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## Robotics Scientists' New 'Shrewbot' Uses Whiskers To Navigate

The Huffington Post [Rebecca Searles](#)

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What does one of the world's tiniest rodents have to say about robot design? Quite a lot, actually. British scientists have come up with a bot that navigates not by sight but with the help of whiskers patterned on those of the [etruscan shrew](#).

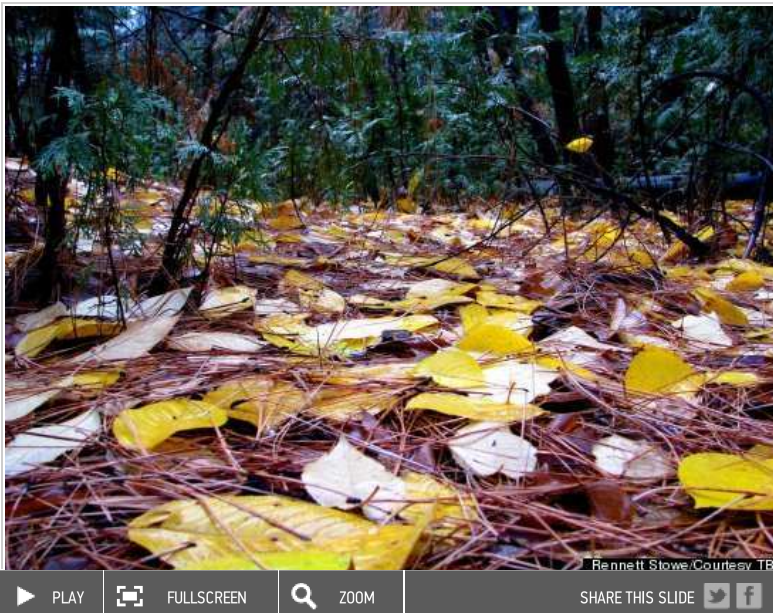
They're calling their creation the "shrewbot."

University of Bristol scientists, in collaboration with other UK teams, have been inspired by a 4-centimeter-long, nocturnal rodent to develop ground-breaking whisker technology that helps robots get around.

*(Keep clicking for more examples of biomimicry. Story continues below.)*

### A WALK IN THE WOODS

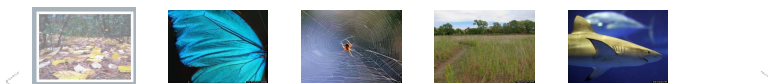
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One early autumn day, David Oakey and his design team at the carpet manufacturer InterfaceFLOR strolled through a deciduous forest with Dr. Dayna Baumeister, co-founder of [Biomimicry 3.8](#). The walkers noticed repeating patterns on the forest floor. Up close, they saw shapes, leaves and reflections. When they stepped back, the random landscape turned into a sort of uniform chaos.

By [replicating nature's randomness](#), the carpet manufacturer reduced its waste and its toxic legacy. Matching the color of a standard carpet is difficult, as each dye lot can vary noticeably. This can mean tossing out replacement runs or producing material that is never needed. But now, instead of uniform carpets identical in every square foot, InterfaceFLOR is making tile with a slightly different pattern and color, so that the whole blends into an intentionally variable pattern. Any tile spilled upon or damaged could be easily replaced, with old tiles recycled into the production of other tiles.

"Nature makes only what she wants, where she wants and when she wants. No waste on the cutting-room floor," writes Janine Benyus in her book, ["Biomimicry: Innovation Inspired By Nature."](#)



The Shrewbot is the latest in a series of robots that use 'active touch' rather than vision to navigate their environment, meaning it senses obstacles when its whiskers 'feel' them. The shrew that inspired the design relies on its whiskers to find, track, and capture its prey in pitch-black darkness.

In nature, the shrew rapidly sweeps its whiskers back and forth to pick up vibrations; these reveal information about the environment such as the location, shape, and texture of objects. This information is then stored in its memory.

Since machine vision is a much more difficult undertaking, artificial whiskers with sensitive electronic roots may be an easier alternative for robot locomotion. But the technology also has advantages over other forms of tactile processing. "Whiskers themselves are easily replaceable since the sensory cells are at the base of the whisker, not the top, unlike our fingers for example, which are more easily damaged and hard to replace." said University of Sheffield Professor Tony Prescott in [a written statement](#).

With sensitive electronics safely housed away from the tips that actually make contact with objects, whiskers can easily be sacrificed, making these robots more resilient than other touch-based robots.

Researchers believe the whisker technology may be applicable in search or military robots that need to get around in smoke-filled or dark environments.

"Overall this project has taken us to a new level in our understanding of active touch sensing and in the use of whisker-like sensors in intelligent machines," said University of the West of England Bristol Professor Tony Pipe.

The shrewbot isn't the first example we've seen of robotics taking cues from nature. Robot technology has been inspired by a [wide range of creatures](#): from the speedy legs of ostriches and the sticky foot pads of geckos, to the swarming behavior of ants and the soaring hops of sand fleas.

