

Drop-In Player Challenge for the RoboCup 2015 3D Simulation League Competition

The main point of this challenge is for teams to develop ‘drop-in’ players that can be good teammates and play well with a team composed of drop-in players from a variety of teams. This is also known as an ad hoc teams challenge.

Each participating team will contribute two drop-in field players to a game (both players will be on the same team). Each drop-in player will compete in full 10 minute games (two 5 minute halves) with both teammates and opponents consisting of randomly chosen other drop-in field players. The exact number of games played by each drop-in player will depend on the number of teams that participate in the challenge, but all drop-in players will play at least one game against every other drop-in player in the challenge. If there are 16 teams participating in the challenge this can be done in as few as 9 games.

Games will be 10 vs 10 with no goalies, however if there are fewer than 10 teams participating in the challenge then smaller team sizes will be used with each drop-in player team consisting of $\text{int}(\text{number_of_participants}/2) * 2$ agents.

Each drop-in player is encouraged to communicate with its teammates using a simple protocol. However, drop-in players are not required to utilize this protocol — the use of the protocol is purely optional. The protocol will communicate the following information:

- player’s team
- player’s uniform number
- player’s current (x,y) position on the field
- (x,y) position of the ball
- time ball was last seen
- if player is currently fallen over

In order to account for server communication restrictions the protocol only allows for one teammate to communicate at a time every other simulation cycle. This is accomplished by giving each agent a rotating time slice to communicate information based on the uniform number of an agent. A C++ implementation of the protocol can be found at http://www.cs.utexas.edu/~AustinVilla/sim/3dsimulation/2015_dropin_challenge/CommProtocol/

A drop-in player agent may use any of the heterogeneous Nao types available for the main competition and there are no restrictions for the number of different Nao types used on a team. All other normal game rules apply in this challenge.

Each player will be randomly assigned a uniform number from 2-11 at the start of a game. In order for an agent to participate it must allow for the following additional arguments to a start script named `start_dropin.sh` to start a single agent:

- -t TEAM_NAME : the name of the team that the agent will be playing on
- -u UNIFORM_NUMBER : the uniform number of the agent

A sample start script can be found at http://www.cs.utexas.edu/~AustinVilla/sim/3dsimulation/2015_dropin_challenge/start_dropin.sh

The challenge will be scored by the average goal difference received by an agent across all games that an agent plays in.

After the tournament all teams participating in the challenge will be asked to release their drop-in player binaries and start scripts. Additionally teams are asked to email a short (no more than 200 words) explanation of their drop-in player strategy to `3DDropInChallenge2015@gmail.com` by the end of the final competition day at RoboCup (July 22, 2015). These descriptions will be posted at http://www.cs.utexas.edu/~AustinVilla/sim/3dsimulation/2015_dropin_challenge/ after the competition.