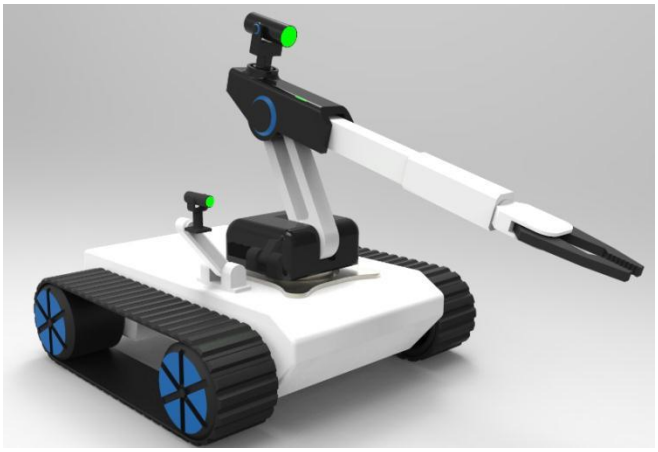
iLABS@MAK PROJECT

STIC 2016 RULES BOOK



Robotics Competition Guide Book | STIC 2016

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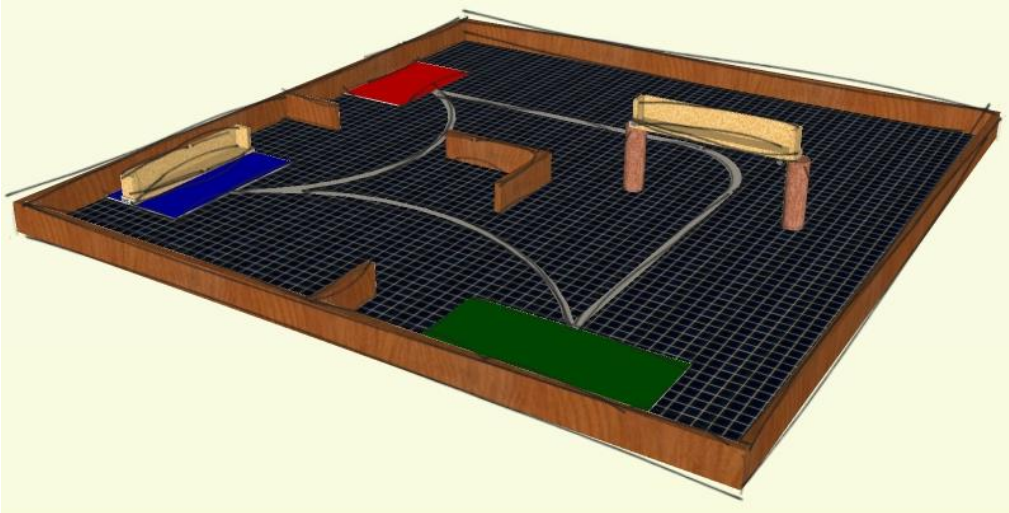

Game Field Structure and Specifications

The field consists of a game area roughly measuring 5m x 5m surrounded by a wooded fence with a height of 200mm and thickness of 50mm.

