New creepy, crawly search and rescue robot developed

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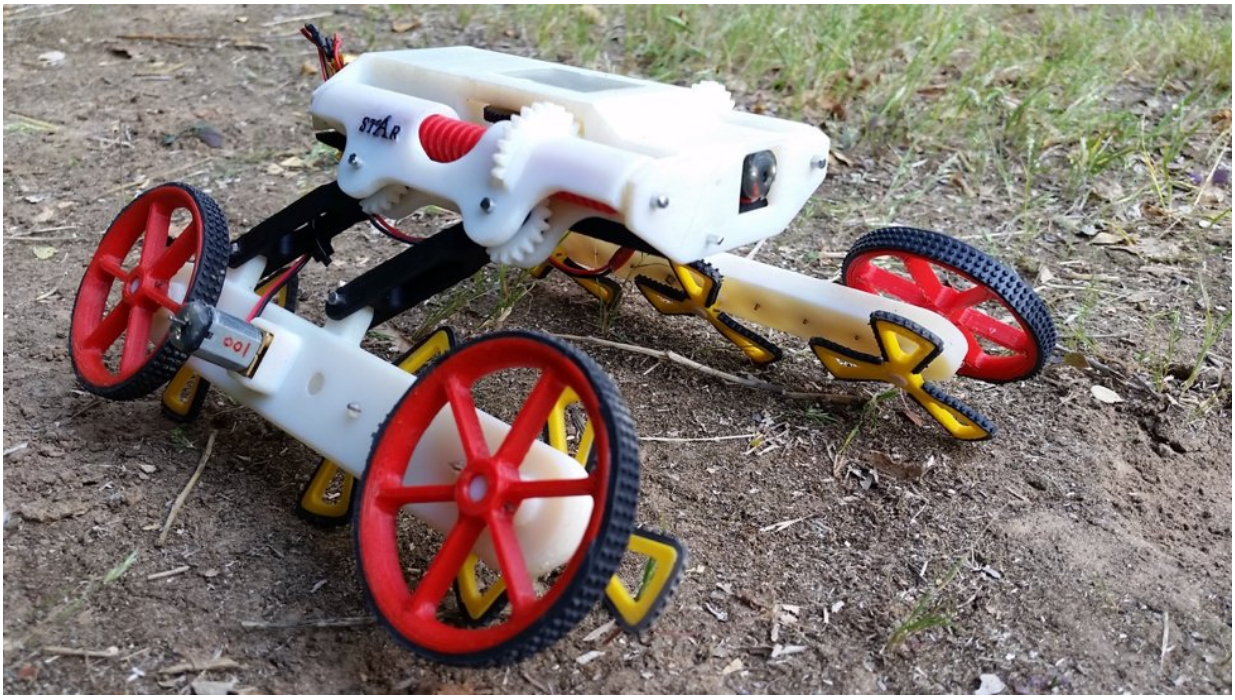

Ben-Gurion University of the Negev researchers designed the Rising Sprawl-Tuned Autonomous Robot (RSTAR) to function simply and reliably, change shape and overcome common obstacles without any external mechanical intervention. RSTAR uses adjustable sprawling legs angled downwards and outwards from its body to creep and crawl and climb over and through a variety of obstacles and surfaces. Credit: Ben-Gurion U

A new highly maneuverable search and rescue robot that can creep,

crawl and climb over rough terrain and through tight spaces has been developed by Ben-Gurion University of the Negev (BGU) researchers.

The new Rising Sprawl-Tuned Autonomous Robot (RSTAR) utilizes adjustable sprawling wheel legs attached to a body that can move independently and reposition itself to run on flat surfaces, climb over large obstacles and up closely-spaced walls, and crawl through a tunnel, pipe or narrow gaps.

The innovative BGU robot was introduced at the International Conference on Robotics and Automation (ICRA 2018) in Brisbane, Australia, May 21-25.

"The RSTAR is ideal for search and rescue operations in unstructured environments, such as collapsed buildings or flooded areas, where it must adapt and overcome a variety of successive obstacles to reach its target," says Dr. David Zarrouk, a lecturer in BGU's Department of Mechanical Engineering, and head of the Bio-Inspired and Medical Robotics Lab. "It is the newest member of our family of STAR robots."

Dr. Zarrouk and BGU student and robotics lab worker Liran Yehezkel designed RSTAR to function simply and reliably, change shape and overcome common obstacles without any external mechanical intervention. Its speed and relatively low energy consumption make the robot ideal for a broad range of applications that may require longer work time.

The robot uses its round wheels to travel more than three feet per second on hard flat surfaces and switches to spoke wheels to traverse extremely soft or granular surfaces, like thick mud or sand, without getting stuck. It also climbs vertically and crawls horizontally by pressing its wheels to walls without touching the floor.

The BGU team is working on a larger STAR robot version that will climb over larger obstacles, including stairs, and carry more than four pounds of sensors and supplies. A smaller STAR or RSTAR will piggyback on the larger robot to use in hard-to-reach areas and sneak in between narrow cracks and passages.

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

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