

Computers teach each other Pac-Man (w/ Video)

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Researchers in Washington State University's School of Electrical Engineering and Computer Science have developed a method to allow a computer to give advice and teach skills to another computer in a way that mimics how a real teacher and student might interact.

Matthew E. Taylor, WSU's Allred Distinguished Professor in Artificial Intelligence, reports on his method in the journal *Connection Science*.

Researchers had the agents – as the [virtual robots](#) are called – act like true student and teacher pairs: student agents struggled to learn Pac-Man and a version of the StarCraft video game. The researchers were able to show that the student agent learned the games and, in fact, surpassed the teacher.

While it may sound like fun and games, helping robots teach each other to play computer games is an important area of research in robotics – and it's not easy. If robots could teach each other tasks, then people wouldn't need to; for instance, a housecleaning robot could teach its replacement the job.

If you're worried about robots taking over the world, though, don't be.

"They're very dumb," says Taylor, an expert on robots, agents and helping them to learn.

Even the most advanced robots are easily confused, he says. And when they get confused, they stop working. He says it often takes two or three times longer than he thinks it will to get a robot to work at all.

PacManThe easiest way to successfully teach a robot new skills is to remove the "brains" of the old one and put them in the new one, says Taylor. Problems occur, though, when hardware and software don't work in the new model.

Furthermore, one long-term goal in robotics is for robots to teach skills to humans. But we can't simply insert their hard drives.

In their study, the researchers programmed their teaching agent to focus on action [advice](#), or telling a student when to act.

As anyone with teenagers knows, the trick is in knowing when the robot should give advice. If it gives no advice, the [robot](#) is not teaching. But if it always gives advice, the student gets annoyed and doesn't learn to outperform the teacher.

"We designed algorithms for advice giving, and we are trying to figure out when our advice makes the biggest difference," Taylor says.

He aims to develop a curriculum for the agents that starts with simple work and builds to more complex.

He also recently received an NSF grant to use ideas from dog training to train robotic agents. Eventually, he hopes to develop a better way for people to teach their robotic agents, as well as for robots to teach people.

Provided by Washington State University

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