



2011 NATIONAL SKILLS COMPETITION

3070 MOBILE ROBOTICS

TEST PROJECT

Skills Turkey Mobile Robotics Competition Day 1

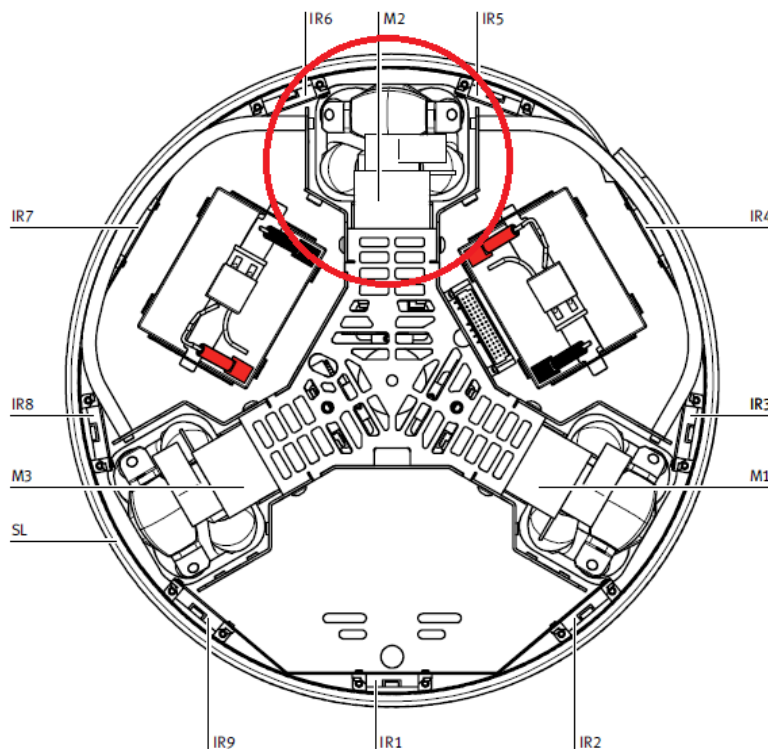
Competition starts at 9 A.M. and teams will be informed about the task of the day. After the presentation 15 Minutes Competitor-Expert sessions is started.

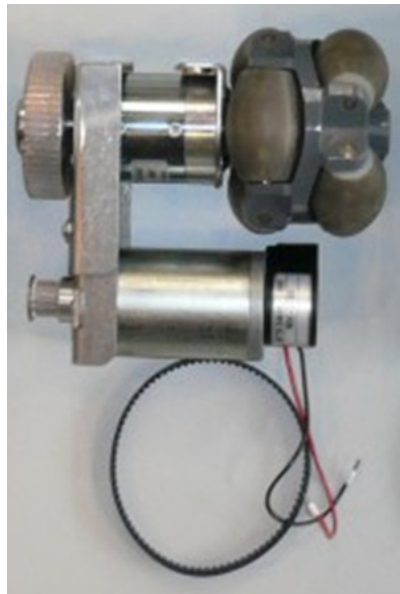
Team starts preparation of the task and each team has a 10 minute for test of the court. Arrangement of the test schedule will be done in 1 hour. After the lunch teams starts to perform on the court and between each performance teams has 15 minutes for the second run.

After break second assignments are presented for the competitors and 1.5 hours preparation time is given to the teams. After the first run each team has 20 minutes preparation for the second run.

First Assignment

In first assignment motor gear on the back of the Robotino is removed from the Robotino and assembling the optical sensors and preparing for the test program for optical sensors. Teams will raise their Green Cards and experts will check their robots.





Program will be written to follow the black stripe with using only two motor. Time mark will be given for this task. Court must be completed in one minute. Each team has 2 Test runs on the court. **(5x2 points)**

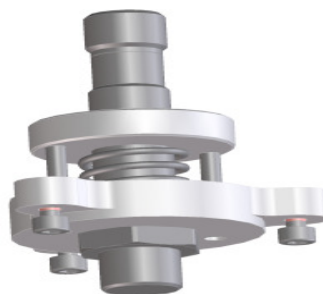
Moving out of the path will be assigned as a penalty and after 5 penalties team won't gain any point from this test run. **(Each penalty is -1 point)**

Second Assignment

In second task of the first day competition start with the announcing the tasks and competitor-expert meeting will be done within 15 minutes. Team has 2.5 hour preparation time for this task. After first runs executed teams have 20 more minutes to prepare for the second run.

Inductive Sensor

Second part of the competition day starts with the assembling the inductive sensor and motor. After assembling these equipments team raise their green card to inform expert about completion of the assembling task.



After assembling the motor and inductive sensor team will be prepare a test program for plotting the inductive sensor data. If the sensor is working correctly teams will be awarded **2 Points**.

