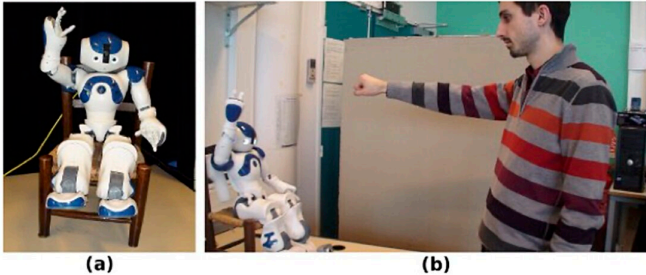


Humans interacting with robot found to mimic and synchronize with its movements

31 January 2022, by Bob Yirka



Experimental setup. (a) the NAO robot, (b) NAO Interacting with a human subject. Credit: DOI: [10.1371/journal.pone.0261174](https://doi.org/10.1371/journal.pone.0261174)

A team of researchers from Université de Cergy-Pontoise, the College of the Holy Cross and Montpellier University, has found that when humans interact with robots, they tend to synchronize their movements with it in ways similar to their interactions with other humans. Their paper is published on the open access site *PLOS ONE*.

Prior research has shown that when people interact with one another, they tend to synchronize their movements. It has been suggested that doing so is a form of unconscious bonding. In this new effort, the researchers noted that some studies have shown that the same sort of synchronizing goes on when humans interact with animals such as monkeys, and they wondered if humans would do the same with a [human-like robot](#). To find out, they asked fifteen volunteers to interact with a Nao [robot](#) while they monitored the movements of both the humans and the robot.

Nao is an autonomous humanoid robot. It has the same basic body parts as a [human](#) and can move in similar ways; thus, it provided a means for testing synchronicity between robots and humans. In their experiment, the researchers asked the humans to sit facing the robot and to extend their

arm out in front of them and then to move it up and down. Meanwhile, the robot did the same thing—it was running an algorithm that allowed it to move its arms in sync with the human or to move at another fixed pace. The humans were not told to sync or to not and they did not know what role the robot was playing in the experiment.

In studying video of the robot-human interactions, the researchers found that without prompting, all of the volunteers except one eventually synced the [movement](#) of their arms with the robot. They found that the one outlier had been intentionally not syncing with the robot as a show of independence. The researchers found that most of the volunteers knew they were synchronized with the robot but were not able to say whether they had done it on purpose. They also were not able to say for sure whether they had done the synchronizing or if it was the robot doing it.

More information: Ghiles Mostafaoui et al, Human unintentional and intentional interpersonal coordination in interaction with a humanoid robot, *PLOS ONE* (2022). DOI: [10.1371/journal.pone.0261174](https://doi.org/10.1371/journal.pone.0261174)

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