

# Warehouse item-picking robot is a perception-controlled mover

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Credit: Magazino

(Tech Xplore)—Retail has gone digital to the point where ecommerce is

commonplace. Your neighbor is just as likely to be waiting for her package from Amazon as she is to take the cross-town bus and get the same item in a three-level shopping mall.

Small wonder why warehouse systems are so focused on fast, efficient, precise and safe shelf-picking solutions to make sure products get out of the warehouse and off to consumers in good time. Small wonder a lot of robotics labs are working on robots that can perform commercial picking.

Easier said than done, nonetheless. Stock-picking, for robots, is not a simple proposition. Last year in *Gizmag* it was reported that an Amazon spokesperson noted how "the task of picking items off the shelf may seem simple, but it involves all domains of robotics. The [robot](#) has to be capable of object and pose recognition. It must be able to plan its grasps, adjust manipulations, plan how to [move](#), and be able to execute tasks while noticing and correcting any errors."

Evan Ackerman in *IEEE Spectrum* would not disagree. Ackerman reported the hard part is getting those robots to pick items from shelves, "and apparently it's really hard." He said even with teams of [researchers](#) all collaborating on picking tasks with very expensive robots, "results have been good but not inspiring."

One more step in trying to get the picking robot right has been made by the German startup Magazino. They have a video out of their Toru robot, which grasps items, safely works alongside people, and is capable of autonomous navigation, equipped with certified security sensors. The video introduces their Toru Cube model for item-specific picking—and the edge the company has involves the fact that Toro Cube is perception-controlled.

What is "perception-controlled" all about? These are mobile robots

designed not only to move around freely but also dynamically among a human workforce. Objects are identified on shelves, localized by 2D and 3D cameras, grasped and placed precisely at their desired destination.

So what's the big deal? Writing in *Robotics Tomorrow*, Frederik Brantner walked readers through a change in picking design. "Current warehouse picking systems are typically picking units operating on rails. They use standardized carriers and complete recurring tasks set within very precise [parameters](#)," and in turn humans cannot work directly with such systems—a clash between a highly structured environment and one with numerous variables.

The company saw an opportunity to make a difference, in engineering Toru to navigate between shelves designed for humans, to complement the regular workforce, and to operate in and around environments with levels of uncertainty.

The Toru Cube video at the end says this is "The picking robot for rectangular objects." Aw, rectangular, such as books and boxes? If that sounds restrictive, Ackerman made the point that nonetheless "you can imagine how much of (say) your average fulfillment warehouse consists of books and boxes of a size that Toru can handle, and you're looking at a pretty significant percentage of robot-pickable stuff."

What's next for Magazino? *IEEE Spectrum* said they are also working on "a slightly different version of Toru, called Toru Flex, which includes a [robot](#) arm intended to pick irregularly shaped objects."

**More information:** [www.magazino.eu/?lang=en](http://www.magazino.eu/?lang=en)

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