Ugur, E., Nagai, Y., Oztop, E., and Asada, M. (Eds) Proceedings of
Humanoids 2012 Workshop on Developmental Robotics: Can
developmental robotics yield human-like cognitive abilities?
November 29, 2012. Osaka, Japan

Invited Talk IV

Integrating visual perception and manipulation for autonomous learning of object representations

Dr. Ales Ude

Jozef Stefan Institute, Ljubljana, Slovenia

Abstract: The human ability to discern objects in the scene is not innate but rather acquired during the early development. From birth on, children are constantly exposed to events caused by the effects of their own actions. The information thus gained can be used to evolve the agents perceptual judgements, including the way how objects are perceived. Reliable object perception is still difficult to achieve in artificial systems because it is not clear how to define the concept of objectness in its full generality. In our research we follow the paradigm that integrates the development of perceptual representations with the robots manipulation capabilities and tactile sensing. In this way the robot can introduce additional information that can be utilized to reliably separate previously unknown objects from the background and learn their representations and affordances.

Speaker Bio: Ale Ude studied applied mathematics at the University of Ljubljana, Slovenia. He received the Ph.D. degree for work on robot programming by demonstration from the University of Karlsruhe, Germany. He was an STA fellow in the Kawato Dynamic Brain Project, which was conducted at ATR in Kyoto, Japan. Currently he is the head of Humanoid and Cognitive Robotics Lab at Joef Stefan Institute, Ljubljana, Slovenia and is also associated with the ATR Computational Neuroscience Laboratories in Kyoto, Japan. His current research interests include learning in humanoid systems, especially imitation learning and learning by exploration, humanoid robot vision, and humanoid cognition.