Atelier on Definition of High-Level Coordination Techniques for Robotic Teams

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Quick Intro:

The server is a system that enables various teams to compete in a game of soccer. Since the match is carried out in a client-server style. Each client is a separate process and a team can have up to 12clients, i.e. 11 players (10 fielders + 1 goalie) and a coach. The players send requests to the server regarding the actions they want to perform (e.g. kick the ball, turn, run, etc.). The server receives those messages, handles the requests, and updates the environment accordingly. In addition, the server provides all players with sensory information (e.g.visual data regarding the position of objects on the field, or data about the player's resources like stamina or speed). It is important to mention that the server is a real-time system working with discrete time intervals (or cycles). Each cycle has a specified duration, and actions that need to be executed in a given cycle, must arrive at the server during the right interval. Therefore, slow performance of a player that results in missing action opportunities has a major impact on the performance of the team as a whole.

The server has the following components:
- rcssbase is base code used by the other modules.
- rcssserver performs the actual simulation.
- rcsslogplayer allows you to replay logs (*.rcg files) created by rcsserver.
- rcssmonitor and rcssmonitorclassic allow you to watch game in progress or game being replayed by the log player.

The Soccer Monitor is a visualization tool that allows people to see what is happening within the server during a game. Currently the monitor comes in two flavors, the rcssmonitor and the rcssmonitor classic. The information shown on both monitors include the score, team names, and the positions of all the players and the ball. They also provide simple interfaces to the server. For example, when both teams have connected, the "Kick-Of" button on the monitor allows a human referee to start the game

The Logplayer can be thought of as a video player. It is a tool that is used to replay matches. When running the server, certain options can be used that will cause the server to store all the data for a given match on the hard drive. Then, the program rcsslogplayer combined with a monitor can be used to replay that game as many times as needed. This is quite useful for doing team analysis and discovering the strong or weak points of a team. Much like a video player, the logplayer is equipped with play, stop, fast forward and rewind buttons. Also the logplayer allows you to jump to a particular cycle in a game (for example if you only want to see the goals).

Using The Simulator

In order to Start a game you need to launch the server, a monitor an both teams. It is recommended that you use at least 3 consoles, one for each team and another for the server/monitor. To launch the server and monitor use the following commands:
`rcsoccersim` (laucher the server and a connected main monitor)
`rcsserver` (server only)
`rcssmonitor` (connects the main monitor to the server)
`rcssmonitor_classic` (connects the classic monitor to the server)

The folder were the server was launched from will store the simulation log.
To launch FCPortugal's EAIA team go to the respective folder and use the following script:
`./StartFCP_EAIA`

To launch an adversary team go to the respective folder and use the following command:
`./start.sh`

Watching logs

In order to watch logfiles launching both the logplayer and the main monitor use the following command in the logs' folder:
`rcsslogplay <filename.rcg>`
eg: `rcsslogplay 200708251828-FCPortugal_EAIA_4-vs-EASYoponent_0.rcg`

To launch only the logplayer and later connect any or both monitors to the logplayer use:
`rcsslogplayer <filename.rcg>`

Configuring FCPortugal's EAIA team

The following files can be used to configure the team.

client.conf – change team's default name
strategy.conf – editing the team's formations and roles
coach.conf – editing mechanisms' points in the atelier competition

Mechanisms	Description
EA_TACTIC	Tactical mechanisms: (0–simple tactic/1–user defined sequence of built tactics/2-can change tactics ingame)
EA_SBSP	Situation Based Strategic Positioning (0-none/1-simple/2-complex)
EA_DPRE	Dynamic Positioning and Role Exchange (0-none/1-use)
EA_COMM	Use Communication between Players (0-none/1-use)
EA_VISION	Vision control (0-ball allways/1-ball if visible/2-most interesting zone)
EA_MMODEL	Mutual Modeling (0-none/1-Teammate and opponent movement model)
EA_HETERO	Heterogeneous Players (0-don't use/1- use coachs' choice)

Configuring the Server

Edit the following file (if the file doesn't exist start the server and close it afterwards):
~/.rcsserver/server.conf