In the court robots are compete 2 times at each time path with the metallic band must be followed and moving out of the path get penalty point. Time mark will be given for teams fastest team will be awarded **8**

points for a single run. Path must be completed within 1 minute to gather point from the run. Penalty points for the moving out of the path are **-1 point** for each fault.

Distance Sensor and Camera

In these task competitors will use distance sensors to moving around an objects in the court. Before starting the task each sensor will be tested in a control program. **(1 Points)**

In each test run test procedure is as follow.

Robot will be started nearby to the black stripe and robot will follow that path using camera until it reaches the metallic tape. **(1.5 Point** each fault cost **-0.5 point)**

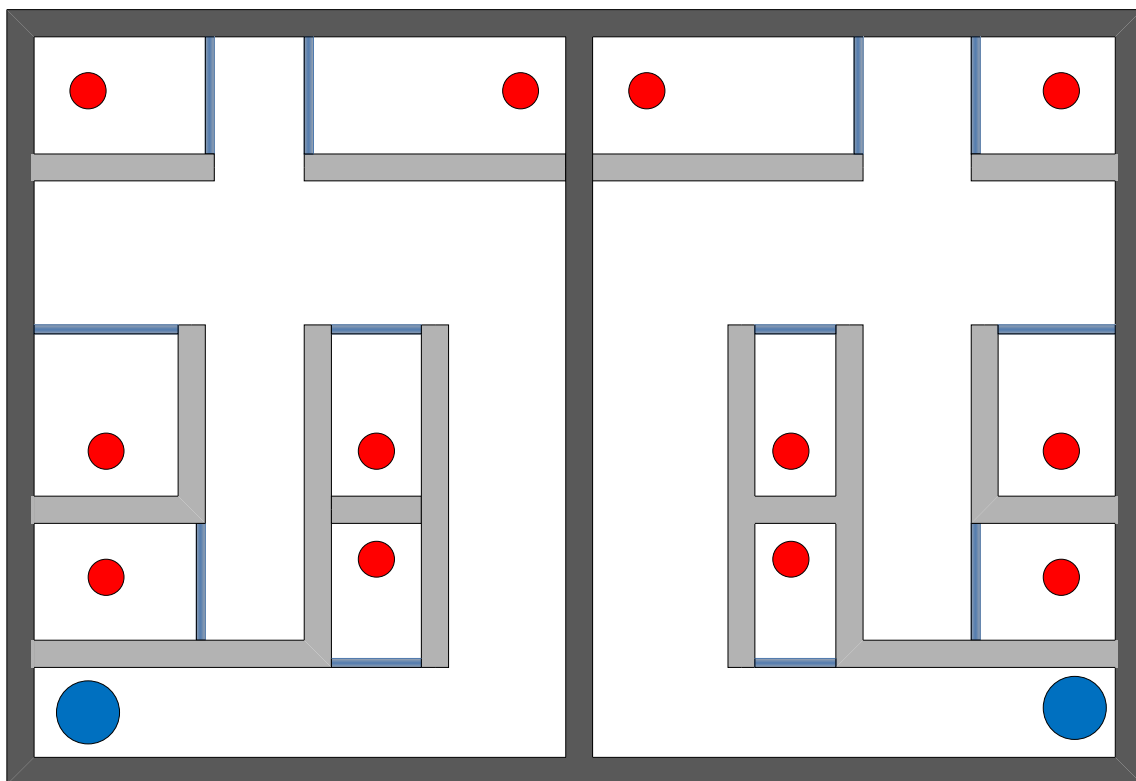
After moving to the metallic tape robot moves through to the objects and follow the edges of the objects from 5 - 15cm distance. Time mark will be awarded for best team **4 points**. Path must be completed in 2 minutes.

Skills Turkey Mobile Robotics Competition Day 2

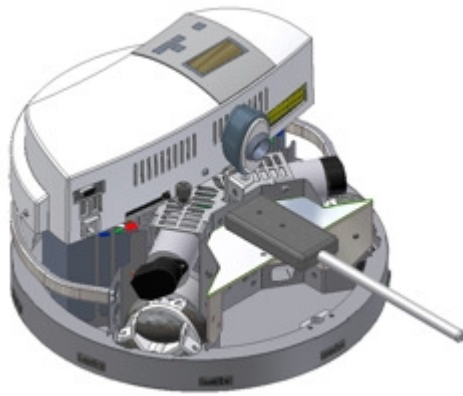
Competition starts at 9 A.M. and teams will be informed about the task of the day. After the presentation 15 Minutes Competitor-Expert sessions is started.

Team starts preparation of the task and each team has a 30 minute for test of the court. Arrangement of the test schedule will be done in 3 hour. After the lunch teams starts to perform on the court and between each performance teams has 30 minutes for the second run.

