

May 12, 2010

Object detection and motion control using an artificial lateral line

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ABSTRACT OF THE TALK

The lateral line of fish and certain invertebrates is a complex sensory organ that can be used to detect and identify nearby objects and prey.

In fish, it has also been implicated in providing feedback for control of swimming motions. Within the CILIA project, we have designed and built a biomimetic robot that uses an artificial lateral line canal to detect and localize actively vibrating objects. The canal is fitted with MEMS-based flow sensors, and processing algorithms based on neural networks have been developed. Tests have shown that objects can be localized, but not with high reliability. In addition, plans for future research will be discussed, including incorporating lateral line sensors into the control of swimming, for example through feedback entrainment in a central pattern generator.