

## **Robot-fish interact with live fish**

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Comparison of the robotic-fish to a zebrafish individual. Credit: The Polytechnic Institute of New York University

Scientists have developed robot-fish that can interact intelligently with live zebrafish according to a study published in *Journal of the Royal Society Interface* today.

Researchers at The Polytechnic Institute of New York University explored the interactions of zebrafish with a <u>robotic-fish</u> that autonomously observed and adapted to the live fish's motion. An <u>experimental setup</u> was designed to allow the robotic-fish to change the movement of its tail as the fish approached or receded in the tank. Like a trained leader, a robotic-fish that beat its tail faster as zebrafish moved closer and slower as they swam away was found to be the most preferred



by zebrafish.

A robotic fish was placed in a compartment next to one containing a live zebrafish. The preference of the live fish was indicated by the average time spent on each side of the tank; either close to or further away from the robot-fish. The tail-beating of the robotic-fish was controlled in realtime based on feedback from fish motion; what is called a closed-loop control system.

This study has demonstrated that real-time visual feedback from the robotic-fish has a significant role in attracting live <u>zebrafish</u> and influencing their behaviour. Introducing robots in the wild may open <u>new horizons</u> for conservation studies, wherein closed-loop control can be used to manipulate the response of live subjects.

**More information:** Closed-loop control of zebrafish response using a bioinspired robotic-fish in a preference test, Journal of the Royal Society Interface, <u>dx.doi.org/10.1098/rsif.2012.0540</u>

Provided by The Royal Society

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