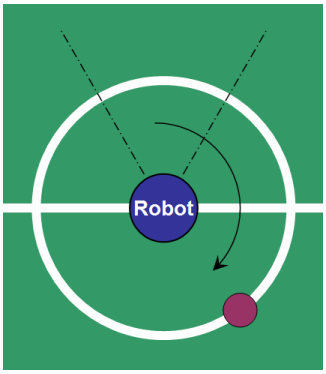
Faculty of Engineering

ENGG1000 2019T3

Soccer Droids

Test Station 1

Find the Ball



The ball will be placed in a random location behind the robot by the referee. The robot handler will activate the robot, which must spin around on the spot and stop spinning when it is facing the ball.

The robot may then go towards the ball after it stops spinning; this will not be a failure of this test.

The robot may turn in either direction. Failure to find the ball at first sighting will be a failure of this test. This test will be repeated twice in the 60 second testing period.

Timing

Arrival and set up	1 minute
Testing	1 minute
Departure	1 minute

Scoring

Robot is ready within 1 minute of the advertised time	4 points	*(no penalty for delay by other teams)*
Robot moves in a purposeful way	4 points	
Robot detects ball (tested twice)	12 points	

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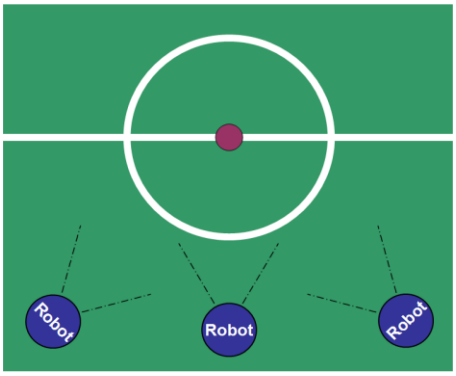
Test Station 2

Kick Off

The robot will be placed in a random location behind, but facing, the ball by the referee. The robot handler will activate the robot which will go directly to the ball and push it towards the other end of the field.



Failure to strike the ball at first attempt will be a failure of this test. The robot may follow after the ball; this will not be a failure of this test. This test will be repeated twice in the 90 second testing period.

Timing

Arrival and set up	1 minute
Testing	1.5 minutes
Departure	1 minute

Scoring

Robot is ready within 1 minute of the advertised time	4 points	*(no penalty for delay by other teams)*
Robot moves in a purposeful way	4 points	
Robot kicks ball (tested twice)	12 points	

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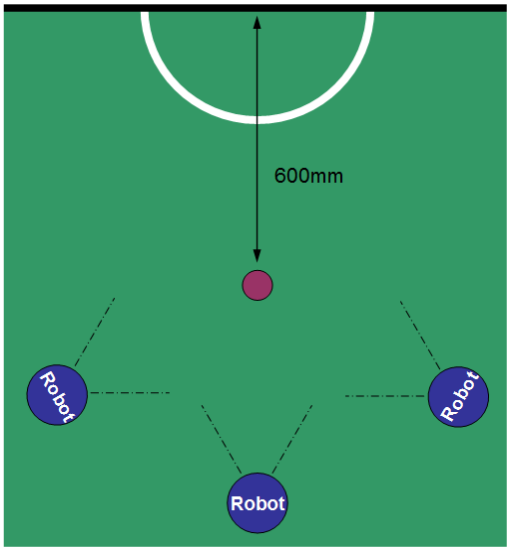
Test Station 3

Shoot for Goal

The robot will be placed in a random location behind, but facing, the ball by the referee. The robot handler will activate the robot which will go to the ball and push it into the goal.

The robot may position itself in the correct orientation before striking the ball.

Failure to strike the ball at first attempt will be a failure of this test. Failure to score a goal at first attempt will be a failure of this test. This test will be repeated twice in the 120 second testing period.



Timing

Arrival and set up	1 minute
Testing	2 minutes
Departure	1 minute

Scoring

Robot is ready within 1 minute of the advertised time	4 points	*(no penalty for delay by other teams)*
Robot moves in a purposeful way	4 points	
Robot scores a goal (tested twice)	12 points	

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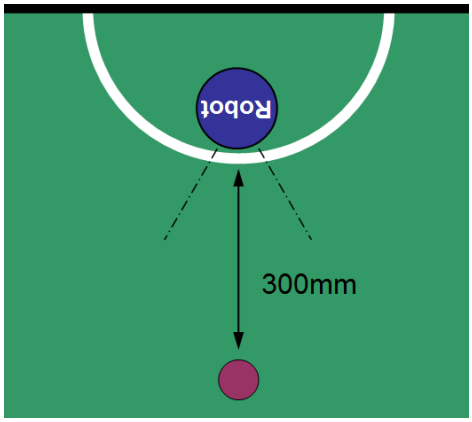
Test Station 4

Defend the Goal



The robot will be placed in the goal mouth and activated by the robot handler. The referee will roll the ball towards the goal. The robot will wait until the ball is less that 300mm away, then it will move forward, strike the ball, then return to its original position.