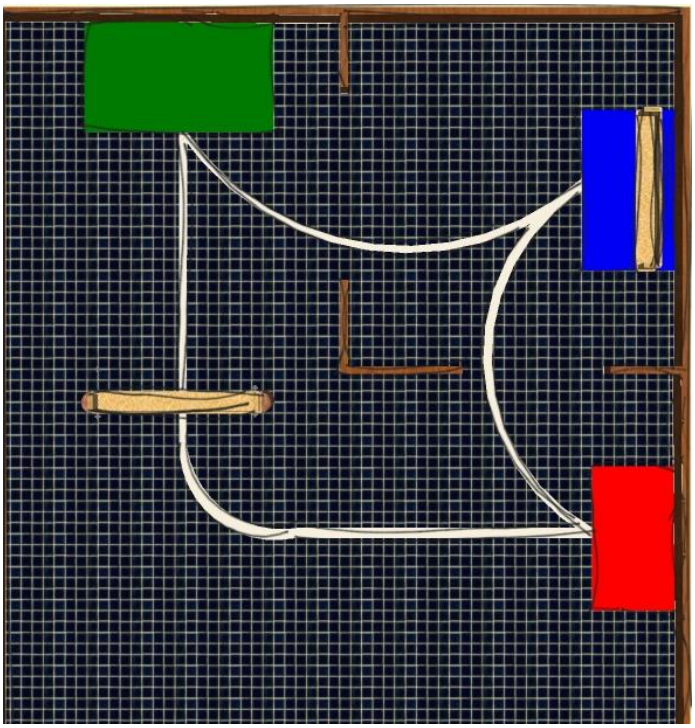

Figure 1: Top View of Game Area Layout

The game field as seen from the above picture consists of a start zone, object zone and deployment zone. The description of the field is outlined as follows

Start zone, Object zone & Stop zone

i) Start Zone

The start zone consists of a 1m x 0.5m green square located approximately 50 cm from the top left corner of the game area. This will be where the robot will begin its tasks.

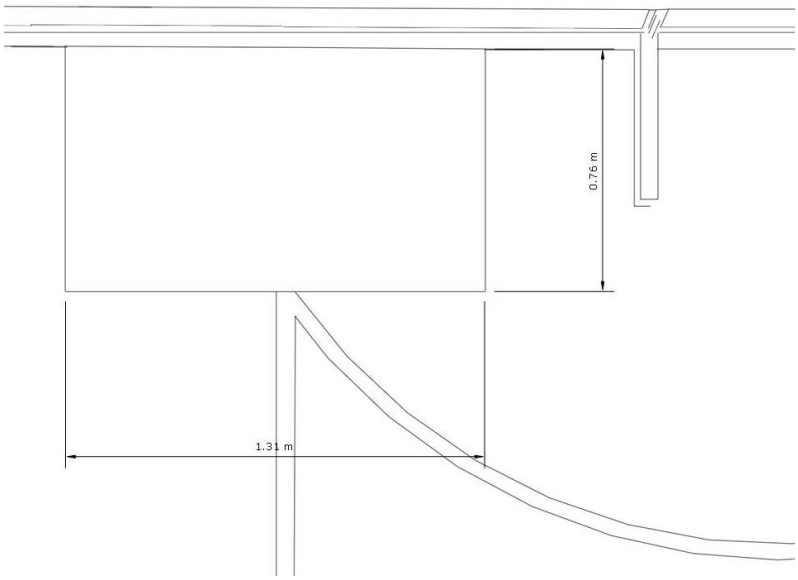

Figure 2: Start Zone Dimension

ii) Object Zone

The object zone is a blue square of roughly 1m x 0.5m and is located about 0.6 m from the top right corner as indicated in the diagram below. The object zone will be where the robot will place the objects it collects from a collection point.

