

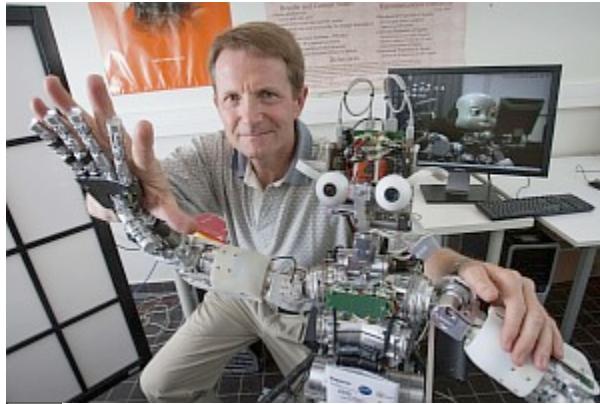
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SCIENCE

A robot that can take decisions

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LYON (FRANCE): Robots that can make their own decisions have so far been confined to science fiction movies, but a child sized figure with big eyes



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CNRS director of research with the 'iCub' robot. Scientists believe this intelligent class of robot will help in understanding the development of human consciousness. (Reuters Photo)

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and a white face is trying hard to turn fiction into reality.

Its name is iCub and scientists are hoping it will learn how to adapt its behavior to changing circumstances, offering new insights into the development of human consciousness.

Six versions of the iCub exist in laboratories across Europe, where scientists are painstakingly tweaking its electronic brain to make it capable of learning, just like a human child.

"Our goal is to really understand something that is very human - the ability to cooperate, to understand what somebody else wants us to do, to be able to get aligned with them and work together," said research director Peter Ford Dominey.

iCub is about 1 meter high, with an articulated trunk, arms and legs made up of intricate electronic circuits. It has a white face with the hint of a nose and big round eyes that can see and follow moving objects.

"Shall we play the [old game](#) or play a new one?" iCub asked Dominey during a recent experiment at a laboratory in Lyon, in southeastern France. Its voice was robotic, unsurprisingly, though it did have the intonation of a person asking a question. The "[game](#)" consisted of one person picking up a box, revealing a toy that was placed underneath. Then another person picked up the toy, before putting it down again. Finally, the first person put the box back down, on top of the toy.

Having watched two humans perform this action, iCub was able to join in the fun.

"The robot is demonstrating that it can change roles. It can play the role of either the first person in the interaction or the second," said Dominey, who receives European Union funding for his work with iCub.

"These robots will be a huge tool for analytical philosophy and philosophy of mind," said Dominey, whose background is in computational neuroscience - in layman's terms, building computer models for different brain functions.

Dominey said after years of research he had understood that such models needed to be "unleashed into the world" and given vision and motor control in order to interact with humans. "Is perception consciousness? The ability to understand that somebody has a goal, is that consciousness?" he asked. "These kinds of questions, we will be able to ask with much more precision because we can have a test bed, this robot, or zombie, that we can use to implement things," he said, describing working with iCub as "an outstanding pleasure."

In the short term, iCub could be used in hospitals to help patients in need of physiotherapy by playing games with them. In the longer term, iCub could gain enough autonomy to help around the house, making its own assessments of needs.

"People have their habits, loading their dishwasher, putting away their dishes. The goal is that the robot can become like a helper, just like a polite apprentice visitor would come into your house and begin to help you," said Dominey.

Anyone looking to cut down on their household chores will need to be patient, however. "It won't be for tomorrow. It's maybe in the next decade we will begin to see this kind of thing," said the scientist.