Rules of Automatic Robot Competition (KTIS Logistic Bot)

ASEAN Undergraduate Level (not higher than bachelor's degree)

The competition uses automated robots. The robot must walk away from the START point and follow the path to pick up objects, which are of 4 types, 2 pieces per type, a total of 8 pieces, which are placed at various points determined by the referees and then transported to the designated area. After completing the mission, the robot must walk to the FINISH point.

Robot Requirements

1. No restrictions of weight and size of the robot

2. Each robot uses a circuit board to control it or uses Microcontroller with no limit on its types /numbers

3. The robot must be programmed and must work only automatically. No communication or control of the robot is allowed by humans.

4. No limit on the number and type of sensors and motors are not limited.

5. There is no limit on the methods of movement, methods of grasping, moving objects.

6. Use no more than 12 volts of electricity or no more than 8 AA batteries.

7. Use any materials to assemble the robot structure. But there must not be a grip on the robot / wheels. with the playing field and not damage the field

8. The robot can be assembled in advance.

Competition Court Requirements

- The competition court is divided into 2 sides, each side is approximately 120 cm. wide and 150 cm. long, without boundaries. The pitch is raised approximately 30 cm. from the ground. The path of the robot is black with a width of 20 mm.

- The corridor between the two sides is 30 cm. wide and 60 cm. long. The path of the robot is black with a width of 20 mm.

- The objects used to move are 8 cans with a diameter of 5 cm., 10 cm. in height, weighing no more than 50 grams and randomly drawn only once before the competition (red, green, blue and yellow, 2 of each color).

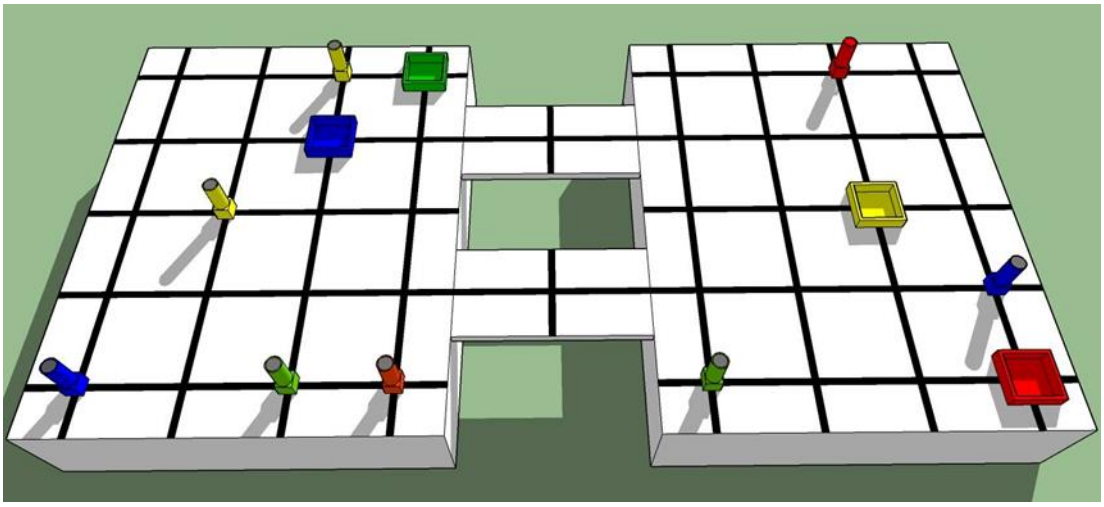
- Can stand before moving is a cube shape, 5x5x5 cm, in the amount of 8 pieces.

- Tray with a width of 15 x 15 cm, a height of about 4 cm, 4 pieces, 1 tray per color

Before Starting the competition, the referee will inform

- Can stand (red, green, blue and yellow), amount: 8 points

- Tray area (red, green, blue and yellow), amount: 4 points



The First Round Competition

It's a single race to complete a mission in recording the time or scores achieved

Completing the mission means the robot transports 1 can of each color, total 4 cans, and returns to a standstill at the FINISH point.

Rules of the First Round Competition

Set the bridge as the START point and the FINISH point. Contestants can choose by themselves which side of the bridge to be the START point and which side to be the FINISH point, or both START and FINISH points on the same side.

1. Competition time is 2 minutes per game, start by placing the robot at the START point (bridge area).

2. When the referee gives the signal to release the robot, contestants press a button on the robot only once to let the robot work automatically. The robot must walk from the starting point along the black line, then move 1 red can, 1 green can, 1 blue can and 1 yellow can from the can stand into the designated tray. Move 1 can at a time and move to the Finish Point).

