RoboCup Soccer Simulation League 3D Competition Rules and Setup

for the 2013 competition
in Eindhoven, The Netherlands

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1. Introduction

    This document describes the rules that will be used at the 2010 RoboCup Soccer 3D Simulation League. Their goal is to provide for fair games and smooth execution of the competitions. The Organizing Committee (OC) has the right to append or change these rules at any time within reasonable bounds. All teams will be notified of these changes as soon as possible. Teams can appeal to these changes or to the rules in general, however the final binding decision will be made by the OC.

2. Tournament Format

TBA

3. Schedule

Mon. June 24	Team Setup
Tue. June 25	Team Setup
Wed. June 26	Seeding Round
Thu. June 27	Competition rounds
Fri. June 28	Competition rounds
Sat. June 29	Competitionrounds
Sun. June 30	Final

4. Hardware and Software Specifications

4.1 Servers

- TBA

4.2 Clients

- TBA

4.3 Software

- Operating system: Ubuntu 12.10

- Dependencies: ODE 0.11.1 + TBB patch, Ruby >= 1.9.3p194

- Simulator: simspark 0.2.4, rcssserver3d 0.6.7[1]

5. Determining the Winner

5.1 Round Robins

For the round robins, each team plays each other team in the same group once. For the seeding round the groups will be determined by drawing lots. Placing will be determined in the following order:

1. points gathered: a win gives 3 points, a tie 1 point, a loss 0 points

2. head to head game of this round

3. goal difference (goals scored minus goals conceded) in this round

4. number of goals scored in this round

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1   To be found at http://sourceforge.net/projects/simspark/files/ (Competition versions are not available yet at time of writing)

5. two extra halves of 3 minutes each (for 2-team ties only)

6. penalty shoot-out (for 2-team ties only)

7. coin toss

5.2 Elimination Rounds

In the elimination rounds, the winner will determined in the following order:

1. number of goals scored in this round

2. two extra halves of 3 minutes each

3. penalty shoot-out

4. coin toss

6. Match Format

1. **Set-up:** The OC will supply upload instructions at the first day, which teams must use and follow to be able to run their agents. Teams will be given the opportunity to upload and test their agents on the competition system before the start of each round. When a round is started, it will no longer be possible to upload or make changes to the agents, until all matches of that round have been played.

2. **Start/end:** The matches will be started automatically by a competition managing system. Teams are required to provide scripts named `start.sh` and `kill.sh` for running and terminating their team. All players of a team must be running in less than 15 seconds when `start.sh` is executed. Additionally, each team must provide scripts named `start_penalty_kicker.sh` and `start_penalty_goalie.sh` to run their penalty kicker and goalie respectively. The IP address that the agents should connect to is given as the first parameter to the start scripts. Examples of start and kill scripts can be found on the SSL wiki[2].

3. **Team format:** A match is played by two teams of 11 players. A match may not start if either team consists of less players. Each match consists of two halves of five minutes each. After the first half the teams switch sides. Each player can select any available agent models, possibly forming a heterogeneous team[3]. The details of the available models will be fixed and announced shortly before the start of the competition; in any case this includes the model used in previous world championships (i.e. `nao.rsg`).

4. **Representation:** For a match, each team has the chance to appoint a single team member as the team's representative. This representative should announce himself to the referee before the start of the match, otherwise it is assumed that the team has none for this match. During the match, only the team's representative can approach the referee.

5. **Faulty agents:** When a match has started and an agent shows clearly unnatural behavior or gets disconnected, the following rules apply:

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2   http://wiki.robocup.org/wiki/Soccer_Simulation_League
3   Heterogeneous player selection is under development at time of writing.

- If this occurs in the first 30 seconds of the match, the match will be restarted up to 2 times. In the case of unnatural behavior, the team's representative is responsible of notifying the referee, who will make the binding decision whether to restart the game on his own discretion.

- If the problem persists after restarts, the team's representative can ask the other team's representative for a 2 minute time-out to fix the problem. A fix may include the use of a binary from a previous round.

- If the problem still persists after the time-out, or if it occurs after the first 30 seconds of the match the game will continue. If due to the problem the team ends up with less than the minimum amount of players, the match will result in a win by the average score against this team but at least 1:0.

6. **Schedule and Results:** The full schedule of the competition and the results of all matches played so far will be made available to each team. These will be written to files in the RSG format that are readable by all agents, to be loaded at the start of a match. The details of the format can be found on the SSL wiki.[4]

7. Game Play

1. **Kickoff:** Goals scored directly from the kick off are not accepted. Also, the agent performing the kick-off may not touch the ball again until it was touched by another player. In case of infringement, a kick-off is awarded to the opposing team.

2. **Goalkeeper:** The player with uniform number 1, and only this player, will be designated as the goalkeeper.

3. **Handling the ball:** Handling the ball involves a deliberate act of a player making contact with the ball with his hand or arm, as decided by the referee on his own discretion. Handling the ball is penalized with a free kick to the opposing team. The goalkeeper can not be guilty of a handling offense when his hands are within his own penalty area.

