



İTÜRO 2023

15. INTERNATIONAL ITU ROBOT OLYMPICS

Stamp Collecting Category Rules



Istanbul Technical University Robot Olympics 2023

Stamp Collecting Category Rules

Task Description:

- The aim of the stamp collecting competition is to carry the stamps to the required stamp release areas according to their colors with the help of robots' own sensors. During the competition, one robot from each team competes on the track, starting at the same time. The team with the most points at the end of the match wins.

Robot Features:

- 1) Robots can have a maximum width of 30 cm, a length of 30 cm and a height of 30 cm.
- 2) After the competition has started, the robots can be expanded but cannot be disassembled.
- 3) Robots may not use any system that can damage the runway. Robots that damage the track will be disqualified.
- 4) Robots must have a maximum weight of 3 kg.
- 5) Robots should be autonomous. It cannot be controlled from the outside.

Track Features:

- 6) The section where the robots will compete is 250 cm in width and 250 cm in length. The outer walls of the runway also have a height of 10 cm.
- 7) The dimensions of the stamping areas are 50 cm in width and 50 cm in length. And it has no height. There are four in total, 1 red, 1 blue and 2 green, and there is one in each corner.



- 8) The stamps have a diameter of 40 mm and a height of 20 mm. The stamps differ only in color and are identical in size.
- 9) There are 21 stamps on the track, 8 red, 8 blue and 5 green.

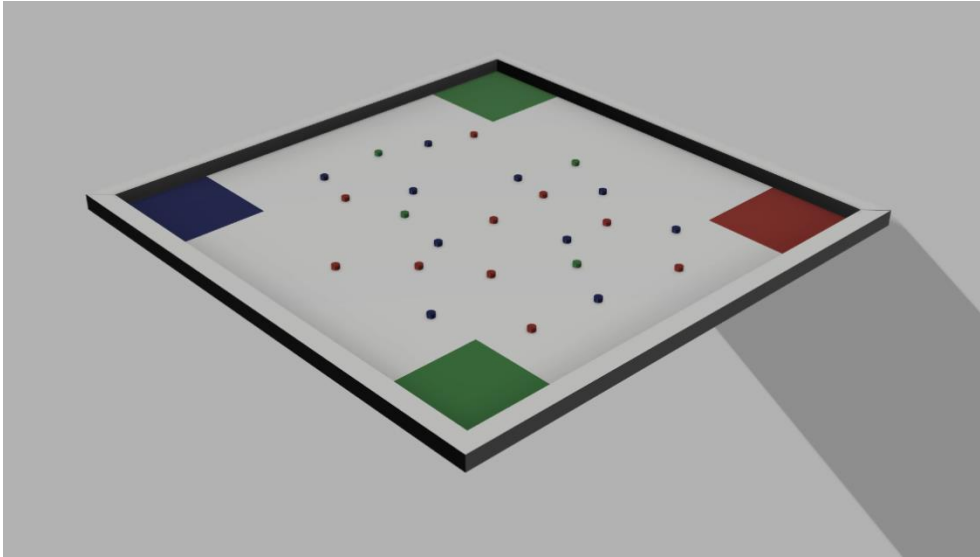


Figure 1: Example image of the track

Competition:

- 10) In each match, the robots of both teams compete simultaneously.
- 11) The match cannot last more than 5 minutes.
- 12) The time starts with the referee's command.
- 13) Each robot must correctly place at least one green stamp and one which has its own color, otherwise the robot will not be evaluated.
- 14) If the referee approves, technical intervention can be made to the robot for a maximum of 1 minute. Technical intervention takes place on the field under the supervision of the referee. During this time, the robot of the team that does not want a time-out is also stopped by the referee.
- 15) Each team has only 1 technical time-out during the match.



- 16) During the competition, it is forbidden for any of the teams to enter the competition area and change the place of the stamps. In case of detection, the relevant team will be disqualified from the competition.
- 17) From the moment the competition starts, no part or module changes can be made on the robot, including technical time-outs. In case of violation of this clause, the violating team will be disqualified from the competition.
- 18) The fields of the robots are determined by flipping a coin, either red or blue. The green area and green stamps are common to both robots. The sticker given to the competitor by the referees must be affixed to the robot.
- 19) Robots are placed back-to-back in the center of the track. The front side of the robots have to face green areas.
- 20) Referees may pause and restart the match, when necessary, without waiting for the duration of the competition.
- 21) Should any of the robots comes down with a malfunction that renders them unable to participate in the competition, the robots will be inspected by the referees, and then it will be decided whether the robot can continue the competition in scope of the technical intervention. If the robot would not be able to continue, it will be taken out of the game.
- 22) For the robots, there are no set boundaries to the means of collecting, the color or the number of stamps.
- 23) The robots are tasked with gathering the stamps of the color assigned to them on their respective areas, while the green stamps must be collected in the green stamping areas only. Failure to adhere to this rule will result in a penalty.
- 24) If the number of competitors is sufficient, a Swiss-bracket system of elimination will be held where the winner of a round will move on to the next.



25) If the number of robots is not sufficient, a tournament system may be held where the winner of a round gets 3 points and the other gets 0. In a case of even points, the average will be considered to decide on a ranking.

Scoring:

26) For a stamp to be considered “collected”, it has to be in the according area in its entirety and has to remain still for one second after being put down.

27) The gathered stamps will then be collected by the referees regardless of the stamps being in the correct area or not. Stamps which have been qualified to be “collected” but have been displaced by the robots before the referees could pick them up will still count.

28) Any red or blue stamp successfully collected inside their respective areas equal +10 points for each stamp.

29) Any green stamp successfully collected inside their areas equal +20 points for each stamp.

30) If a robot collects a stamp which was the color specified for the opponent, in its own area, a penalty of -25 points will be given out.

31) If a robot collects a green stamp in its own area, a penalty of -40 points will be given out.

32) Any stamps in the color specified for the opponent, collected in the area specified for the opponent, will earn the opponent points equal to the value of the stamp. If the stamp color is not the same as the area, it won't have an effect on the score.