

B. Invited Talks

Invited Speaker 1

Mobiligence: Emergence of Adaptive Motor Function through Interaction among the Body, Brain and Environment



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Abstract

Adaptiveness is one of the target functions of research on autonomous robotic systems. However, the adaptiveness realized in the robotic research so far is quite limited and specific to sample problems and systems configurations. On the other hand, all the animals from primitive ones to insects or mammals have commonly the adaptiveness to behave in an unexpected environment. Such adaptive behaviors are the intelligent sensory-motor functions, and most essential and indispensable ones for animals to survive.

It must be effective to consult biological systems to find the general design principle to realize the adaptiveness in artificial systems as well as robotic systems. However, the secret of the mechanism to realize the adaptiveness in animals is not yet thoroughly revealed even in biology as well as brain science and neurophysiology. Such an adaptive function is considered to emerge

from the interaction of the body, brain, and environment, which is caused by a subject to act or move. We call the intelligence for generating adaptive motor function *mobiligence*.

The *Mobiligence* project started from 2005, which was accepted as a five-year program of Scientific Research on Priority Areas of Grant-in-Aid Scientific Research from the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT). The present program is designed to investigate the mechanisms of mobiligence by collaborative research in biology and engineering from systematic and synthetic (constructive) approach. In this talk, the abstract of the program is introduced in contrast to adaptive behaviors achieved in the robotic research so far.