Task will be performing for two robots at the same time. Each run of the robot will hold in different courts. Court layout seems like below.



Robots have to detect the object and will touch them. There are 6 objects of the court and each object is located in a room. Doors entrances are marked with the metallic tape.



Evaluation Criteria

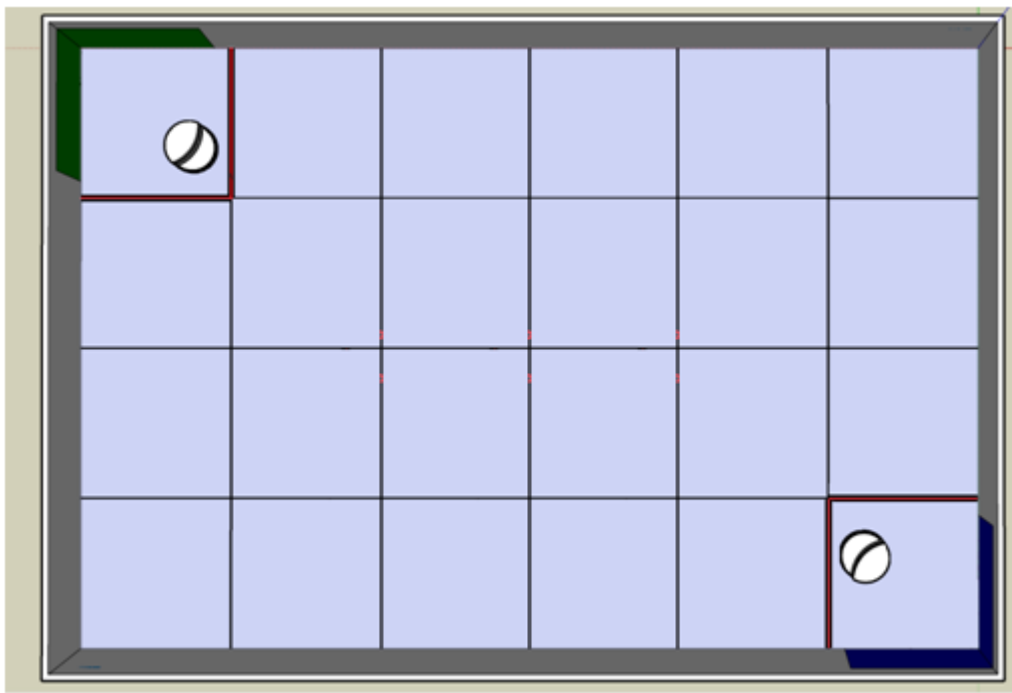
- Robots have to use camera. Competitors prepare a test program for testing camera. (1 Point)
- When detecting the metallic tape at the entrance of the room Red LED will be light on 3 times with 2 Hz frequency. (0.25x6 Points)
- Founding the object from the Image and moving through the object. (0.5x6 Points)
- Touching the objects and moving them off the panel. (1x6 Points)
- After completing a each object successfully Green LED will be light on 3 times with 2Hz frequency. (0.25x6 Points)
- After completing all the object robot will stop and light on Red LED 5 times with 2Hz Frequency.
- Time mark will be awarded to teams. Best team will gather 1.5 Points. Task must be completed within 5 minutes to get time points.

Skills Turkey Mobile Robotics Competition Day 3

Competition starts at 9 A.M. and teams will be informed about the task of the day. After the presentation 15 Minutes Competitor-Expert sessions is started.

Team starts preparation of the task and each team has a 20 minute for test of the court. Arrangement of the test schedule will be done in 1.5 hour.

Task will be performing for two robots at the same time. Each run of the robot will hold in different courts. Court layout seems like below. Teams will be matched randomly for the first run. Other run matches will change.



Team A	Team D
Team A	Team B
Team B	Team C
Team C	Team D
Team B	Team D
Team A	Team C

Matches will be done in systematically shown in above. Each match performs for both Hunt and hunter role for competitors. Team placed court with a specific color and robot has a marker with this color on the top. Such as hunt robot starts from the red corner and puts red cylinder on it and tries to move to the green corner to get point.

Evaluation Criteria

- **Hunt Role:** When one robot plays as a hunt, robot protects itself from touching hunter and moving to the other corner of the court.
 - Moving hunters are without caught by hunter (2x3 Points)
 - Time mark will be awarded for the fastest robot for completing task. Each run must take maximum 3 minutes to get time mark. (4x3 Points)
- **Hunter Role:** When Robot plays as a hunter, it aims to catch hunt robot. In this task time mark will be awarded for the fastest hunter. Each run must take maximum 3 minutes to get time mark. (4x3 Point)