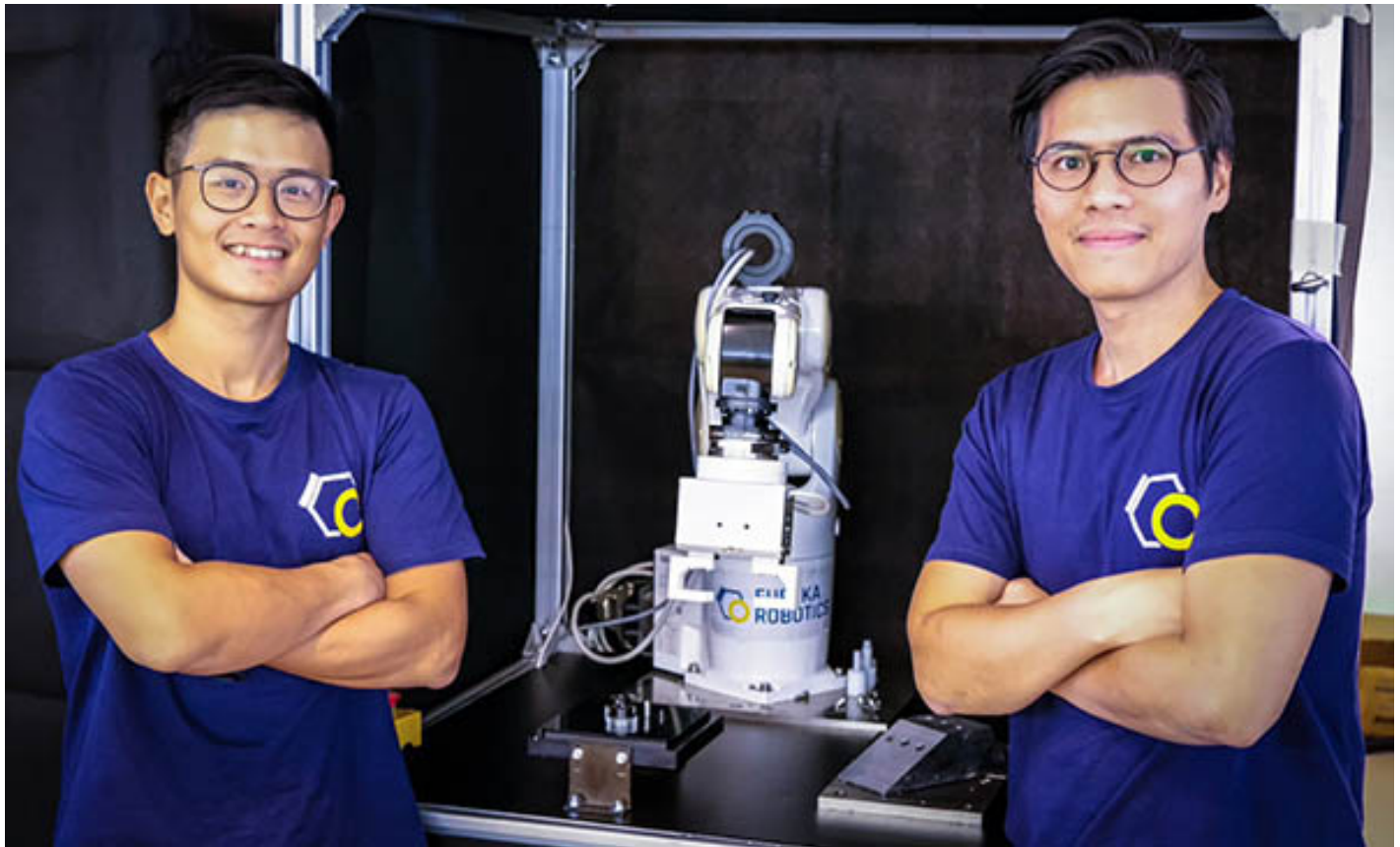


Eureka Robotics Develops Software to Add Sensitivity, Dexterity to Industrial Robots

NTU Singapore spinoff Eureka Robotics' Dynamis technology promises to add precision and productivity.



Eureka Robotics

NTU Singapore professors and Eureka Robotics co-founders Hung Pham (left) and Pham Quang Cong (right) with a DENSO WAVE robot equipped with the Dynamis force-feedback software.

Eureka Robotics today announced that it has developed a proprietary force-feedback technology that can make industrial robots almost as nimble and sensitive as human hands. The company and its Dynamis software spun out of research at Nanyang Technological University (NTU) Singapore. Eureka Robotics said its technology enables robots to manipulate small and fragile objects that are millimeters in size without damaging them.

“Today, Dynamis has made it easy for anyone to program touch-sensitive tasks that are usually done by humans, such as assembly, fine manipulation, polishing, or sanding,” explained Pham Quang Cuong, an associate professor at [NTU Singapore](#) and co-founder of Eureka Robotics. “These tasks all share a common characteristic: the ability to maintain consistent contact with a surface.”

“If our human hands are deprived of our touch sensitivity, such as when wearing a thick glove, we would find it very hard to put tiny Lego blocks together, much less assemble the tiny components of a car engine or of a camera used in our mobile phones,” said Pham, who is also the deputy director of the Robotics Research Centre at NTU’s School of Mechanical and Aerospace Engineering.

NTU technology first seen in Ikea Bot

Mastering “touch sensitivity” and humanlike dexterity has been a holy grail for roboticists, said Pham. Programming force [controllers](#) is extremely complicated, requiring long hours to perfect the grip just for a specific task, he said.

Current robots in the market have either high accuracy but low agility, where robots perform the same movements repeatedly such as in a [car](#) factory, or low accuracy but high agility, such as robots handling packages of different sizes in [logistics](#).

NTU scientists developed the force-feedback technology and demonstrated it with the “Ikea Bot,” which assembled an Ikea chair in just 20 minutes. The breakthrough was first published in the journal *Science* in 2018 and showed that a robot could match the dexterity of human hands in assembling furniture.

The Singapore university’s NTUitive innovation and commercialization company incubated Eureka Robotics and has helped to speed its path to market. It said it followed the NTU 2025 strategic plan, which seeks to tackle some of the world’s most pressing challenges with new technologies.

and is now used by multiple companies worldwide.

Despite its simple setup, Dynamis can outperform conventional robotic controllers, which require an enormous amount of expertise and time to fine-tune, claimed Eureka Robotics.

Robotics engineers can use the technology to imbue robots with both high accuracy and high agility (HAHA) on a large scale, the [company](#) added. This could pave the way for industrial applications that were previously very difficult or impossible to implement, such as handling and assembly of delicate objects such as glass optical lenses, [electronics](#) components, or engine gears.