

RoboCup Soccer Simulation 3D League

Rules for the 2026 Competition, Incheon, South Korea and RoboCup Portugal Open 2026, Barcelos

These rules are based on Simulation 3D League RoboCup 2015 to 2025 Competition Rules.

New rules and server changes for RoboCup 2026

Version 2026.0

The Technical Committee (TC) has approved to use the new Mujoco-based simulator for the main competition. Many rules have been changed, merged or removed, so this year it is probably the best to read the entire document.

Version 2026.1 (prior to Robotica)

The following updates and clarifications have been introduced:

- Team format: clarified that T1 and K1 are the robot types to choose from.
- Field size: clarified the dimensions of the field to be used in 2026.
- Illegal defense: the relevant area has been changed from penalty area to the smaller goal area.
- Player communication: added some details on inter-player communication through the server.
- Penalty shoot-outs: the latest format from earlier years is not yet available in the server so we have to fallback to starting from kickoff point as in earlier years.

Version 2026.2 (after Robotica)

- removed a section in part "faulty agents" to end a game if a team has fewer agents
- add rule "kick situations" to clarify where opponent players may be located in special situations (no changes, just documentation of the rules implementation of version 0.2)
- minor clarification for the Fair Play rule
- fixed a typo in field width

A complete history of the changes is available at <https://gitlab.com/hannesbraun/soccersim3d-rulebook>.

Organizing Committee

This document describes the rules of the RoboCup 2026 3D Soccer Simulation League. The 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 the rules in general. However, the OC will make the final decision. The organizing committee for RoboCup 2026 simulation 3D league is composed by Marco Simoes (msimoes@uneb.br), Jiang Xiangrui (xr1020268296@gmail.com) and Jingran Zhang (1039220419@stu.jiangnan.edu.cn).

Competitions and Schedule

Server and Server Changes

The competition will use the version announced of rcssservermj announced by the OC (among the latest versions) and Ubuntu 24.04 (64-bit). See the latest versions at <https://gitlab.com/robocup-sim/rcssservermj>. A Java 21 Runtime will be available for clients, as well as a recent version of Python. We distinguish two kinds of setup:

1. There are two client computers – one for each team – named client1 and client2; one server computer; and one monitor computer. The server computer may also be used as monitor computer.
2. All client processes and the server run on a single local or remote computer. The complete setup may be executed in a single remote high-performance computer if the internet in the venue allows using this setup.

All teams are strongly encouraged to test their code using both of the previous setups, with special care on the one that is similar to the competition's environment to avoid problems with faulty agents during competition. **The OC will not install any additional libraries. So, teams MUST manage to build their binaries using static links to all libraries they need.**

Teams should refer to the complete information available at <https://ssim.robocup.org/3d-tools/> for the latest version changes and other information.

Competition Format and Challenges

General Format

The competition includes four rounds (seeding round, first, second and third round) followed by semifinals and finals. Teams not qualified in any round play additional matches for the full ranking. The number of groups and the details of how many teams are eliminated in each round depend on the number of participating teams and will only be fixed at the beginning of the competition. A detailed schedule will be published separately by the organizing committee. Both format and schedule may be adapted by the OC as needed. The OC will define the schedule of matches for defining the full ranking according to the number of teams not-qualified in each round.

Qualifying Rounds

For the seeding and first rounds, all teams may be included in a single group or be split into two or more groups, according to the total number of teams. All teams play a round-robin within their groups. For the second round, one group of 6 teams will play a round-robin. If more than 6 teams are qualified for the second round, they may be split into two or more groups. In the third round, one group of 5 teams will play a round-robin. If more than 5 teams are qualified for the third round, they may be split into two or more groups. Each team plays with every other team in the group once. The following criteria define the ranking in each round:

- Points gathered. A win gives 3 points, a tie 1 point, and a loss 0 points

- Goal difference (goals scored minus goals conceded) in this round
- Goals scored in this round
- Head-to-head games of this round
- An extra match (only in cases where it matters for advancing to the next round)
- Two extra halves of 3 minutes each
- Penalty shoot-outs (for 2-team ties only)
- Coin toss

Semifinals and Finals

After the third round, a knockout system is used. The matches are defined according to the ranking in the third round. The first place plays against the fourth place for the first semifinal, and the second place plays against the third place for the second semifinal. The winners of these matches will play against each other in the final. The losers will play a match to decide who wins the third prize. If a knockout game ends in a tie, two extra halves of 3 minutes are played. A penalty shootout determines the winner if these also end in a tie. In the knockout matches, the winner will be determined in the following order:

