

ICS research seminar on June 15th, 2018

Presenter: Erhard Wieser

Title:

Spatiotemporal prediction for bootstrap learning of robot sensory-motor capabilities

Abstract:

In developmental robotics, a long-term challenge is to make robots learn meaningful behaviour and cognitive capabilities in an open-ended manner. A realization of such an open-ended learning system is very difficult and requires the implementation of a set of principles that are motivated from biology. I focus on a key principle inspired by the human cortex: spatiotemporal prediction. What is it, and how can it be useful for learning and generating sensory-motor capabilities on robots? I explain a particular type of spatiotemporal learner and suggest a way to optimize it. Moreover, I show how to extend it with other components, forming a cognitive architecture that learns to coordinate a robot. To this end, I explain the computational modelling, and show robot behaviours that result from particular components of the architecture, as well as sensory-motor capabilities that result from the entire architecture as a holistic system. I conclude by summarizing the benefits of my work.