

FIRA Middle League SimuroSot Game Rules

(Mar 2006)

1. Introduction

The following rules and regulations govern the game of Middle League SimuroSot. The rules and regulations stated are to ensure a fair competition takes place. The objective of the Middle League SimuroSot is to allow researchers to develop control algorithms and team strategies without the need of complex and costly hardware setup. Teams are encouraged to use the simulation platform for the evaluation of their algorithms and eventually to participate in the Middle League MiroSot which is exposed to real world conditions. The Simulation platform is written to simulate the physical workings of a MiroSot robot in every possible way.

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2. The Simulation Platform

2.1. The simulation software

The simulation software must be operated on a computer system with or better than the following system configurations.

Pentium III 600 MHz

- RAM 256 MB
- Screen resolution 800 x 600
- Microsoft Windows 98, 2000, XP
- TNT2 3D Graphics accelerator with 32 MB of RAM
- Direct X 8.0

The simulation software (version 1.5) can be downloaded at

http://www.fira.net/soccer/simurosot/R_Soccer_v15a_030204.exe

2.2. The field dimensions

A black (non-reflective) playground 220cm X 180cm in size with 5cm high and 2.5cm thick white side-walls are to be used. The topsides of the side-walls shall be black in color with the walls in white (side view). Solid 7cm X 7cm isosceles triangles shall be fixed at the four corners of the playground to avoid the ball being cornered.

2.3. Markings on the field

The field shall be marked as shown in Figure 1. The center circle will have a radius of 25cm.

The arc, which is part of the penalty area, will be 25cm along the goal line and 5cm perpendicular to it.

The major lines/arcs (centerline, goal area borderlines and the center circle) shall be white in color of 3mm thickness. The free ball positions shall be marked in grey color.

2.4. The goal, goal line and goal area

The goal shall be 40cm wide. The goal line is the line just in front of the goal which is 40cm long. The goal area (Region A) shall comprise of the area contained by the rectangle (sized 50cm X 15cm in front of the goal).

2.5. The penalty area

The penalty area (Region A and Region B of Figure 1) shall comprise of an area of 80cm x 35cm and the attached arc.

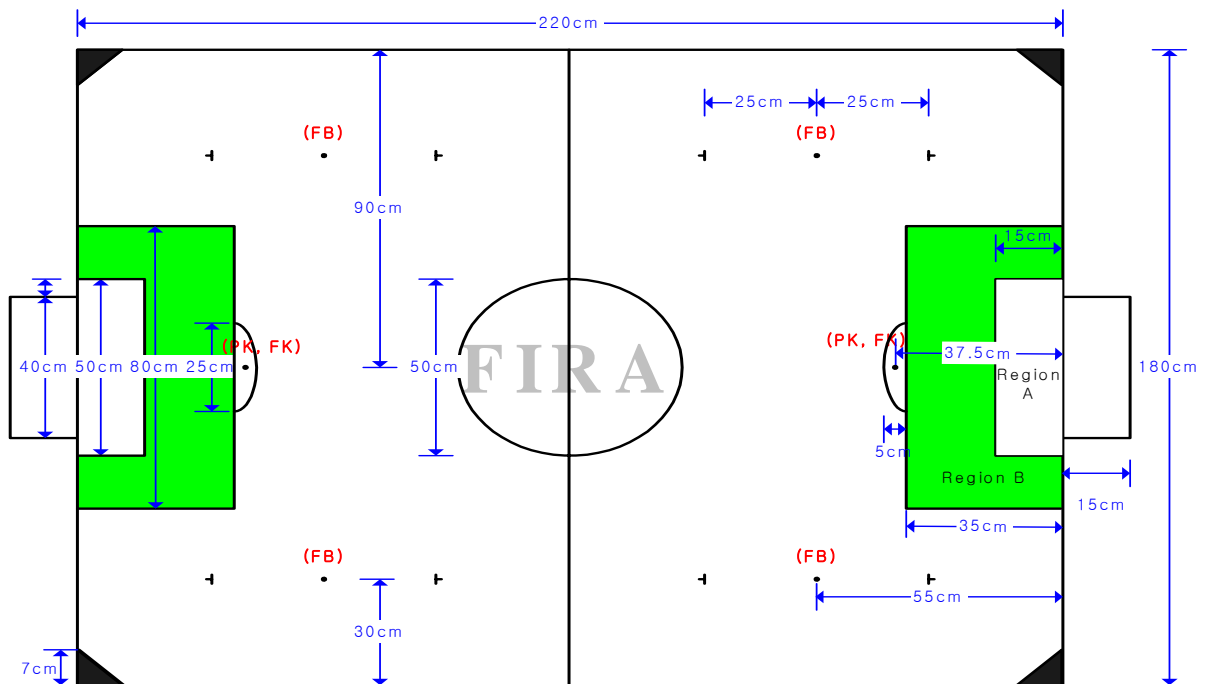


Figure 1: Dimensions and markings on the field

3. Game Duration

3.1. Duration

The duration of a game shall be two equal periods of 5 minutes each, with a half time interval for 10 minutes. An official timekeeper will pause the stopwatch during substitutions, during time-out and during such situations that deem to be right as per the discretion of the timekeeper.

