

NTU tie-up with Taiwan tech firm creates robot with a human touch

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A robot with two arms that can hold odd-shaped objects – a human-like quality with applications in industries such as logistics and healthcare – is among the highlights of a tie-up between Nanyang Technological University (NTU) and Taiwan-based tech company Delta Electronics.

Boasting a significantly wider range of motion and functionality than existing devices on the market, the two-armed robot will continue its development at the Delta-NTU Corporate Lab for Advanced Robotics, a \$24 million laboratory to drive research and development into next-generation robotics technology.

The lab was launched on Wednesday at a ceremony attended by Minister of State for Trade and Industry Alvin Tan, NTU president Ho Teck Hua and Delta Electronics chairman Yancey Hai.

The joint venture, which is currently in its second phase, is supported by the Government as part of Research, Innovation and Enterprise 2025 plan. Announced in 2020, the plan sets the direction for Singapore's research and development priorities.

The Phase 1 Delta-NTU partnership yielded impressive results that led to 15 patents and innovative solutions, such as a universal



smart navigation system for automated guided vehicles used to transport goods in factories, said Professor Lam Khin Yong, vice-president for industry at NTU.

The second phase of research aims to refine and redefine existing robotic capabilities.

One area of focus will be to improve the dexterity and flexibility

of robots, so that they mimic human movements, and integrate this into each part of the robotic system. This could significantly improve automation within the

warehousing, healthcare and service industries.

For example, one of the robot grippers integrates touch and force sensors that are flexible, which al-

Minister of State for Trade and Industry Alvin Tan checking out a robot gripper at the launch of the Delta-NTU Corporate Lab for Advanced Robotics on Wednesday. With him was Dr Cindy Tang, a research fellow at Nanyang Technological University.
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lows the robot to pick up small and delicate objects, something conventional grippers are still unable to do.

Another new device is a robot arm that can be controlled remotely, which could prove useful in unpredictable events with severe consequences, such as the Covid-19 pandemic.

It could also increase workplace safety, with workers packing heavy goods by controlling the robot arm from a distance.

Such improvements are made possible with novel machine learning methods.

Instead of relying on images to train robots in how to precisely position their machine extensions, robots are trained by a user demonstrating natural arm movements. In turn, the model generated allows other robots to imitate the human gestures with ease.

Investors are hopeful their nascent technology can make its debut in commercial warehouses within the next two years.

Mr Tan expressed support for the research partnership, which could bring benefits to the country.

"They contribute to Singapore's competitiveness as a global hub for business, innovation and talent – and also generate scientific outcomes that could meet our national needs and also improve our lives," he said.

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