

## Erhan Öztop

Adaptive Systems through Human Sensorimotor Learning  
Erhan Öztop

Erhan Öztop is a Computer Science faculty member of Ozyegin University, Istanbul, Turkey, and is affiliated with ATR, Japan as a visiting researcher.

The research interests of Dr. Öztop include computational study of action understanding and intelligent behavior, human-machine interface, cognitive neuroscience, robotics and machine learning.

Webpage: <http://www.ozyegin.edu.tr/AKADEMIK-PROGRAMLAR/Muhendislik-Fakultesi/Computer-Science/People?lang=en-US#erhano> <sup>[1]</sup>

### Abstract of communication:

The sensorimotor learning capacity allows humans to efficiently learn to use new tools and control tasks. To realize this ability in complex systems such as robots is still elusive. One promising way to approach this problem is to transfer human sensorimotor skills to robots using a human-in-the-control-loop setup. The idea is to consider the target robotic platform as a tool that can be controlled by a human. Provided with an intuitive interface for controlling the robot, the human learns to perform a given task using the robot. After sufficient learning, the skilled control of the robot by the human provides learning data points that can be used to obtain an autonomous controller so that the robot can perform the task without human guidance. The feasibility of this framework is supported by the neuroscientific findings on body schema and has been shown to work for several robot skill synthesis scenarios. From an engineering point of view, the approach relies on techniques from teleoperation and machine learning, and has the same goals with robot learning by demonstration. The key difference is that the proposed framework includes the human in the control loop and employs the human brain as the adaptive controller to accomplish a given task. Once the control proficiency has been attained, the data generated by the human performance allows the human policy to be transferred to the robot. In this talk, I will introduce the human-in-the-loop framework and outline the current challenges to be tackled for facilitating a wide impact for the development of adaptive systems for complex environments.

Adaptive Machines in Complex Environment


June 13

Keynote talk

### Attachment

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