



Robots take on hardest task known to man and complete it in just 20 minutes

The robots took on the challenge to build an £18 'Stefan' chair from Ikea

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Robots have managed to take on what is probably the hardest task known to man - and managed to do it in just 20 minutes.

Two robots, programmed by engineers in Singapore, managed to put together an Ikea chair.

It is something that has left humans scratching their heads at almost every weekend, but these two machines managed to work out the puzzle pretty swiftly.

Like anyone, it took the robots a couple of failed attempts to work out what they needed to do.



The robots were tasked with putting together an Ikea chair (Image: Nanyang Technological University)



It took them 20 minutes to complete (Image: Nanyang Technological University)

But once they had it figured they completed the task without a hitch.

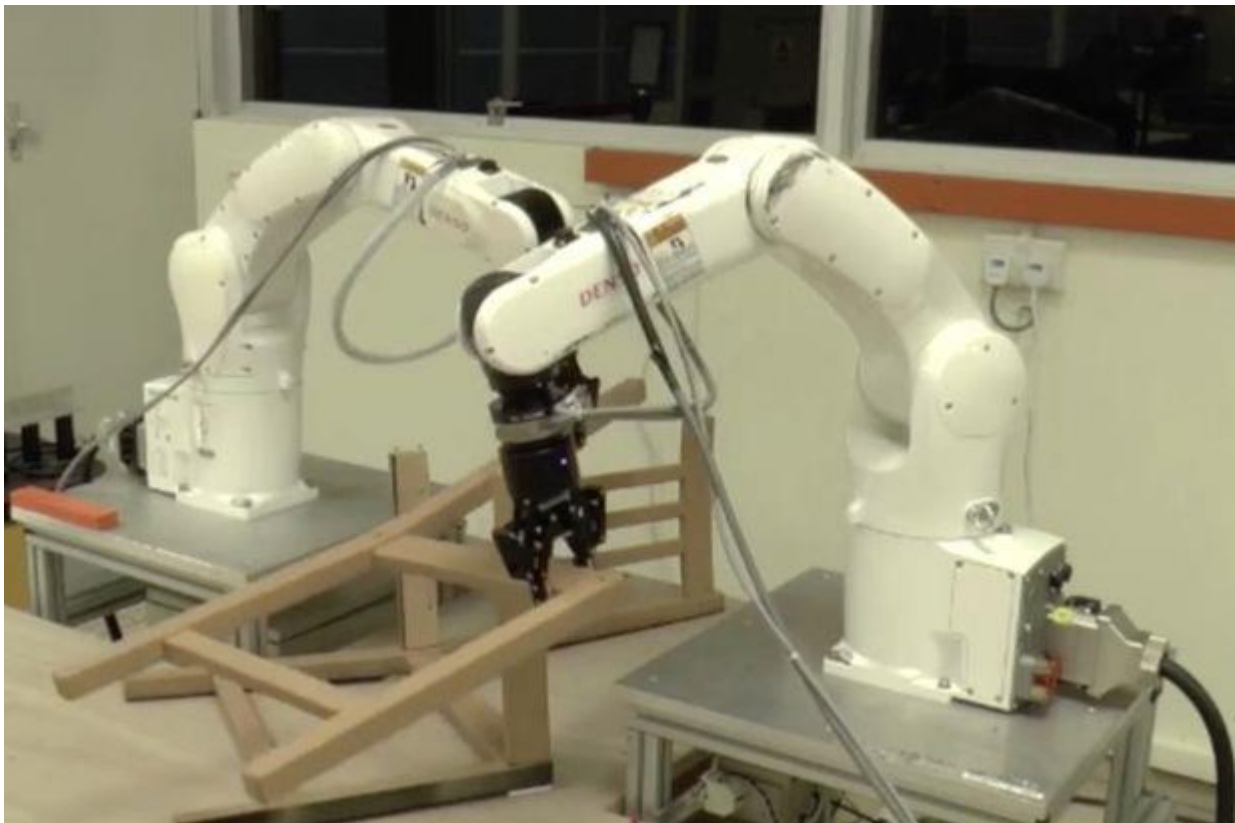
Engineers at Nanyang Technological University used a 3D camera and two robot arms kitted out with grippers and force sensors to take on the challenge of building an £18 'Stefan' chair.

The robots completed the task in 20 minutes and 19 seconds - with more than half that time spent planning moves.

