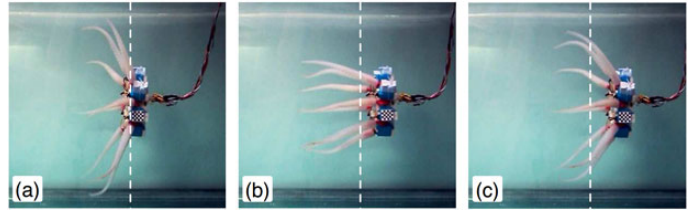


Robot Octopus Shows Off New Sculls

By Evan Ackerman

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Octopi are pro swimmers, thanks (at least in part) to that octet of arms they've got going on. They've adopted a particular swimming gait called sculling, which works great for them, but until they start publishing scientific papers, we're missing out on all of their gait testing data. Roboticists have had to start from scratch, and along the way, they've experimented with some swimming gaits that we've *never* seen a real octopus try and pull off.



Of all of these gaits, the only one that octopi actually **use** is the sculling gait, when all eight arms move in synchrony. However, according to recent experiments, some of the artificial gaits produce much smoother movements, which may make more sense for octopus-inspired robots.

Towards the end of the video, rigid tentacles are replaced with undulating compliant arms that look alarmingly realistic. There are still some important bits missing, though: in addition to the pump jet motor that serves as an octopus' primary method of propulsion, real octopi also have a web that connects the bases of the tentacles to each other. Future research on this project will start taking a look at what effect the web has on propulsion, and how actively controlled, multi-joint arms can be used to come up with even more gaits. [Robot octopi](http://spectrum.ieee.org/automaton/robotics/robotics-hardware/robotic-octopus-takes-first-betentacled-steps) (<http://spectrum.ieee.org/automaton/robotics/robotics-hardware/robotic-octopus-takes-first-betentacled-steps>), here we come!

"Octopus-inspired Eight-arm Robotic Swimming by Sculling Movements," by Michael Sfakiotakis, Asimina Kazakidi, Nikolaos Pateromichelakis, and Dimitris P. Tsakiris from the Foundation for Research and Technology, in Hellas, Greece, was presented earlier this month at the [IEEE International Conference on Robotics and Automation \(ICRA\)](http://spectrum.ieee.org/tag/icra) (<http://spectrum.ieee.org/tag/icra>) in Karlsruhe, Germany.

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