

New robotic arm that could service satellites or pick apples developed

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An innovative new type of robotic arm that could be useful in outer space or in the orchards has been developed by Ben-Gurion University of the Negev (BGU) researchers.

BGU's minimally actuated serial [robot](#) (MASR) operates much like a traditional snake robot with many connected motors, except that it only uses two: one to travel along the structure and another to rotate the joint it needs to flex.

"This unique minimalistic configuration, which can be applied to any serial robot with two or more links, reduces weight, size and cost," says Dr. David Zarrouk, a lecturer in BGU's Department of Mechanical Engineering, and head of the Bio-Inspired and Medical Robotics Lab. It allows a [robotic manipulator](#) to achieve a wide range of movements using few actuators that aren't possible with other robots.

"This robot is easy to operate and likely has a number of [applications](#) including space, agriculture, and industry, as well as search and rescue," Dr. Zarrouk adds.

The [robot design](#) is ideal for space applications due to its lightweight and inertia and could be used to fix malfunctioning satellites, and for docking or refueling to increase their satellite lifespan. Dr. Zarrouk also envisions that picking fruit is another potential application.

"The configuration of the MASR robot combines the best characteristics

of existing robot technologies to achieve a high level of accuracy and control," he says. "In addition, the ability to add or subtract up to four links in less than a minute makes it possible to target quick repairs in isolated sections."

The BGU researchers are also experimenting with adding motors to increase speed and are exploring ways to apply their minimally actuated concept to walking robots, utilizing motors that can change position along the legs and move from one to another when necessary.

Provided by American Associates, Ben-Gurion University of the Negev

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