- Number of goals scored in the game
- Two extra halves of 3 minutes each
- Penalty shoot-out
- Coin toss

General Rules

Match Preparation and Format

1. Set-up: The OC will supply binary delivery instructions on the first day, which teams must use and follow to make their agents available to the OC. Teams will be allowed to deliver and test their agents on the competition system before the deadlines defined by the OC. When a round is started, it will no longer be possible to make changes to the software present in competition PCs until all matches of that round have been played.
2. Start/end: A competition managing system will automatically start the matches. Teams are required to provide scripts named `start.sh` and `kill.sh` for running and terminating their team. All team players must run in less than 3 seconds when `start.sh` is executed. Additionally, each team must provide a script named `start_penalty_kicker.sh` to run a single penalty kicker and one named `start_penalty_goalie.sh` to start a goalie for defending penalty kicks. The IP address the agents should connect to is the first parameter to the start scripts. Examples of start and kill scripts can be found on the SSIM3D wiki.
3. Team format: Two teams of 7 players play a match. A match may not start if either team consists of fewer players. Each match consists of two halves of five minutes each. After the first half, the teams switch sides. Each player can select from the available agent models T1 and K1, possibly forming a heterogeneous team. Only those two models will be allowed for 2026.
4. Field size: The field size will be 55 meter long and 36 meters wide. Please check other dimensions considering "fifa7vs7" soccer field version of the field in `rcssservermj` source code.
5. Representation: For a match, each team can appoint a single team member as the team's representative. This representative should announce herself/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.
6. Forfeiting rule: We define forfeiting as refusing to make a good-faith effort to participate in a scheduled game. A team that forfeits is disqualified from the competition. In round robins, when a team forfeits, all the scores will be 3x0 against this team. In a knock-out round, the teams who forfeit will be replaced by the next team in the rank from the previous round.
7. Faulty agents: When a match has started, and an agent shows clearly abnormal behavior or gets disconnected, the following rules apply:
 - If this occurs in the first 30 seconds, the match will be restarted up to 2 times. In the case of abnormal behavior, the team's representative is responsible for notifying the referee, who will decide whether to restart the game at his own discretion.
 - If the problem persists after restarts, the team's representative can ask the referee for a 4-minute time-out to fix the problem. A fix may include the use of a binary from a previous round.
 - If the problem persists after the time-out, or if it occurs after the first 30 seconds of the match, the game will continue.
 - After a time-out, the match will restart from the beginning (00:00) unless otherwise decided by the OC.

Game Play

1. **Kickoff:** Goals scored directly from the kickoff are not accepted. Also, the agent performing the kick-off may not touch the ball again until another player touches it. In case of infringement, a kick-off is awarded to the opposing team. A goal can be scored after a kickoff only if a second player from the team performing the kickoff touches the ball outside the main circle or if an opponent touches the ball.
2. **Kick situations:** The automated referee will automatically decide on the following kick situations. The list includes the area, in which no opponent player is allowed to be in. All these kick situations are indirect kicks, i.e. it is not allowed to score a goal directly.
 - Kickoff: opponent players have to be in their own half excluding the center circle
 - Goal Kick: opponent players have to be outside the goalie area
 - Free Kick, Kickin, Corner Kick: opponent players have to stay outside a circle around the ball as big as the center circle (radius 5.5m)
3. **Dead Ball situations:** Dead Ball situations are Kickoff, Free Kick, Kickin, Corner Kick, and Goal Kick. Whenever the automatic referee assigns a Dead Ball situation, the team supposed to kick the ball must do it in `RuleDropBallTime` (20) seconds. If the ball is not put back into play within 20 seconds, the automatic referee will enforce the following defaults:
 - Goal Kick: Drop Ball in the upper corner of the penalty area.
 - KickIn: KickIn assigned to the opponent.
 - KickOff: Indirect Free Kick assigned to the opponent.
 - Corner Kick: Drop Ball in the same position where the ball is.
 - Indirect Free Kick: Indirect Free Kick assigned to the opponent.
4. **Goalkeeper:** The player with uniform number 1, and only this player, will be designated as the goalkeeper. Only the goalkeeper can use its hands on purpose to touch the ball within its penalty area. Violating this rule will be punished with a free kick to the opposing team.
5. **Obstructing the ball:** Obstructing the ball involves the use of one or more player's body, arms or legs to prevent the progress of the game or access to the ball, which includes covering the ball, carrying the ball, holding the ball between arms or legs, and lying or crouching in front of the ball or 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. In case of unintentional obstruction of the ball for longer than 10 seconds, a drop ball may be called by the referee.
6. **Illegal defense:** At any time during the match, no more than 2 players of a team may be inside their own goal area. If a 3rd player enters the goal 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 players that were already in the goalie area will be placed outside the field instead.
7. **Incapable robot:** Players that have been immobile or fail to stand up for too long will be charged for an *incapable foul* and 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. **Charging fouls:** Players must avoid touching other players. The situations where an illegal charge of one player to another one is considered as a foul are described at <http://www.acso.uneb.br/bahiar/uploads/Main/FoulModel2016.pdf>. The automated referee will call such fouls. Fouling players will be beamed outside the field as with other fouls.