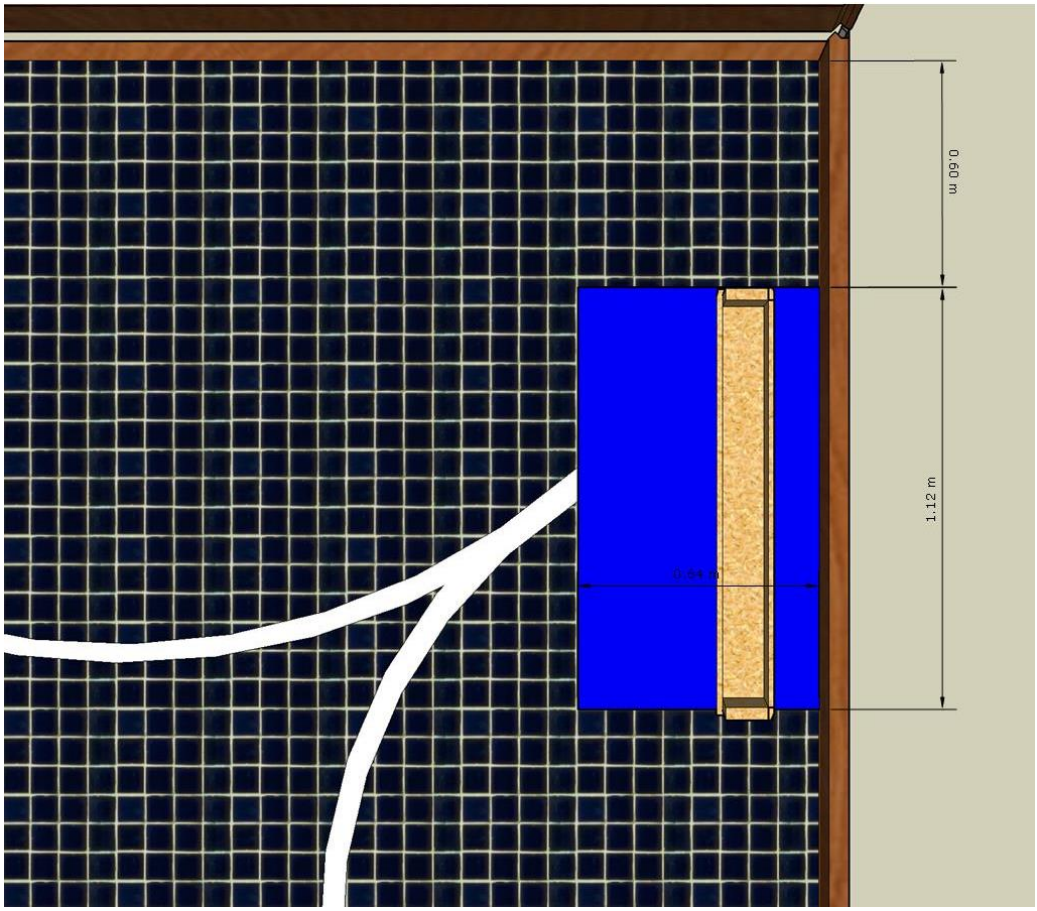

Figure 3: Object Zone

iii) Stop Zone

This is the rectangle of roughly 1 m x 0.5m where the robot must reach in order for the robot to signify that it has completed the task. It is located about 1m from the bottom right corner of the game field as shown in the image below.