If a team is not ready to resume the game after the half time, additional 5 minutes shall be given. If the team is still not ready to continue the game after the additional time, the team will be disqualified from the game.

3.2. Time-out

The human operator can call for 'time-out' to notify the referee. Each team will be entitled for two time-outs in a game and each shall be of 2 minutes duration.

3.3. Time keeping

Time indicated on the simulation software shall not be used as the official game time. A stopwatch shall be used for time keeping instead.

4. Game Interruptions

Shall the play be interrupted, the relocation of robots shall be done by a human operator, only when:

- A goal is scored or a foul occurs.
- Referee calls penalty kick, free kick, goal kick or free-ball.
- A fault occurs in the simulation software.
- An unseen situation encountered as judged by the site referee. e.g. computer automatic restart, sudden electricity shutdown.

5. The Players

5.1. The robots

A robot within its own goal area shall be considered as the "goalkeeper". (A robot is considered to be in the goal area if it is more than 50% inside, as judged by the referee).

6. Game Commencement

Before the commencement of a game, either the team color (blue/yellow) or the ball shall be decided by the toss of a coin. The team that wins the toss shall be allowed to choose either their robot's identification color (blue/yellow).

At the commencement of the game, the attacking team will first position their robots freely in their own area and within the center circle. After which, the defending team can place their robots freely in their own area excluding the center circle (Figure 2).

At the beginning of the first and second halves and after a goal has been scored, the ball should be placed at the center of the field and the ball should be kicked or passed towards the team's own side. With a signal from the referee, the game shall be started and all robots may move freely. If the attacking team is unable to kick or pass the ball towards the team's own side within 5 sec, a place-kick will be call again. If such situation happens twice, then the place-kick will be given to the opponent team.

After the half time, the teams have to change their sides.

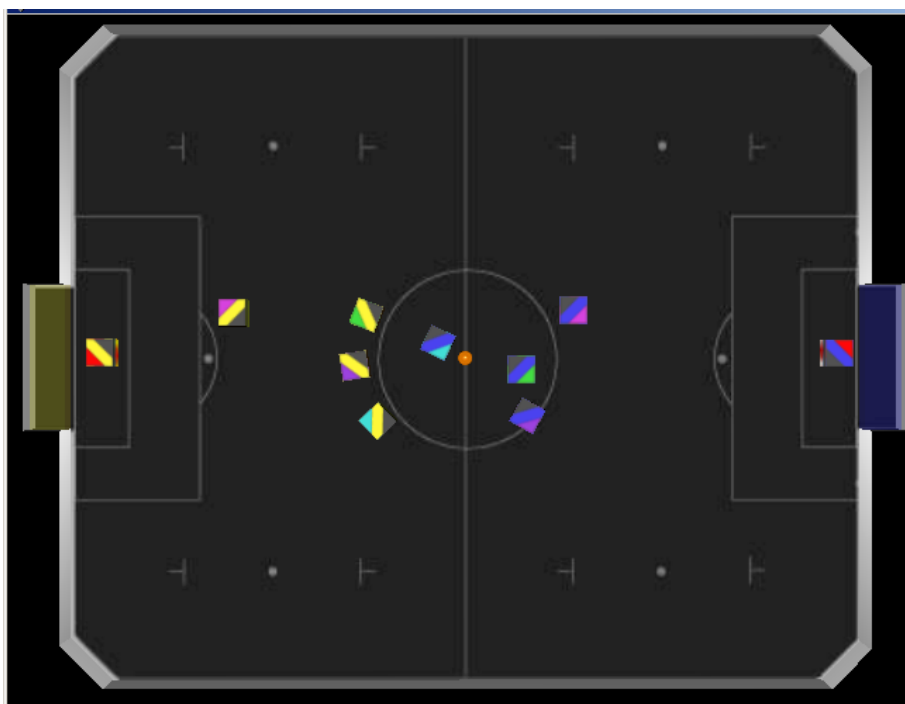


Figure 2: Place kick

7. End of the Game

At the end of the game, the team should remove or delete their team strategy files from the simulation platform immediately. The referee and FIRA Federation shall not be liable for any misuse of such strategy files left undeleted after the match.

