

Tutorial

Format: Tutorial, Half day on October 10, 2016.

Title: Multi-Robot Autonomy in Robot Soccer as an Adversarial Domain

Organizers: Minoru Asada (Osaka Univ.), Manuela M. Veloso (CMU), Daniele Nardi (Univ. of La Sapienza), Dan Lee (UPenn)

Objectives

In this tutorial, we will introduce robot soccer as a problem involving planning for the coordination among multiple robots in response to an opponent team. We will focus on presenting a variety of techniques used in robot soccer, including (i) multi-robot strategies that respond to the score of the game in a finite horizon game, (ii) role assignment through predefined and negotiated agreements; (iii) distributed state sharing and decision making; (iv) decentralized sparse interaction planning under uncertainty; and playbook generation, learning, and adaptation. The tutorial will be illustrated with RoboCup games of the different soccer leagues, namely simulation, small-size, middle-size, standard platform, and humanoids.

Topics of interest: RoboCup Soccer, multi-robot strategies, role assignment through predefined and negotiated agreements, distributed state sharing and decision making, decentralized sparse interaction planning under uncertainty

Intended audience

This tutorial aims to introduce one of the main research issues of RoboCup, that is, multi-robot autonomy in robot soccer as an adversarial domain. The intended audience is: (1) potential teams to attend the RoboCup, (2) students and young researchers who like to share the research issues and research environments offered by RoboCup, (3) RAS members who like to know about RoboCup as science/technology activities.

Program (tentative)

Time	Talk
09:00 - 09:25	Opening and Talk1: Brief History of RoboCup and report from RC2016 (Minoru Asada)
09:25 - 10:00	Talk 2: An algorithm on play selection and adaption (Manuela Veloso)
10:00 - 10:30	Coffee Break
10:30 - 11:05	Talk 3: Role Assignment Through Predefined And Negotiated Agreements (Daniel Lee)
11:05 - 11:40	Talk 4: Distributed State Sharing And Decision Making (Daniele Nardi)
11:40 - 11:50	Talk 5: A new challenge in RoboCup 2017 Nagoya (Komei Sugiura (tentative))
11:50 - 12:00	Closing (Minoru Asada)