



## Industrial robots get human touch

Written by: [Andrew Wade](#) | Published: 29 November 2021



*(Credit: NTU Singapore)*

[Comment on this article](#)

Scientists from NTU Singapore have upgraded the software that they developed to enable industrial robots to have human-like touch and feel.

Dynamis, was developed by Eureka Robotics, a spin-out from NTU Singapore. The force feedback enabled by the software allows industrial robots to handle tiny lenses and electrical components with similar dexterity to human hands. The researchers had previously showcased its capabilities with an 'Ikea bot' that was able to assemble a flat pack chair in under 10 minutes.

"Today, Dynamis has made it easy for anyone to programme touch-sensitive tasks that are usually done by humans, such as assembly, fine manipulation, polishing or sanding," said Associate Professor Pham Quang Cuong, co-founder of Eureka Robotics and the deputy director of the Robotics Research Centre at NTU's School of Mechanical and Aerospace Engineering.

"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."

According to the researchers, Dynamis has been significantly enhanced since the Ikea bot video was first seen in 2018. Known as "Force Sensor Robust Compliance Control", the new software requires just a single parameter to be set: the stiffness of the contact, labelled either soft, medium, or hard.

Despite this relative simplicity, the researchers claim the latest version of Dynamis can out-perform conventional robotic controllers which generally require much higher levels of expertise. The upgraded software is now available worldwide via Denso Wave, an industrial robot player that is part of the Toyota Group.

"Due to its high basic performance and openness, Denso robots are the preferred choice by companies and universities with advanced initiatives in the field of robotics. NTU Singapore and Eureka Robotics have also been using Denso robots for this reason," said Denso Wave's Hiroyasu Baba.

“Because of this relationship, joint development began naturally, and we were able to launch this product smoothly. The technology, which will be installed in Denso robots, is a technology for force feedback, which is becoming more and more important in the practical use of robotics. Thanks to the development capabilities of Eureka Robotics, the system is advanced, yet easy to use and light enough to be integrated into our standard robot controllers.”