8. The Referee

Every match is controlled by a referee who has full authority to enforce the Laws of the Game in connection with the match to which he has been appointed. The referee shall communicate with both team members in English unless it is agreeable by both teams and the referee/assistant referee that other languages are allowed to be used.

The referee

- Enforces the Laws of the Game.
- Controls the match possibly in co-operation with assistant referees.
- Stops, suspends or terminates the match, at his discretion, for an infringements of the Laws
- Stops, suspends or terminates the match because of outside interference of any kind
- Acts on the advice of assistant referees regarding incidents which he has not seen.
- Ensures that no unauthorized persons enter the field of play
- Takes action against team officials who fail to conduct themselves in a responsible manner and may at his discretion, expel them from the field of play and its immediate surrounds

9. Method of Scoring

9.1. The winner

A goal shall be scored when the whole of the ball passes over the goal line. The winner of a game shall be decided on the basis of the number of goals scored.

9.2. The tiebreaker (only for knockout games)

In the event of a tie after the second half, the winner will be decided by the sudden death scheme. The game will be continued after a 5 minutes break, for a maximum period of three minutes. The team which scores the first goal will be the winner. If the tie persists after the extra 3 minutes game, the winner shall be decided through penalty-kicks.

Each team shall take three penalty-kicks, which differs from the normal game mode as only a kicker and a goalkeeper shall be allowed on the playground. The goalkeeper should be kept within its goal area and the positions of the kicker and of the ball shall be position as shown in Figure 3. After the referee's whistle, the goalkeeper is allowed to leave the goal area.

In case of a tie even after the three-time penalty-kicks, additional penalty-kicks shall be given to each team until a goal is scored. All penalty-kicks shall be taken by a single robot and shall commence with the referee's whistle. A penalty-kick will be completed, when the ball comes out of goal area or 30 seconds pass after the referee's whistle.

10. Fouls for Penalty-Kick

A penalty-kick will be called under the following situations.

- 10.1. Defending with more than one robot in the goal area shall be penalized by a penalty-kick. (A robot is considered to be in the goal area if it is more than 50% inside, as judged by the referee). An exception to this situation is, when the additional robot in the goal area is not there for defense or if it does not directly affect the play of the game. The referee shall decide to call for a foul.

- 10.2. Defending with more than three robots inside the penalty area (Region A and Region B of Figure 1). (A robot is considered as staying inside the penalty area if more than 50% of the robot is within the penalty area). An exception to this situation is, when the additional robot in the penalty area is not there for defense or if it does not directly affect the play of the game. For example, a robot passes through its own penalty area without directly affecting the game. The referee shall decide to call for a foul.

- 10.3. Nobody is allowed to touch the robots or ball without the referee's permission while the game is in progress.

11. Position of the Ball and Robots for Penalty Kick

When the referee calls a penalty-kick, the ball must be placed at the relevant penalty kick position (PK) on the playground.

All robots except the robot taking the penalty kick and the goal keeper are to be placed freely within the other side of the half-line.

The attacking robot taking the kick shall be placed behind the ball (Figure 3). The robot taking the penalty-kick may kick or dribble the ball.

While facing a penalty kick, the defending goalkeeper must be in touch with the goal line. The goalkeeper may be oriented in any direction.

The defending team will position their robots first.



Figure 3: Position of the Ball and Robots for Penalty Kick

12. Fouls for Free-Kick

- 12.1. Colliding with a robot of the opposite team, either intentionally or otherwise: the referee will call such fouls that directly affects the play of the game or that appears to have potential to harm the opponent robot.
- 12.2. It is permitted to push the ball and an opponent player backwards provided the pushing player is always in contact with the ball.

13. Position of the Ball and Robots for Free-Kick

The ball will be placed at the relevant free kick position (FK) on the field.

The robot taking the kick shall be placed behind the ball.

The attacking team can position its robots freely within its own side.

While facing a penalty kick, the defending goalkeeper must be in touch with the goal line. The goalkeeper and the other defending robots may be oriented in any direction.

Two defending robots are allowed to be placed at the left most and right most sides in touch with the front goal area line and the other two defending robots are allowed to be placed in touch with the side line of the penalty area as shown in Figure 4.

The defending team will position their robots first. The game shall restart normally (all robots shall start moving freely) after the referee's whistle. The robot taking the penalty-kick may kick or dribble the ball.



Figure 4: Position of the Ball and Robots for Free-Kick

14. Call for a Free-Ball

14.1. A free-ball is called when a stalemate occurs for 10 seconds outside the goal area. A stalemate is also considered when the ball is moving at a very slow speed as determined by the referee. An example of such scenario is shown in Figure 5.

