

FIRA RoboSot Competition

Rules and Regulations for 2017

Version - 2.4.2 (PSIS)

(Additional Notes for 10th FIRA Malaysia Cup 2017, PSIS)

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General Information:

- Minimum robot size 35cm x 35cm (minimum height is not assigned)
- All challenges and soccer competition does not allow 'HANDLING of ball", which refers to CATCHING the ball. Handling is decided whereby 33.3% (1/3) of the ball is not visible from top view, or ball is lifted from the ground when dribbled, or the robot arms / tentacles extended 1/3 of the ball's diameter.
 - During the dribbling motion, the ball must rotate on the ground, otherwise a handling foul will be called (Judged as the ball is rotating without touching the ground OR sliding on the ground without rotating).
- The standard ball used for 9th FIRA Malaysia Cup (RoboSot Category) : Molten Pereda [Molten] 3,000 (F5P30000) fluorescent orange, size 5.
- Robot may communicate with the image processing unit (commonly PC) during game play autonomously, as long as no interference from the human player.
- Rules 4.5.1 referred: ○ Commands from remote computer / controller may now transmit positional data. However, in case of communication failure, the game match will not be stopped.
 - The robots may use any kind of sensors (active and passive sensors; e.g., sonar sensor, infrared sensors, camera, etc.) for all challenges. However, the sensors must be located on the robots itself within the size limit. Any sensor placed on other location is considered exceeding the size limits and considered disqualified.
 - The use of vision system is optional (not compulsory)

1. Localization Challenge

a. Point selection:

- i. The play field is firstly divided to FOUR Quadrants, placing only FOUR point in each quadrant, ignoring the point 7, 10 – 14, and 17 which are on the boundary lines. (Fig.2 referred)
- ii. Referee will draw ONE point from each quadrant (FOUR selected) and the last point among point 7, 10 – 14 and 17 (making a total of 5 point)
Eg.: Quadrant 1 (top left) = 2, Quadrant 2 (top right) = 3, Quadrant 3 (bottom left) = 15, and Quadrant 4 (bottom right) = 23, lastly On-Boundary (cross line) = 11.

b. Game Play

- i. Middle Box is the starting point for the ball, therefore should not be drawn. (Additional to 10th FMC)
- ii. Each team should start from middle box, dribbling the ball towards ONE point and return to center circle, before proceeding to the next point.
- iii. Sequence of point to reach are determined by the team themselves.
- iv. Points are awarded only when the ball touches the box (Fig.1) at every point and touch the circle line at the center. (Additional to 10th FMC)
- v. Total points awarded for each trial is 10 Points, where each successful point touches are given 1 point. Time completion will be recorded.
- vi. Test run before each actual run only allows 3 points only.
- vii. Robot may hold the ball before start trial, as long as the ball is in the middle of the circle. Robot may face any direction. (Additional to 10th FMC)
- viii. Tie breaker for winners (When more the one team score the same point for this challenge) will be judge based on the best time (shortest time taken to complete a particular point or trial, which ever applies). For example, two team successfully completed all five point, team with the shortest time taken will be declared as the winner. If none of the team completed the task in all trial, winner will be declared between the teams with the highest point completed based on the shortest time taken to complete the most point. (Additional to 10th FMC)

2. Avoidance Challenge

a. Point selection:

- i. 3 Round of trials, where each round of trial will set a new route.
- ii. Play field is divided into 5 imaginary section (Fig.6 referred).
During each round, referee will draw (Cabut Undi) a number (between 1 and 2) for a particular section. If No. 1 is drawn, on a corresponding section, one obstacle will be placed on that section. Eg.: Section 1 = 1 Obstacle, Section 2 = 2 obstacle, Section 3 = 2 obstacles, Section 4 = 1 obstacle, and Section 5 = 2 obstacles, a Total of 8 obstacles.
Note: Every section can only have either one or two obstacles, meaning for cases where the first and second draw obtain only one obstacles,

automatically Section 3, 4 and 5 will have 2 obstacles without any needs to continue the drawing process. Note: Practically, the pattern can only consist of 2 Section with 1 obstacle, and 3 Section with 2 obstacles.

iii. The obstacle pattern changes every trial with the same drawing process.

