

News & Comments

The invention of "Necrobot" - a Dead Spider Capable of Grasping

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Using dead wolf spider carcasses, [scientists](#) have developed mechanical grippers. As a subfield of robotics, soft robotics utilizes nontraditional materials to achieve greater flexibility and unique functions that traditional plastics, metals, and electronics cannot. The team's lab specializes in soft robotics.

Humans and other mammals generate motion by contracting and relaxing opposing muscles, whereas spiders use hydraulics to move their limbs. A chamber near the spider's head can be contracted, sending blood to the legs and forcing them to extend. Their legs curl up again when the pressure from the chamber is relieved.

Spiders can be blown up with air by inserting a needle into their bodies and gluing it in place to seal any gaps. Necrorobotic grippers can lift up to 130% and sometimes significantly more of their own body weight with this system.

Necrorobotics takes advantage of unique designs created by nature that cannot be replicated artificially or are difficult to create. In robotics, spiders can also be used as biodegradable parts, which would reduce waste. Micro-manipulation, such as manipulating microelectronic devices, is one possible application. After two days or 1,000 cycles of opening and closing, the dead spider gripper begins to wear out. Dehydration of the joints may be to blame for that. Polymeric coatings may be able to overcome this.

Scientists coated wolf spiders in beeswax and found their mass decreased 17 times less than uncoated spiders over 10 days, which indicates they retained more water and their hydraulic system worked longer.

According to the authors, their research represents the first step in extending necrobot locomotion to each leg of the spider independently actuated, which doesn't seem like a nightmare. The researchers are also interested in working with biotic materials derived from other creatures with similar hydraulic properties.

KEYWORDS

Necrorobotics, spiders, Robotics, Soft Robots, Wolf Spider, Rice University, Hydraulics

