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TECH

## \$2.9 Million Pizza-Bot Can Barely Make a Pizza

BY DANIEL STARKEY 08.14.2017 :: 3:45PM EDT @DCSTARKEY

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Robot Companions Are Changing The

I'm often pretty pessimistic about the rise of robots. They will, eventually, easily be able to outclass humans in basically everything. And with Tesla looking to make electric, self-driving semis,ānd the like, that seems more and more like an inevitability

Ways Companions Interact With Humans

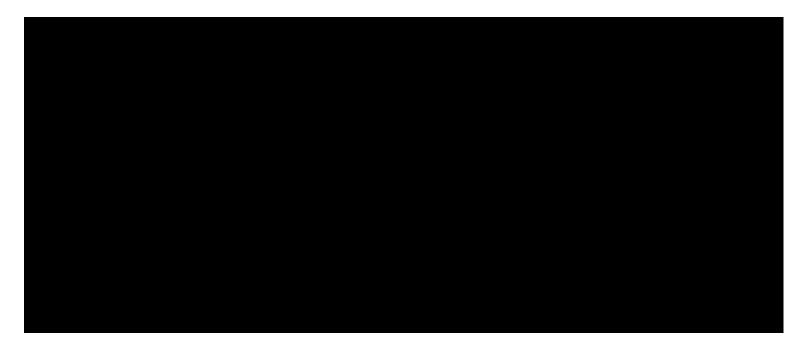
with each passing day. But, if your job is making pizzas, you probably don'thave anything to fear just yet.

Researchers at the University of Naples Federico II have been trying to get their bot to make the perfect pizza for four years, but it still isn't working. The Robotic Dynamic Manipulation (RoDyMan, for short) is a pretty impressive machine. It can sense the world in extraordinary detail and move with impeccable precision.

Professor Bruno Siciliano, the project lead, has even hired one of the world's best pizzaiolos (the proper term for a master pizza-maker). Enzo Coccia, to provide motion capture in the hopes that the team will be able to feed that data into RoDyMan so that it can get it's technique just right.

"I have a great responsibility as I have to teach it all the things related to the Neapolitan pizza: the dough grasp, the precision grasp in the toss phase, in which you have to grab and release the doughdisc while assessing the texture too, the movements between the palm and thumb, the bimanuality and I have to be able to instill the organizational strategy in bimanual tasks as well," Coccia wrote.

When it does finally come together, the bot shouldn't have muchissue making the perfect Neapolitan. For not, though, the process is socomplex — requiring a myriad of different high-precision skills like kneading and rolling and tossing, that it's just not feasiblefor it to handle the whole procedure quite yet.



The project has picked up quite a bit of press, in part, because of its extraordinary cost. Spending that kind of cash on a pizza-making bought certainly seems frivolous to many. That's led to some saying that the project is a giant waste of "dough." When itdoes finally get the recipe down, though, the hope is that the skills the bot picks up will be transferable to other fields like medicine.

"Preparing a pizza involves an extraordinary level of agility and dexterity," Siciliano told Scientific American. The fact that it's taken nearly five years to get the bot running evidence of that. What may be simple to us, is monumentally difficult for a bot. Once we're past childhood, it's not too ard for most people to be able to toss an object in the air and intuitively sense where it'll fall so we can catch it. Bots just don't have that. And dough-tossing is but one step of many in making the perfect pie.

Siciliano is confident, though, that his bot will be ready in time for the Naples pizza festival in May next year. The legendary festival would be the ultimate gauntlet for the bot and would certainly stand up to the most discerning of pizza critics. When the time comes, though, Siciliano won't be partaking.

"I would never eat a pizza made by a robot," he told Scientific American. "It would not have the taste a real pizzaiolo, with his soul, would put in it."

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