b. Game Play

- i. Robot must be placed completely at the middle of the goal area, but can face towards any direction. (Additional to 10th FMC)
- ii. The robot must touch the penalty area on the opposite side to be considered completion of trial. (Additional to 10th FMC)
- iii. No testing allowed before each trial, but player may calibrate during setup time, without moving the robot into any section. (Additional to 10th FMC)
- iv. Referee has the last say on who the place the obstacles in each sections. (Additional to 10th FMC)

3. Passing Challenge

a. Setup of play field

- i. The cone is placed upside-down, means the bigger diameter is on top, to ease the touching decision.
- ii. The ball and cone setting is fix based on Fig.9 – Fig.10.
- iii. Robot may face any direction during game start.
Note: the orange cone will be replaced with red colored cone to differentiate with the ball.

b. Game Play

- i. Each team are given TWO trials on each level, but if the first trial is successful, the team will be given the 2nd trial with time reset. (Additional to 10th FMC)
- ii. If any team fails both trials of a particular level, they will not be allowed to proceed to the next level and points are awarded up till the successful level only.
- iii. Human player may only remove the cone from the field once touch by the correct ball, however, time will not be paused during the trial even if any colour retuning is required. (Additional to 10th FMC)
- iv. Winners are decided based on scores.
- v. Tie breaker for winners (When more the one team score the same point for this challenge) will be judge based on the best time (shortest time taken to complete a particular level or trial, which ever applies). For example, two team successfully completed all four level, team with the shortest time taken will be declared as the winner. If none of the team completed the task in all trial, winner will be declared between the teams with the highest level completed, then based on the shortest time taken to complete the task. Else, if two or more team are tied for a

particular medal awarded, team with the most successful cone touched by the correct ball in the highest trial level (failed level) is declared winner, then judge by the shortest time if still tied. (Additional to 10th FMC)

4. Robot Soccer Competition

a. Goalkeeper Behavior:

- i. Only goalkeeper can catch the ball, but only in the penalty area. The goalkeeper may not catch the ball beyond the penalty area as it is considered as a striker.
- ii. However, if the goalkeeper holds the ball more than 5 second in its own penalty area, a Handling foul is called and awarded Penalty Kick to the opposing team.
- iii. The goalkeeper may directly dribble / shoot the ball toward the opponent's goal.

b. Collision fouls

- i. A foul is called when an attacking robot (robot with possession of the ball) pushes a defending goalkeeper into the goal with the ball between the two robots, however pushing the goalkeeper the ball in between is allowed in the penalty area as long as not into the goal.
- ii. However, a goal is award if there is not direct (straight) collision between two robot and the balls slides into the goal even though the goalkeeper is pushed.

c. Throw-in

- i. Throw-in requires the ball to be kicked towards their own side of the field first, as the striker may not face directly toward the opponent's goal. (Additional to 10th FMC)

d. Kick Off

- i. Ball must be kicked towards their own side of field first, a small push of the ball is considered valid. Therefore, the opposing team must wait for the valid kick-off before moving their robots.

5. Best Poster Award

a. Introduction

- i. Every participant of any RoboSot Challenges and Soccer Competition must join the Best Poster Award.
- ii. The aim of this category is to encourage knowledge, skills and technology sharing to develop the robot.
- iii. Participant must hand-in the poster during the registration of team to qualify them for any RoboSot Challenges and Soccer Competition.

- iv. All poster will be exhibited in the Hall and evaluated by the appointed panels through a presentation slot. (Additional to 10th FMC)
- v. One winner will be announced during the closing ceremony.
- vi. No team is allowed to join ONLY the poster competition and did not join other RoboSot's challenges or soccer competition. (Additional to 10th FMC)

b. Poster Specifications

- i. A1 size colored poster. (Additional to 10th FMC)
- ii. Paper type is not restricted
- iii. Content's format depend on the participant's rational and creativity.

c. Content

- i. Innovation of robots built by the participating team for RoboSot competition.
- ii. Participants are encouraged to design the poster's layout and content effectively to avoid misunderstanding when evaluated by the panels.
- iii. Evaluation criteria includes but not least: the knowledge sharing element, creativity on poster design, ease of duplicate on the new technology or innovation, and distinctive technology uses. (Additional to 10th FMC)
Note: The poster should be designed to speak for itself as no team members is needed to be with the poster all time. (Additional to 10th FMC)

d. Evaluation (Additional to 10th FMC)

- i. Participant is required to attend a presentation evaluation scheduled during the event, judged by appointed panels by the committee.