

Teaching Multiagent Systems with LEGO MindStorms RCX Robot Controller.

Ole Caprani,
University of Aarhus,
Department of Computer Science,
Aabogade 34,
DK-8200 Aarhus N, Denmark
+45 8942 5611
ocaprani@daimi.au.dk.

Tutorial category can be either half-day or full-day. A full-day tutorial will make it possible to have hands-on experience with programming of the RCX.

Tutorial description:

Autonomous agents are systems that inhabit a dynamic environment in which they try to satisfy a set of time-varying goals. An agent can sense the environment through its sensors and act upon the environment using its actuators. The agent decides how to relate its sensor data and internal state to actuator commands in such a way that its goals are attended to successfully. For agents like mobile robots the goal of the agent might be to find its way to a battery recharge station while avoiding obstacles. In multiagent systems communication among agents can be used to exchange information to achieve common goals like dancing or playing music.

The LEGO MindStorms RCX computer will be used as an example of a controller that can be used to implement an agent. Several such agents can communicate through the RCX infra-red transmitter/receiver. The RCX computer is programmed in C to provide low-level control of sensors, actuators and cpu scheduling.

A description of a similar one semester course for computer science students can be found on:

<http://www.legolab.daimi.au.dk/CSaEA/>

In the Course Schedule for that course a series of RCX programming lessons is included. These will be presented as a way of teaching programming of physical agents to computer science student.

Ole Caprani is associate professor and has been teaching for several years in computer science subjects like operating systems, computer architecture, embedded systems programming and robotics.