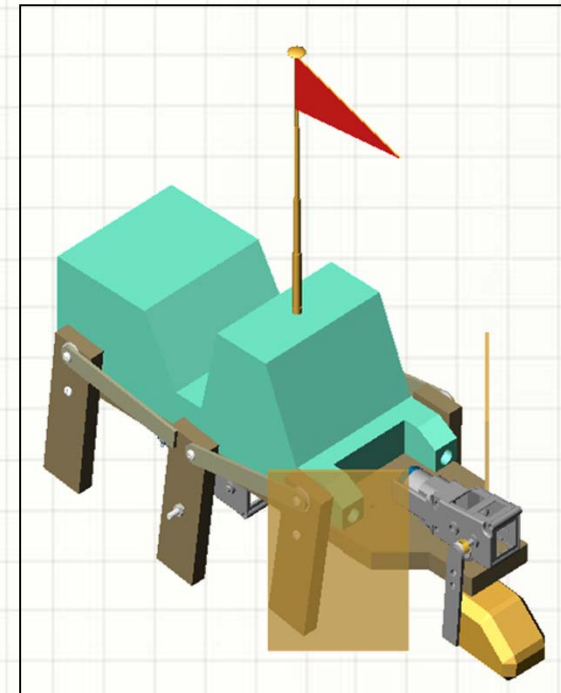


Semi - Automatic Robot : Soccer Robot

Objective

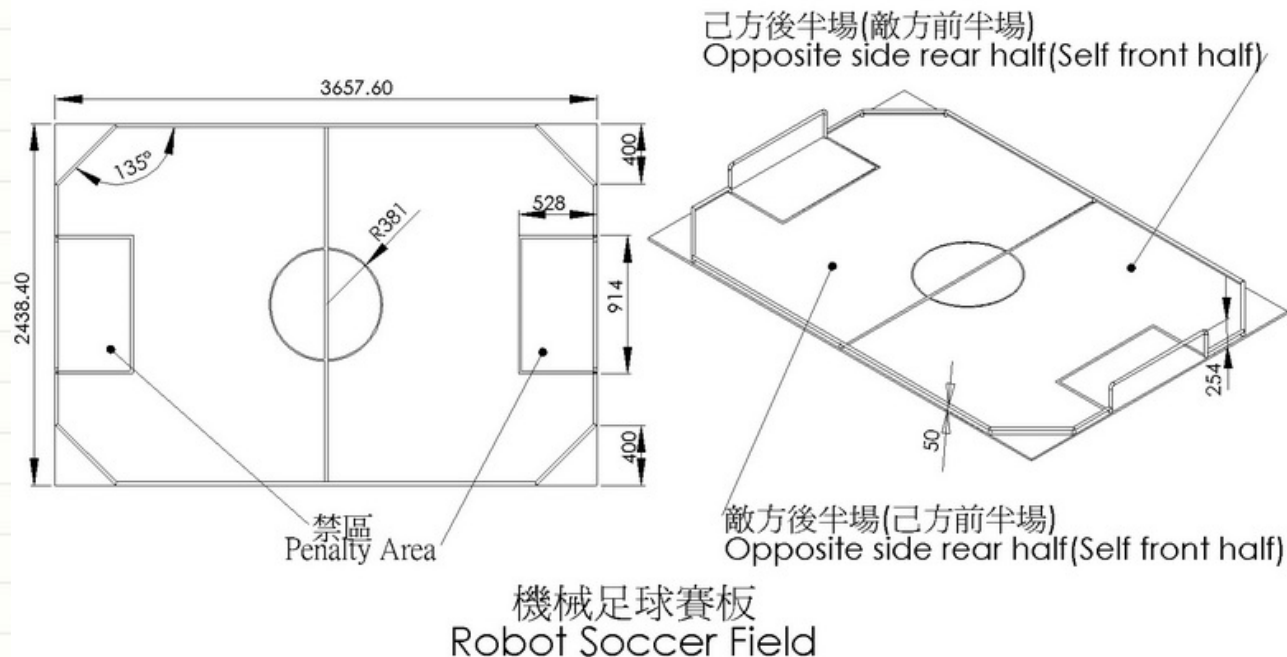
This is a team competition. Each team should have four robots with one of them as reserve. Students are encouraged to work as a team to build robots with efficient walking actions for the competition. During the game, the two competing team players would use their "legs" to kick the ball into their opponent's goal. The team with higher score is the winner.