9. **Ball Holding:** A player is considered to be holding the ball if, during PlayOn mode, the ball is within `BallHoldRadius` meters of the player and no opponents are closer to the ball. A player is penalized for holding the ball if they continuously hold the ball for `BallHoldMaxTime` seconds (`BallHoldGoalieMaxTime` seconds if the player is a goalie with the ball in their own penalty area) or the ball travels at least `BallHoldMaxDistance` from the ball's position when it was first held, and an opponent is within `BallHoldOppDistance` of the ball. The following table presents tuneable parameters for the ball holding penalty.

Parameter	Default Value	Description
<code>BallHoldRadius</code>	0.2	Radius in meters from a player's center in which the ball is considered being held.
<code>BallHoldMaxTime</code>	5.0	Max time in seconds a player can hold the ball.
<code>BallHoldGoalieMaxTime</code>	10.0	Max time in seconds a goalie can hold the ball while the ball is in their own penalty area.
<code>BallHoldResetTime</code>	0.5	Time in seconds since a player stopped holding the ball before ball holding time resets.
<code>BallHoldMaxDistance</code>	1.0	Max distance in meters the ball can travel while a player is holding the ball.
<code>BallHoldOppDistance</code>	50	How close an opponent must be from the ball in meters for a holding penalty foul to be called (a negative value causes a foul to be called independent of where opponents are).
<code>BallHoldBeamPenalty</code>	true	Use beaming to penalize ball holding instead of repositioning a player off the ball.

10. **Penalty shoot-outs:** A kicker from one team and a goalie from the other team join simultaneously. The kicker is expected to beam behind the ball, the goalie into the goal area. The ball position will be the kickoff point for now. When the game is started by switching the play mode to `KickOff_Left`, the kicker from the left team has to try to score into the right goal within `PenaltyShootoutMaxTime` seconds. When the ball is touched, the play mode is changed to `PlayOn` until a goal is scored (at which point the play mode changes to `Goal_<Left or Right>`). For each attempt we will have to restart the server as of now. Goalies are not allowed to move outside of the penalty area which will be judged by human referee. If neglected, it will be considered a goal for the attacking team. The game ends after a specified minimum number of rounds (`PenaltyShootoutMinRounds`) if one team scores more goals than the other team. If after these penalty shots, the score is still equal, sudden death rounds of one attempt each are used until one side scores, and the other does not. After a specified maximum number of rounds (`PenaltyShootoutMaxRounds`), the game will be over regardless of the score. A coin-toss then determines the winner.

- o `PenaltyShootoutMaxTime`: 60s
- o `PenaltyShootoutMinRounds`: 5
- o `PenaltyShootoutMaxRounds`: 10

11. **Player communication:** Communication between players is only allowed through the `say` command provided by the server. A player may issue a `say` command each cycle with a length

of up to 10 Bytes. Players in the vicinity may hear this message as specified in the documentation of the server.

12. **Fair play:** Games should be played according to a fair and common-sense understanding of soccer and restrictions imposed by the virtual simulated world of the 3D soccer simulator. Circumvention of these is considered to violate 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 or parts of a binary like models 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.
- Unnatural behaviors that exploit weaknesses of the simulation.

Any of these is strictly forbidden. Other strategies might be found to violate the fair play commitment after consultation with the OC. However, we expect it to be clear how a fair team should behave. 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 unfair play. If you are in doubt about using a particular 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.

Disclaimer: some of these rules are dependent on developments in the automatic referee of the simulator that are currently in progress. The exact set of rules used by the automatic referee in a competition will be defined when the version of the simulator is chosen by the OC.

Referee

During each game, a referee is appointed to enforce the rules in this document. In situations 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 involved in a 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. The referee's decisions 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, she/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.

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 log files online 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 team's responsibility 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 must 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 the disqualification of the team from the current and/or future competitions.