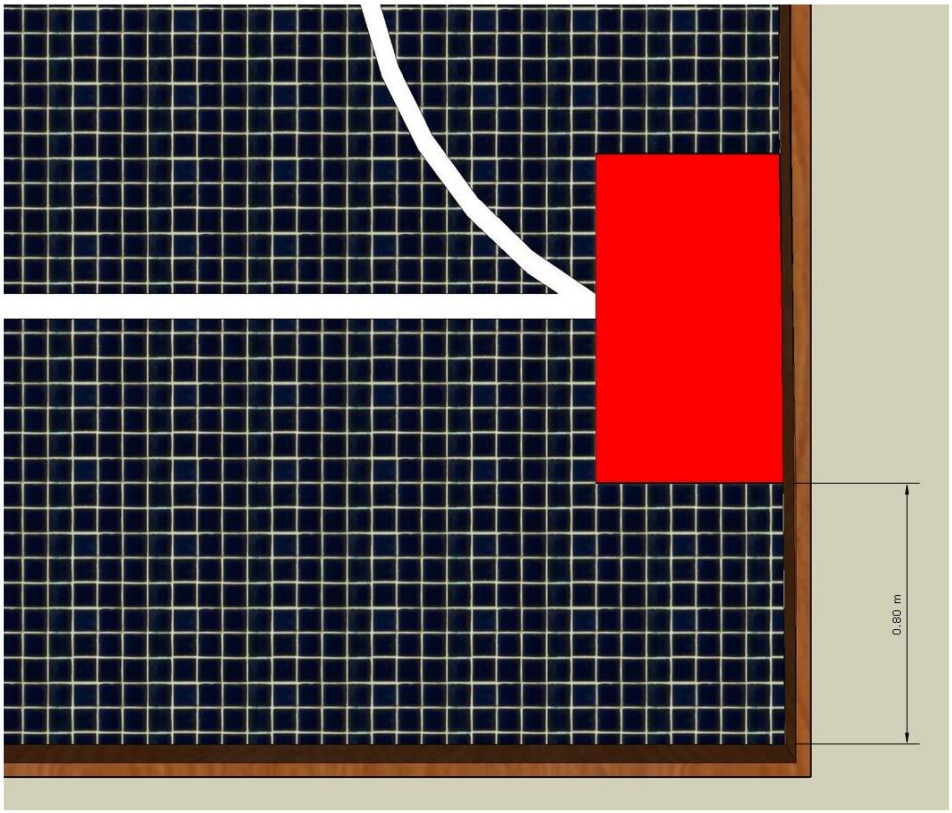

Figure 4: Stop Zone

iv) Object Place holder

The object Place holder will consist of cylindrical

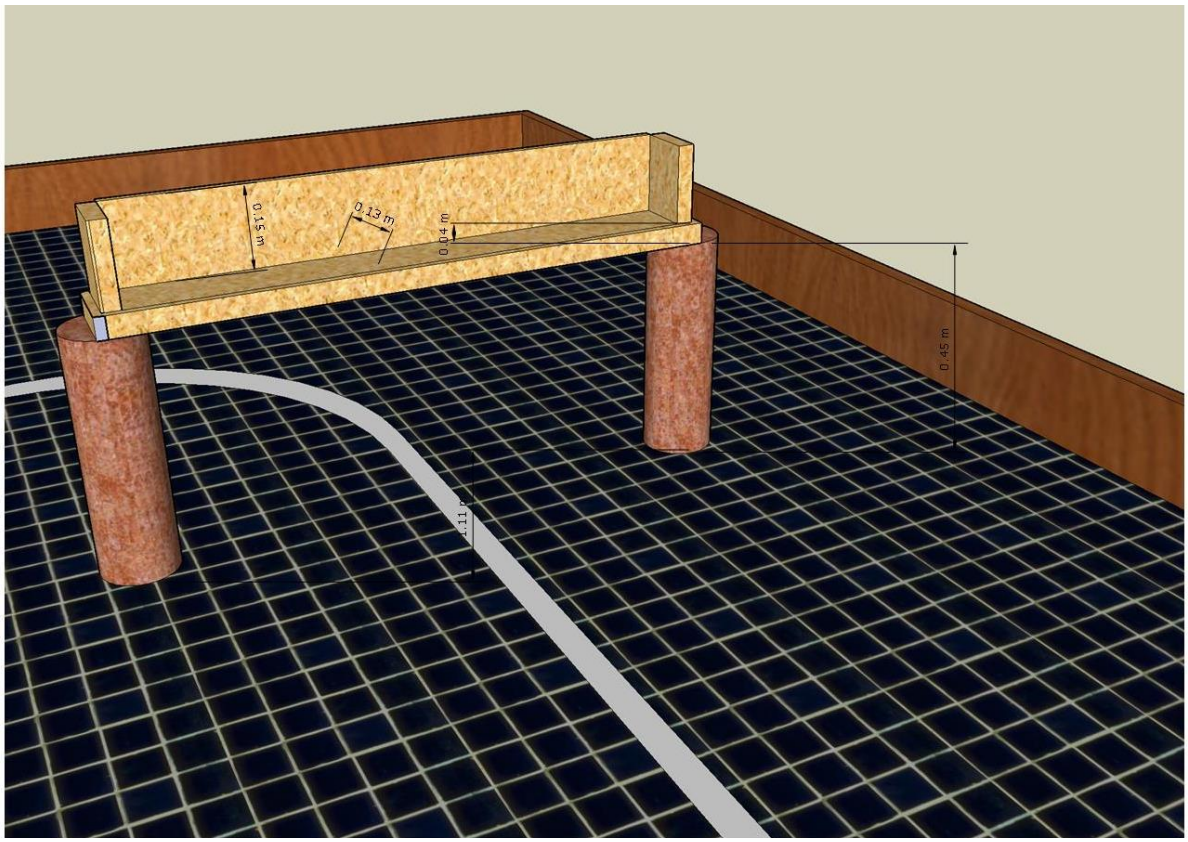

Figure 5: Object Placeholder

Outline of the contest

The game is derived as a basic test of the student's ability to program their robots to carry out the tasks in the most efficient manner. Each team may consist of not more than two automatic robots. The game robot must complete the first task of picking a light cylindrical paper like material (like toilet paper) from the object place holder and take it (drag/ move it) to the object zone. The match should last at most 7 minutes.