4. **Obstructing the ball:** Obstructing the ball involves use of a player's body, arms or legs to prevent progress of the game, which includes covering the ball, carrying the ball, holding the ball between arms or legs and lying in front of the goal in an attacking situation. Deliberately obstructing the ball, as judged by the referee, for longer than 10 seconds is penalized with a free kick to the opposing team. Unintentional obstruction of the ball for longer than 10 seconds is ended by a drop ball by the referee.

5. **Illegal defense:** At any time during the match, no more than 3 players of a team may be inside of their own penalty area. If a 4th player enters the penalty area, it will be placed outside of the field. When the last to enter is the goalkeeper, the player furthest away from the own goal of the three that were already in the penalty area will be placed outside of the field instead.

6. **Crowding the ball:** Crowding of the ball when an opponent is near (within 0.8m of the ball) is illegal. If two players of one team are within a circle with radius 0.4 m. of the ball, the furthest of these two is repositioned. If three players of one team are within a circle with radius 1 m. of

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4 http://wiki.robocup.org/wiki/Soccer_Simulation_League (The details of the RSG format are to be finalized as of writing)

the ball, the furthest of these three is repositioned.

7. **Immobility:** Players that have been immobile or fail to stand up for too long will be repositioned. The goalkeeper will be repositioned after 30 seconds of immobility, or after failing to stand up for 60 seconds; other players will be repositioned after 15 seconds of immobility, or after failing to stand up for 30 seconds.

8. **Penalty shoot-outs:** During a penalty shoot-out, each team only has a single player in the field: the goalkeeper for the defending team and a striker for the attacking team. Each penalty shot starts with a kickoff. The attacking team gets 60 seconds to attempt to score. The goalkeeper of the defending team has to stay within his penalty area the whole of this time. If neglected, it will be considered as a goal for the attacking team. When penalty shots are used to decide a tied game, each team gets five penalty shots. If after five penalty shots the score is still equal, sudden death rounds of one kick each are used until one side scores and the other does not. If after seven penalty shots no winner is determined, a coin-toss is used to decide.

9. **Colliding with other players:** Players must avoid touching other players. If three or more players get in touch with each other, a player from the team with the most players in this situation, or a random player in case of an equal amount, will be re-positioned outside the field. The following collision events are considered fouls and can be rewarded with a free kick to the opposing team, if they result in tripping, obstructing, blocking, slowing down or forcing a change of direction by an opponent: running into an opponent from behind, and moving in the path of a faster moving opponent (illegal interception).

10. **Output:** Each player is permitted to generate output in files named `stdout` and stderr with the player number appended (e.g. `stdout3` and `stderr3` for player number 3). These write-only files will be located in their home directory under a `log/` subdirectory. Except these files, the home directory is read-only during the games, so agents should not try to open any other file for writing.

11. **Fair play:** Games should be played according to a fair and common-sense understanding of soccer and to restrictions imposed by the virtual simulated world of the 3D soccer simulator. Circumvention of these is considered violating the fair play commitment and is strictly forbidden during the tournament. Violation of the fair-play commitment includes, but is not limited to, for example:

   • using another team's binary in your team

   • jamming the simulator by sending excessive commands per client

   • direct communication between players by using communication means other than those provided by the simulator, such as inter-process communication

   • manipulating competition machines or restarting them intentionally

Any of these is strictly forbidden. Other strategies might be found violating the fair play commitment, after consultation with the OC. However, we expect it to be clear what a fair team should be like. In particular, the destructive disruption of opponent agent operation or the gain of advantage by other means than explicitly offered by the simulator counts as not fair play. If you are in doubt of using a certain method, please ask the OC before the tournament starts. If a

team is found to use unfair programming methods during the tournament, it will be immediately disqualified.

8. Referee

During each game a referee is appointed to enforce the rules laid out in this document. In situations that are not handled by the rules, the referee should decide based on his/her common sense. The referee can be a member of the OC or a volunteer, from a team other than the teams of the match, who has full knowledge of the rules as deemed by the OC. During a match only one representative of each playing team is allowed to approach the referee. Decisions of the referee are binding and cannot be appealed during a match. If there is any complaint about a game or a decision, this should be brought to the OC's attention as soon as possible, who will decide how to handle it after all games of the current round are finished. If the referee cannot decide in a situation, he can consult the OC who will give the final decision.

Each team must supply a volunteer to be a referee, preferably the same as the team's representative.

9. Publication of Logs and Binaries

The OC will make the logfiles of the matches available to the participating teams during the competition. After the competition, the OC will also publish these logfiles on the internet at their earliest convenience.

The OC will also publish the binary, and additional files needed to run this binary, of each team after the competition. To do this, at the start of each round the home directory of the teams participating in that round will be archived. The team's last archive will be used for publication. If the home directory contains material that a team wishes not to be published and that is not needed to run the binary, it is the responsibility of the team to notify the OC of this.

Note that teams that have used third party source code must follow that code's license regarding conveying the work. For instance, under GPL you are required to accompany your binary with the corresponding source, a written offer to supply the corresponding source, or information about where the source is offered to the general public. Failing to comply with any licensing will result in disqualification of the team from the current and/or future competitions.