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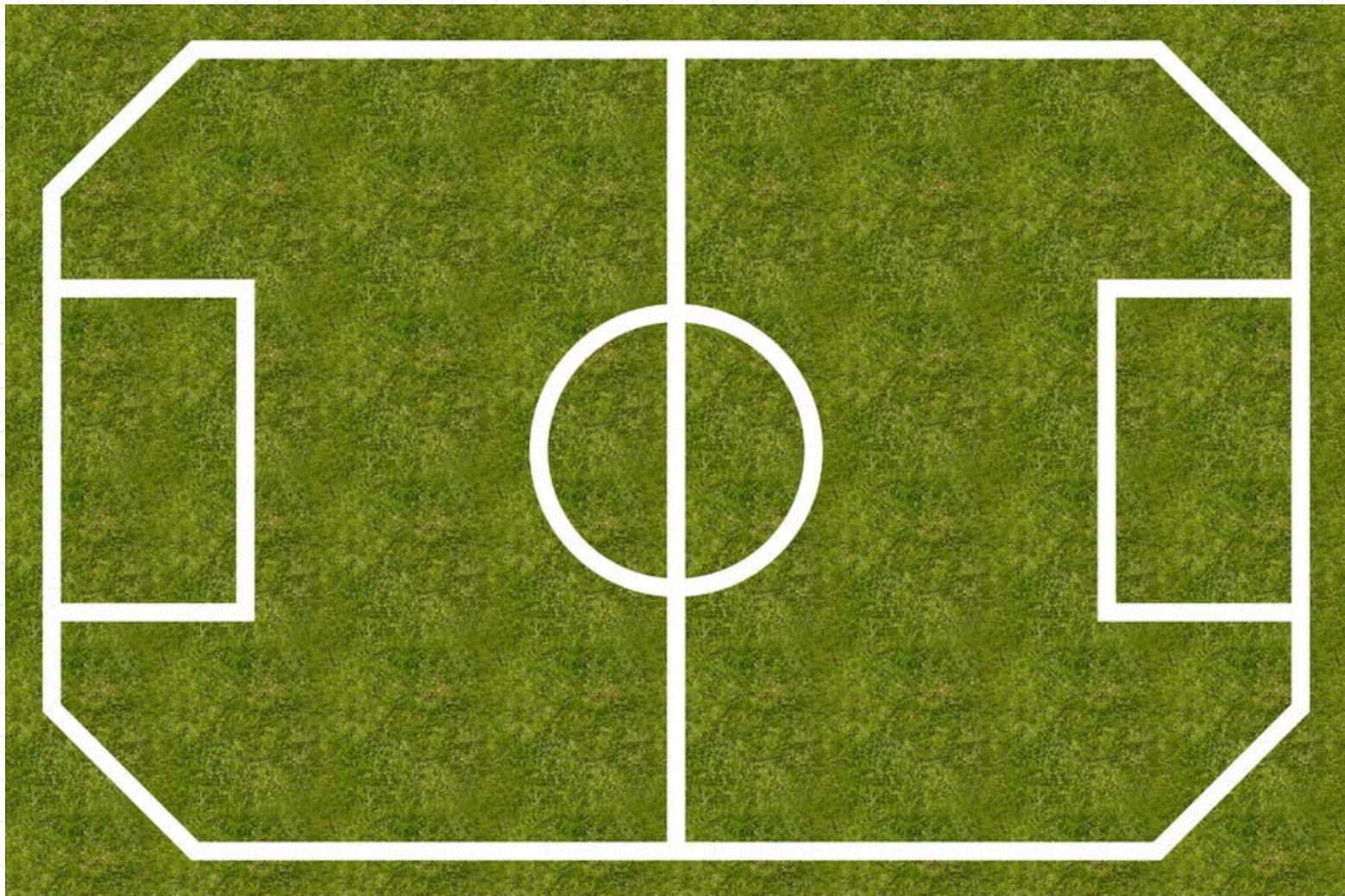
Game Field Specification

- Football court is used for the competition.
- The area of playing field is 3658mm (12ft) × 2438mm (8ft), surrounded by 100 mm tall 45 degree triangular fence. The goal is 915mm (width) x 200 mm (height) x 200mm (depth). A 60mm diameter rubber ball is used for the competition.



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Game Field Specification



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Robot Dimensions

- The size of the robot cannot exceed 300 mm long, 200 mm wide and 240 mm tall (length, width and height dimensions are not inter-changeable) nor weighs more than 1.5kg (including batteries and receiver).
- Each team consists of three robots.
 - a) The Forward robot identifies itself with a yellow semi-circular flag on its 200mm pole. It may move around in the front half of its own playing field and into the penalty area of the opponent's field.
 - b) The Midfield robot identifies itself with a red triangular flag on its 200 mm pole. It may move around in the entire playing field except the two penalty areas.
 - c) The Defense robot identifies itself with a blue rectangular flag on its 200mm pole. It may move around in the rear half of its own playing field including its own penalty area.
- A flap is installed on each side of the robot front end, slanting backward at 30-45 degree from the gear box to prevent the robot front legs from kicking the football. The opening between the two flaps should not be more than 30mm wide. Therefore, the foot for kicking the ball may not be larger than 30 mm (diagram referred).

