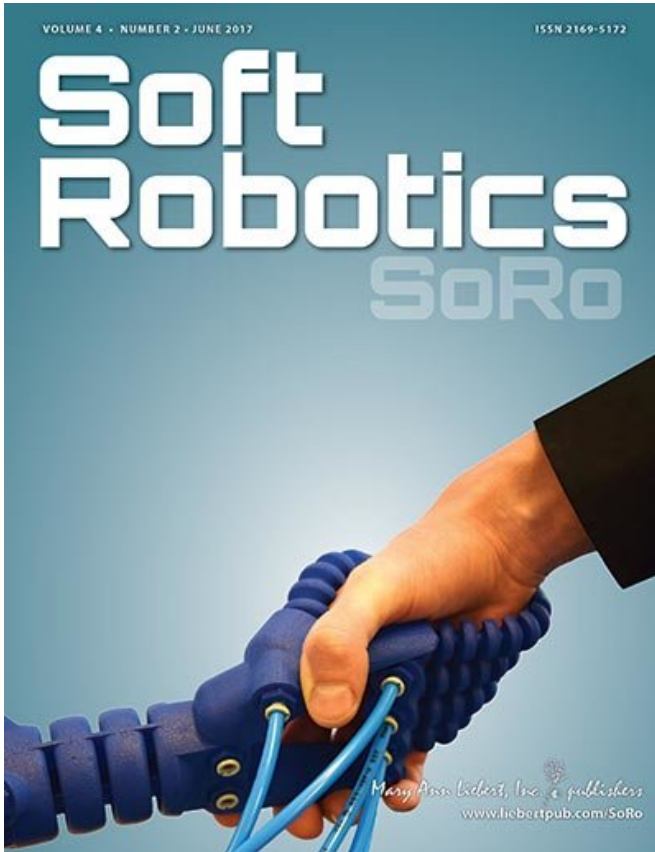


3-D-printed underwater vortex sensor mimics whiskers of sea animal

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Credit: Mary Ann Liebert, Inc

A new study has shown that a fully 3D-printed whisker sensor made of polyurethane, graphene, and copper tape can detect underwater vortices with very high sensitivity. The simple design, mechanical reliability, and low-cost fabrication method contribute to the important commercial implications of this versatile new sensor, as described in an article in *Soft Robotics*

Coauthors Jahan Zeb Gul, Kim Young Su, and Kyung Hyun Choi, Jeju National University, South Korea, provide a detailed description of the sensor, which mimics the vortex-detecting capability of the

whiskers of a pinniped—a semiaquatic carnivore—as it tracks its prey in the water. The researchers report on the 3D [fabrication method](#) used to produce the whisker sensor and how the analog signals that indicate resistance changes are digitized and fed to a microcontroller for vortex detection.

The article is entitled "Fully 3D Printed Multi-Material Soft Bio-Inspired Whisker Sensor for Underwater Induced Vortex Detection."

"This paper is a wonderful example of bioinspired [soft robotics](#). The authors have used observations of a natural system to build a materials-based sensor that can be used on underwater robots for better positional control, navigation, and object detection," says Editor-in-Chief Barry A. Trimmer, PhD, who directs the Neuromechanics and Biomimetic Devices Laboratory at Tufts University (Medford, MA).

More information: Jahan Zeb Gul et al. Fully 3D Printed Multi-Material Soft Bio-Inspired Whisker Sensor for Underwater-Induced Vortex Detection, *Soft Robotics* (2018). [DOI: 10.1089/soro.2016.0069](https://doi.org/10.1089/soro.2016.0069)

Provided by Mary Ann Liebert, Inc

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