is attached with two nozzles, one to spray high-pressure water for cleaning surfaces, the other to spray paint.

Manpower

No workers are required to be on the gondola. An operator on the ground operates the Outobot using a tablet. Another person acts as a safety officer.



BT Graphics: Teoh Yi Chie

them specialised input and loaning them a place to use." The made-in-Singapore system is currently patent pending and will be deployed for an upcoming project over the next few months.

The robot will also be tested on selected public housing blocks. HDB will then work with ELID to refine the robot's design to better suit its building designs. Kenneth Wong, vice-president of

ELID's International Business Unit, added: "We have plans to commercialise the OutoBot, and it has been deployed here (at Ubi) as our first customer site. In the coming months, we will also launch this product overseas."