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Robot Dimensions

- All robots are controlled by wireless controller approved by the Organizer. All wireless installations must be able to alter frequency channels. Transmitters found interfering must be immediately changed channel, otherwise it would be disqualified for the competition. A 2.4 G wireless remote control device is recommended.
- Motor driver of robot cannot use more than 9V Alkaline batteries, 7.2V rechargeable battery or 7.4V Lithium-polymer battery. There is no limit on the batteries for transmitter and receiver. Participants are to prepare their own batteries in the regional competition.
- The robot must kick the ball with a swing (not rotation) action.

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Robot Dimensions

- Each team assigns one robot for the competition. The robot is controlled by one member.
- The robots are placed at the corner opposite to each other. The judge checks the robots to ensure that there is no movable dangerous mechanism in the design before game start.
- The winner is determined in a 2-minute match. One point is scored for each successful knock down the opponent. No score if the opponent falls down itself. The robot with the highest scores wins.
- If the winner is unable to determined at the end of the game, the lighter weight robot wins the game.

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Robot Dimensions

- The judge will warn the team that continually dodges the opponent and refuses to attack. The team will be disqualified after receiving the second warning.
- The robots stop combat if a robot falls down and will continue after the judge has put up the fell down robot. If the robot fails to move or fight anymore, the opponent will become winner.
- There is a red line along the boundaries of the boxing ring. A warning will be served when the robot steps outside of the red boundary line. The opponent will score one point after 5 warnings are served.
- The Panel judges' decision is final.

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Game Rules

- The Robot may only kick but not hold or push the ball.
- The reserve robot and its controller must be placed in a position specified by the referee; otherwise contestants would not be allowed to replace the robot.
- The game has first and second halves, each lasts for 2 minutes. The first stage of the competition will be conducted on a round-robin basis. The winning side will get 3 points, losing side 0 point and each side 1 point in case of a draw. The second stage will be conducted on a knockout basis.
- Choice of side and first-kick is determined by toss of coin. Each team has a first-kick opportunity in the first or second half of game. Each side places its Forward robot in position first and then the Defense robot in their own penalty area. The first-kick team would then place the Midfield robot inside the mid-court and finally the opposing team places its Midfield robot outside of the mid-court.

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Game Rules

- The timer begins to count when the referee signals start of the game. The first-kick team should kick the ball within five seconds otherwise the right goes to the opposing team. All other robots must stay still before the first-kick.
- If the ball is tangled by the robots for over ten seconds, the judge may pause the match and move the robots 300 mm away from the ball and re-start the match.
- Players of each team should stay at the designated areas to control their robots. Once the game starts, players may not touch the robots or the ball until either the ball goes into the goal or the match ends.
- The goal would not be counted as score by first-kick or pushing opponent and the ball together in the goal.

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Game Rules

- During the match, request should be made to the referee for repair or replacement of robot. Upon approval, the robot should only be removed and returned to the field by the referee. The timer would not pause and the match continues. The robot on returning to the field should wait for the referee's permission to move and continue the game.
- Each goal scores one point. The losing team would re-start the game from the middle field. The timer would not pause. The side with higher score at the end of the game is the winner.
- Should there be a draw at the end of time during the knockout stage, extra time of 2 minutes will be given to determine the winner via 'sudden death'. Each team can send only one robot for the extra time game.

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Game Rules

- Should there be no score or same score in the extra time game, each team takes turn to send the 3 robots to do Fix Point Shooting one at each time. Time of each successful shooting will be recorded and sum up. After the 3 robots of each team have finished the fix point shooting, the team that scores higher points will win. In case of draw, the team with shorter sum up time of the three shootings will win. Second round will be conducted if they still draw until a winner is identified.

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Game Rules

- Fix Point Shooting: Each team would be given one minute to move the ball from mid-court to shoot the goal without defensive robot. Repeat the attempt of shooting if unsuccessful. Robot cannot shoot but get the ball inside the penalty area.
- Penalty kick: The ball is placed at the middle top location of the penalty area. The shooting robot is placed outside the penalty area. The defense robot would then be placed at the goal line perpendicular to it (the shortest side faces the ball). The Defense robot must not move before the ball is kicked or the shoot would be retaken and a warning would be served.
- The Panel Referee's decision is final.