Game procedure

Length of the game

i) The game match lasts at most 7 minutes

ii) In any of the following cases, the match ends immediately (even before the 7 minutes have elapsed)

- When task is completed successfully
- Disqualification is announced by the judges in the game
- When the judges announce that the game cannot continue.

3.2 Setting of robots

i) One minute is given for setting the robots before the game starts
ii) At most two members of each team can engage in setting the robot(s)
iii) Any team that fails to complete setting of the robot within one minute can resume the setting again once the game starts.

3.3 Deployment of the robots and team members at the start of the game

i) Game robot must be started at the start zone
ii) After starting the game robot, the team members who perform the starting action must leave the game field immediately.

3.4 Collection of the object from the object zone

i) Each team shall have their robot navigate to the object placeholder, collect the object. The object place holder shall be directly in front of the start zone.

Competition Tasks and General Restrictions

Once the game has begun, each team shall complete the tasks:

i) The game robot navigates to the object zone.
ii) The game robot shall collect the object in the object zone
iii) The game robot shall navigate with the object from the object zone to the object deployment zone
iv) The robot shall deploy the object at the deployment zone
v) The robot shall return to the start zone to complete the game.

Some restrictions that are enforced in the game are as follows

i) In case the robot drops the object, the object must be returned to the object zone and the robot to the start zone and the game starts all over again. Each team is given a maximum of three trials, beyond which the judges shall consider the match a fail.
ii) The team members can not in any way touch the robots except during the starting operation. Touching the robot in any way could lead to severe penalties or even disqualification.

Retries of Robot

i) A retry can only be made after the referee gives permission
ii) Team members are allowed to touch the robot while preparing for a retry
iii) Retries of a robot or several robots at the same time can be made as many times as necessary
iv) A retry of a game robot is made at the start zone only.
v) During retry, the team can request the referee to bring the dropped object back to object zone if the robot has dropped it or not placed well along the way. The earned points will still be counted.

Deciding the winner

i) The first team whose game robot successfully places the object in the object deployment zone and returns back to the start zone, wins the game and hence the end of the match.

ii) If neither team achieves this at the end of the five minutes, the winner is decided based onthe points achieved. The team with the higher points wins. How the points are awarded is described below?

- Game robot successfully navigates to the object zone: 10 pts
- Game robot successfully collects the object: 20 pts
- Game robot successfully navigates to the object deployment zone with object: 15 pts
- Game robot successfully deploys object in object deployment zone: 3 pts
- Game robot successfully navigates back to start zone: 2 pts

iii) T h e game result

- The game result is announced at the end of all competitions
- The match will end when the time elapses, one team is disqualified, or one of the team completes the tasks before the other.
- A total of 50 pts is awarded to the team that completes the game.

Violations

If a violation occurs, 10 points will be automatically deducted and if the violation still continues, 10 points will be deducted every 3 seconds. Each time of deduction is considered as the number of violations. The team with three violations in a match will be disqualified. Violations are categorized as follows;

a) Any parts of the robot or object held by any robots move out of the game field of the space above it

b) Any other action that infringes on the rules and is not mentioned is considered as a violation.

Disqualifications, Safety Issues and Teams

Disqualification

A team will be disqualified if it commits any of the following actions during the match;

i) Damages or tries to damage the field, facilities, equipment or opponents' robots;

ii) Performs any acts that are not in the spirit of fair play

iii) Fails to obey instructions or warnings issues by the judges

iv) H a s made a false start for three times in the same match

v) Has made three violations in the same match

Safety issues of the robots

All robots must be designed/ assembled so as to

i) Pose no danger of any kind to anyone

ii) Cause no damage to any robots of opposing team of the field