Failure to strike the ball at first attempt will be a failure of this test.

Failure to defend the goal will be a failure of this test.

Failure of the robot to return to its original position will be a failure of this test.

This test will be repeated twice in the 120 second testing period.

Timing

Arrival and set up	1 minute
Testing	2 minutes
Departure	1 minute

Scoring

Robot is ready within 1 minute of the advertised time	4 points	*(no penalty for delay by other teams)*
Robot moves in a purposeful way	4 points	
Robot defends goal (tested twice)	12 points	

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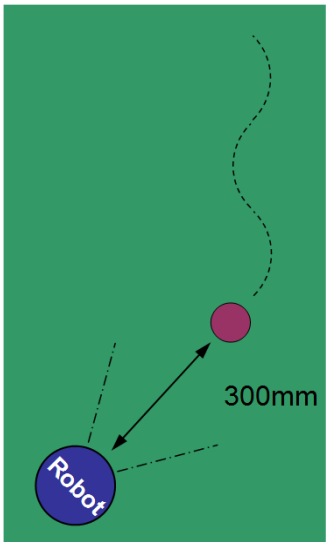
Test Station 5

Follow a Moving Ball

The robot will be placed on the field and activated by the robot handler. The referee will place the ball 300mm from the robot and wait for the robot to see the ball. As the robot moves towards the ball the referee will draw the ball in a random path away from the robot. The robot is expected to follow the moving ball.

Failure to follow the moving ball at first attempt will be a failure of this test.

This test will be repeated twice in the 120 second testing period.



Timing

Arrival and set up	1 minute
Testing	2 minutes
Departure	1 minute

Scoring

Robot is ready within 1 minute of the advertised time	4 points	*(no penalty for delay by other teams)*
Robot moved in a purposeful way	4 points	
Robot detects ball (tested twice)	12 points	

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Test Station 6

Play as Part of a Winning Team

Robots will become part of a soccer team and participate in a competition, playing against two other teams.

Soccer teams will consist of two robots from two different project teams. Project teams are expected to make arrangements to form a Soccer Team before the Final Testing day.

Game Rules

Each Soccer Team will be made up of 2 Project Teams
- Project teams must join together to play in the tournament

Play will be continuous

5 minutes total time no change of ends

Toss for kick off

At kick off
- Defending robots can only be started when the ball moves or after 15 seconds

Only the referee may touch the ball
- Trapped ball moved to neutral location after 15 seconds

Broken robots may be removed for repairs
- Stay off field for 30 seconds
- Returned to neutral location

After a goal is scored
- Robots can be removed from the field and placed in kick off positions

Timing

Arrival and set up	1 minute
Testing	5 minutes
Departure	1 minute

Scoring

Robot is on the winning side	10 bonus points
The match is a draw	5 bonus points

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Test Station 7

Engineering Quality

The device that achieves the highest marks in performance may not represent the best engineering design. Additional marks are available for good design of your team based on four criteria:

- Robustness – 5 points
- Simplicity – 5 points
- Aesthetic Appeal – 5 points

Robustness Scoring Guide

- The robot looks like could survive a 1 metre fall from a bench onto a hard floor 5 points
- The robot looks like it can survive all the above tests 3 points
- The robot fell apart while being inspected 0 points

Simplicity Scoring Guide

- Simple functional design 5 points
- Functional, but has some unnecessary components 3 points
- Unnecessarily complicated for the task 0 points

Aesthetic Appeal Scoring Guide

- Pleasing form that looks suited to the task 5 points
- Pleasing form, but with a little cluttered or messy 3 points
- Looks like a jumbled mess of wires and parts 0 points

Innovation

This will be determined by the panel of judges based on the uniqueness of your design in comparison to the other entries. In general this is related to the way in which you utilise technology to perform the primary functions of the design and the degree of difference between your solution and the other teams.

- Innovation – 10 points