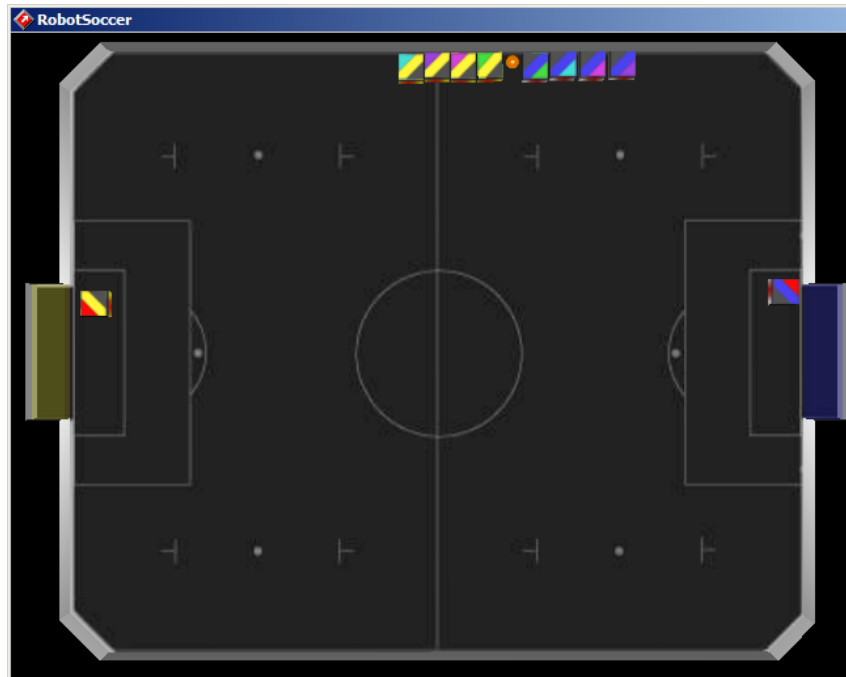


Figure 5: Call for a Free-Ball scenario 1

15. Position of the Ball and Robots for Free-Ball

When a free-ball is called within any quarter of the playground, the ball will be placed at the relevant free ball position (FB a shown in Figure 1). One robot per team will be placed at locations 25 cm apart from the ball position in the longitudinal direction of the field. The front of the robot shall be in touch with the vertical line of the FB position. The robots are allowed to be oriented with slight deviation (e.g. $\pm 5^\circ$) as judged by the referee when it is facing the ball in the FB position as shown in Figure 6. Other robots (of both teams) can be placed freely outside the quarter where the free-ball is being called.

The defending team will position their robots first.



Figure 6: Position of the Ball and Robots for Free-Ball

16. Call for a Goal Kick

- 16.1. Attacking with more than one robot in the goal area of the opposite team shall be penalized by a goal kick to be taken by the team of the goalkeeper. A robot is considered to be in the goal area if it is more than 50% inside, as judged by the referee.
- 16.2. An attacking robot pushes or blocks the goalkeeper which affects the game, as determined by the referee. This shall be regarded as a goalkeeper charging.
- 16.3. An attacking robot pushes the goalkeeper with the ball in between, into the goal, as determined by the referee. This shall be regarded as a goalkeeper charging.
- 16.4. When attacking robot pushes the goalkeeper with the ball in between and affects the goalkeeper ability to block a goal, as determined by the referee, it shall be regarded as a goalkeeper charging (Figure 7).
- 16.5. A stalemate occurs in the goal area for 10 seconds.



Figure 7: Scenario of goalkeeper charging



Figure 8: Scenario that shall not be regard as goalkeeper charging

16.6. It shall not be regarded as goalkeeper charging when an attacking robot happens to touch the goalkeeper but does not affect the goalkeeper's ability to block a goal (Figure 8). Such situation and decision shall be judged in the opinion of the referee.

16.7. It is permitted to push the goalkeeper robot in the goal area, if the ball is between the pushing robot and the goalkeeper. However, pushing the goalkeeper into the goal along with the ball is not allowed.

17. Position of the Ball and Robots for Goal Kick

During goal kick only the goalkeeper is allowed within the goal area and the ball can be placed anywhere within the goal area.

Other robots of the team shall be placed outside the goal area during goal kick as shown in Figure 9 .



Figure 9: Position of the Ball and Robots for Goal Kick

The defending team can then place its robots within their own side of the playground. The game shall restart with the referee's whistle.

The defending team will position their robots first. The game shall restart normally (all robots shall start moving freely) after the referee's whistle. The robot taking the penalty-kick may kick or dribble the ball.
