

# THIS ROBOT CAN FIND OBJECTS BURIED UNDER A PILE

Relevant for: Science & Technology | Topic: Robotics & Artificial Intelligence

The research team ran trials using real robotic arms in pile of household items, like office supplies, stuffed animals, and clothing | Photo Credit: MIT

Researchers at MIT have developed a new robotic system that can retrieve any object buried under a pile. As long as some items in the pile have RFID tags, the target item does not need to be tagged for the system to recover it.

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The system is known as FuseBot, programmed with probabilistic reasoning that helps it to identify the probable location and orientation of objects under the pile, according to the research report.

Besides reasoning, FuseBot uses RF signals to remove obstructing objects and extract the target item.

With FuseBot, a robotic arm uses an attached video camera and RF antenna to retrieve an untagged target item from a mixed pile. The system scans the pile with its camera to create a 3D model of the environment.

Simultaneously, it sends signals from its antenna to locate RFID tags. These radio waves can pass through most solid surfaces like cardboard, wood, and plastic, allowing the robot to “see” deep into the pile, the research report noted.

The algorithm highlights probable locations of the target item; the robot knows its size and shape. Then the system narrows down the objects in the pile and RFID tag locations to determine which item to remove and find the target item.

The research team ran trials using real robotic arms in pile of household items, like office supplies, stuffed animals, and clothing. They varied the sizes of piles and number of RFID-tagged items in each pile.

FuseBot extracted the target item successfully 95% of the time, compared to 84% for other robotic systems which use only vision.

It achieved this using 40% fewer moves, and found more hidden items than other robotics systems in half the time.

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