

Video: Smart assembly line robots that learn from experience working alongside humans

March 3 2015, by Miles O'brien



In work done at the University of California (UC), Berkeley, and presented at the Association for Advancement of Artificial Intelligence conference in Austin, Texas, Siddharth Srivastava, a scientist at the United Technologies Research Center, Berkeley, (working with Abhishek Gupta, Pieter Abbeel and Stuart Russell from UC Berkeley and Shlomo Zilberstein from the University of Massachusetts, Amherst) demonstrated a robot that is capable of doing laundry without any specific knowledge of what it has to wash. Earlier work by Abbeel's group had demonstrated solutions for the sorting and folding of clothes. The laundry task serves as an example for a wide range of daily tasks that people do without thinking but that have, until now, proved difficult for automated tools assisting humans. The researchers' key insight was to use human behavior--the almost unconscious action of pulling, stuffing, folding and piling--as a template, adapting both the repetitive and thoughtful aspects of human problem-solving to handle uncertainty in computed solutions. By doing so, they enabled a PR2 robot to do the laundry without knowing how many and what type of clothes needed to be washed. Out of the 13 or so tasks involved in the laundry problem, the team's system was able to complete more than half of them autonomously and nearly

completed the rest--by far the most effective demonstration of laundering artificial intelligence to date. Credit: Siddharth Srivastava, Shlomo Zilberstein, Abhishek Gupta, Pieter Abbeel, Stuart Russell

Assembly line workers won't be swapping stories with their robotic counterparts any time soon, but future robots will be more aware of the humans they're working alongside.

With support from the National Science Foundation (NSF), roboticist and aerospace engineer Julie Shah and her team at the Massachusetts Institute of Technology (MIT) are developing next generation assembly line robots that are smarter and more adaptable than robots available on today's assembly lines.

The team is designing the robots with [artificial intelligence](#) that enables them to learn from experience, so the robots will be more responsive to [human behavior](#). The more robots can sense the humans around them and make adjustments, the safer and more effective the robots will be on the assembly line.

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