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New disinfection robot to aid cleaners in COVID-19 fight

Singapore, Apr 15 (PTI) Scientists have developed a semi-autonomous robot that can disinfect large surfaces quickly, and reduce the risk of cleaners picking up the novel coronavirus from potentially contaminated areas.

The researchers from Nanyang Technological University (NTU) in Singapore are planning to have public trials to support the fight against COVID-19.

Named eXtreme Disinfection roBOT (XDBOT), it can be wirelessly controlled via a laptop or tablet, removing the need for cleaners to be in contact with surfaces, the researchers said.

The new robot differs from other disinfection robots currently on the market that are primarily intended to clean and vacuum floor surfaces and are unable to disinfect odd-shaped surfaces or anything above ground level, they said.

Comprising a semi-autonomous control unit with motorised wheels, XDBOT has a six-axis robotic arm that can mimic human movement to reach awkward locations such as under tables and beds, as well as doorknobs, tabletops and light switches.

Instead of a conventional pressure-spray nozzle, it uses an electrostatic-charged nozzle to ensure a wider and further spread of the disinfectant, behind and over hidden surfaces, according to the researchers.

Unlike typical nozzles, XDBOT's nozzle discharges chemicals with a positive electrical charge, they said.

These disinfectants, the researchers noted, will then be attracted to all

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Professor Chen I-Ming, a roboticist at NTU, said the XDBOT was conceived when COVID19 cases started to spike worldwide in mid-February, and disinfection efforts were being stepped up at airports, hotels and hospitals.

"To stop the transmission of a virus means we need a way to quickly disinfect surfaces, which is a labour-intensive and repetitive activity," Chen explained.

"Using our new robot from a distance, a human operator can precisely control the disinfection process, increasing surface area cleaned by up to four times, with zero contact with surfaces," he said.

XDBOT can navigate semi-autonomously in any environment using LIDAR (Light Detection and Ranging) and high-definition cameras, while its arm is controlled by a human operator -- like a tank with a rotating turret, the researchers said.

The operator can control the robot from up to 30 metres using a laptop or a tablet, which can be increased to 50m or further with more antennas installed on XDBOT, they said.

The researchers said the robot possesses an 8.5 litre tank that can carry a variety of disinfectants appropriate to different environments such as childcare centres, hospitals, nursing homes and shopping malls.

They said it can run for four hours continuously on a rechargeable battery pack and is estimated to be able to disinfect a surface area of up to four times that of manual cleaning.

Recharging its batteries takes eight hours at present, but the researchers said this can be further improved if quick-charging technology is adopted. PTI SAR SAR

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