3. Retry requests can be requested an unlimited number of times. And no score will be deducted when requesting a retry. The contestant has 2 options.

(1) Request to stop the game to count and record the score achieved. (a competition time will be recorded as 3 minutes)

(2) Request to continue the competition, but the competition time continues until the end of the competition and cans which have been picked up completely must be placed in their original position.

*** Retry, the referee will record the score achieved in that round. And all the cans which have been picked up completely must be placed at the starting point again. and then start dropping the robot at the starting point. Scores that the contestants will get is the highest score in the round.

4. During the robot's mission

- If the robot walks away from the black line, referee will force Retry

- If the robot picks up the can, while walking, the can touches the ground before reaching the can storage area, that can will not score.

- If the robot falls on the bridge, referee will force Retry

- If red, green, blue and yellow cans fall on the field in any case be regarded as an obstacle to competition.

5. The duration of the competition is 2 minutes. Total score is 50 points as follows:

- The team that can correctly place the red, green, blue and yellow cans in the designated tray area; the cans must be within the designated tray area, and the cans must be standing still, gets 10 points per can.

- The team that can complete all missions, and the robot can reach the FINISH point and stand still, gets 10 points.

6. Robot with the highest score and the best time wins the competition.

7. In case the robots get the same score and take the same amount of time to complete the mission, look at the number of retry attempts. The team with the fewer attempts wins the competition. If the number of retry attempts is the same, it depends on the referee's final decision.

8. In case that a robot is damaged during the competition, contestants can fix it, however, the referee will not stop the competition time. Once the repair is complete, bring the robot to the starting position (start position) to start a new competition, before releasing the robot, contestants must notify the referee every time.

9. The referee's consideration is the final decision.

The Second Round and the Semi-Finals Competitions

Bringing the results of the first round to select the 16 best statistical teams entering the 2nd round by using the statistics obtained in the first round to sort into the competition line and then compete in a knock-out system (elimination) by using the results of 2 out of 3 games.

Rules of the Second Round and the Semi-Finals Competitions

Set the bridge as the START point and the FINISH point. Contestants can choose by themselves which side of the bridge to be the START point and which side to be the FINISH point, or both START and FINISH points on the same side.

1. Selection of boundary side: The team listed first is the red team and the other is the blue team.

2. Competition time: 3 minutes per game, start by placing the robot at the START point (bridge area).

3.When the referee gives the signal to release the robot, contestants press a button on the robot only once to let the robot work automatically. The robot must walk from the starting point along the black line, then move 2 red cans, 2 green cans, 2 blue cans and 2 yellow cans from the can stand into the designated tray. Move 1 can at a time and move to the Finish Point.

4. Retry requests can be requested an unlimited number of times. And no score will be deducted when requesting a retry. The contestant has 2 options.

(1) Request to stop the game to count and record the score achieved. (a competition time will be recorded as 3 minutes)

(2) Request to continue the competition, but the competition time continues until the end of the competition and cans which have been picked up completely must be placed in their original position.

*** Retry, the referee will record the score achieved in that round. And all the cans which have been picked up completely must be placed at the starting point again. and then start dropping the robot at the starting point. Scores that the contestants will get is the highest score in the round

5. During the robot's mission

- If the robot walks away from the black line, referee will force Retry

- If the robot picks up the can, while walking, the can touches the ground before reaching the can storage area, that can will not score.

- If the robot falls on the bridge, referee will force Retry

- If red, green, blue and yellow cans fall on the field in any case be regarded as an obstacle to competition.

6. The duration of the competition is 3 minutes. Total score is 100 points as follows:

-The team that can correctly place the red, green, blue and yellow cans in the designated tray area; the cans must be within the designated tray area, and the cans must be standing still, gets 10 points per can.

- The team that can complete all missions, and the robot can reach the FINISH point and stand still, gets 20 points.

7. Robot with the highest score and the best time wins the competition.

8. In case the robots get the same score and take the same amount of time to complete the mission, look at the number of retry attempts. The team with the fewer attempts wins the competition. If the number of retry attempts is the same, it depends on the referee's final decision.

9. In case that a robot is damaged during the competition, contestants can fix it, however, the referee will not stop the competition time. Once the repair is complete, bring the robot to the starting position (start position) to start a new competition, before releasing the robot, contestants must notify the referee every time.

10. The referee's consideration is the final decision.