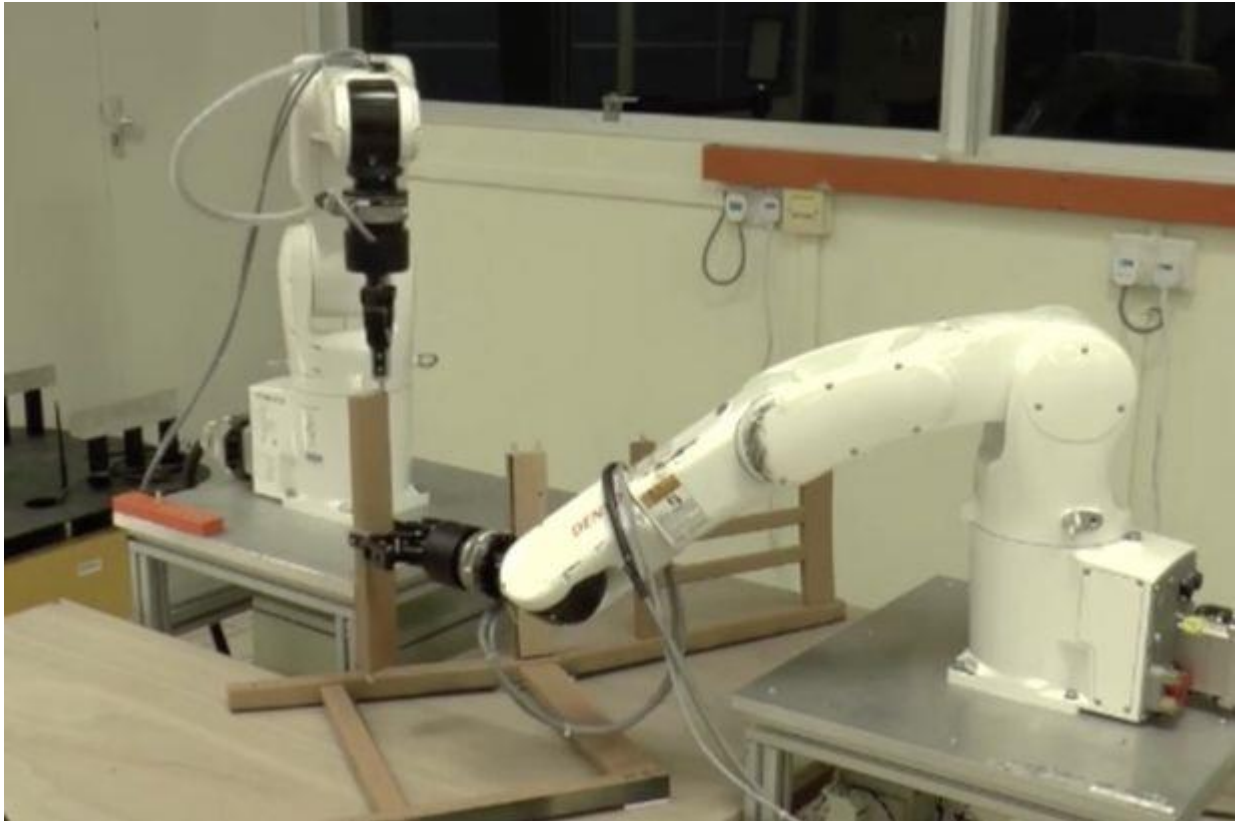
The actual assembly of the chair only took them nine minutes - a job which typically takes a person 10-15 minutes to complete, an Ikea spokesman told the [Guardian](#) .

Dr Quang-Cuong Pham told [Inverse](#) that the experiment could see robots building our Ikea purchases in the future.

In the study which was published in the journal Science Robotics, Pham and his colleagues explained how they copied human senses during the building process.



The robots spent half the time planning their moves (Image: Nanyang Technological University)



After a few failed attempts they managed to put the chair together in nine minutes (Image: Nanyang Technological University)

The study said: "At the start, the parts were placed randomly within the environment. This is similar to human assembly settings and contrasts with most existing works.

"To emphasise the genericity of the setup, we used only commercial off-the-shelf hardware: industrial robot arms, parallel grippers, force sensors, and three-dimensional camera.

"This reflects the genericity of human 'hardware': The same eyes and hands are used to assemble a large variety of objects."

It took the robots a few attempts to get it right - and they went through four chair kits in the process.

But they did not work out how to put it together on their own.

Programmers told them what the parts of the chair looked like, how they should go together and in what order.

A clip of the assembly process shows the robots dropping pins and parts of the chair until they manage to build the finished seat.



The study was carried out in a lab in Singapore (Image: Nanyang Technological University)



It hopes that robots could be used to complete more complicated tasks in the future (Image: Nanyang Technological University)

It shows them spinning the pins around until they find the hole and then working as a team to bolt it together.

Pham says he believes the study shows that robots could move on from industrial assembly lines to take on more complicated tasks.

Which is something Edward Johns, a roboticist at Imperial College London agrees with.

Speaking to the Guardian he said: "We will soon see manufacturing robots moving beyond car assembly lines, but the key long-term challenge is generalisation to everyday environments, outside of factories and laboratories.

"In particular, fine-grained object manipulation, such as hammering a nail into a hole, is extremely challenging for robots to adapt to new environments, and yet these are the skills which really showcase human dexterity above all other animals."