

Test Project

Module H Performance Review and
Commissioning

Autonomous Mobile Robotics

Independent Test Project Designer: Derek Murphy, James

Taylor Independent Test Project Validator: Johan Benade SCM

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Introduction

Module H is the main task of the Autonomous Mobile Robotics Skill Core performance tasks and test runs are completed in this module on a court measuring 4 m x 4 m. The court layout and test object information is provided in this document. Performance and Commissioning is expected to be completed at the end of C4 after starting the morning of C3. A total time of two full Competition days

There are three test runs, two on Competition day 3 and one on Competition day 4

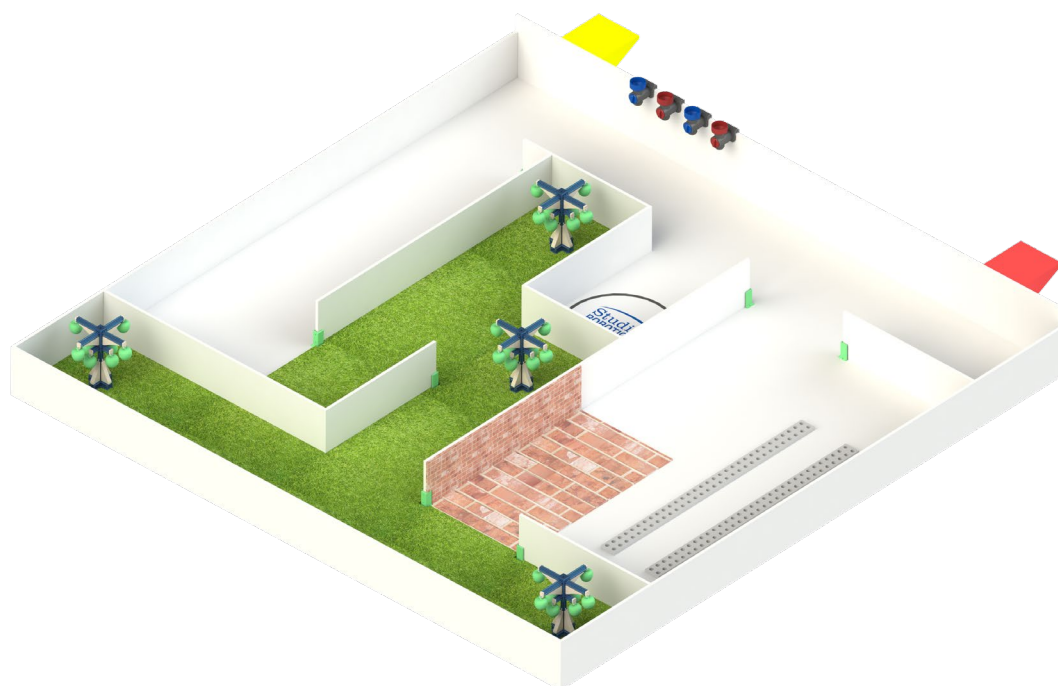
The task should be performed mostly autonomously, but teams are allowed to interfere with the robot (with penalties), either using teleoperation, or manually (physically touching the robot). This will allow the Competitors to perform a small adjustment to the robot, backing it up into a known stage. Teams are allowed one interaction only and during this period the completion time (15 minutes) for the task will not stop. Teams will be required to announce the interaction with the Experts marking that run.

A Tele-op adjustment will have smaller deduction than manually moving the robot to simulate a real event.

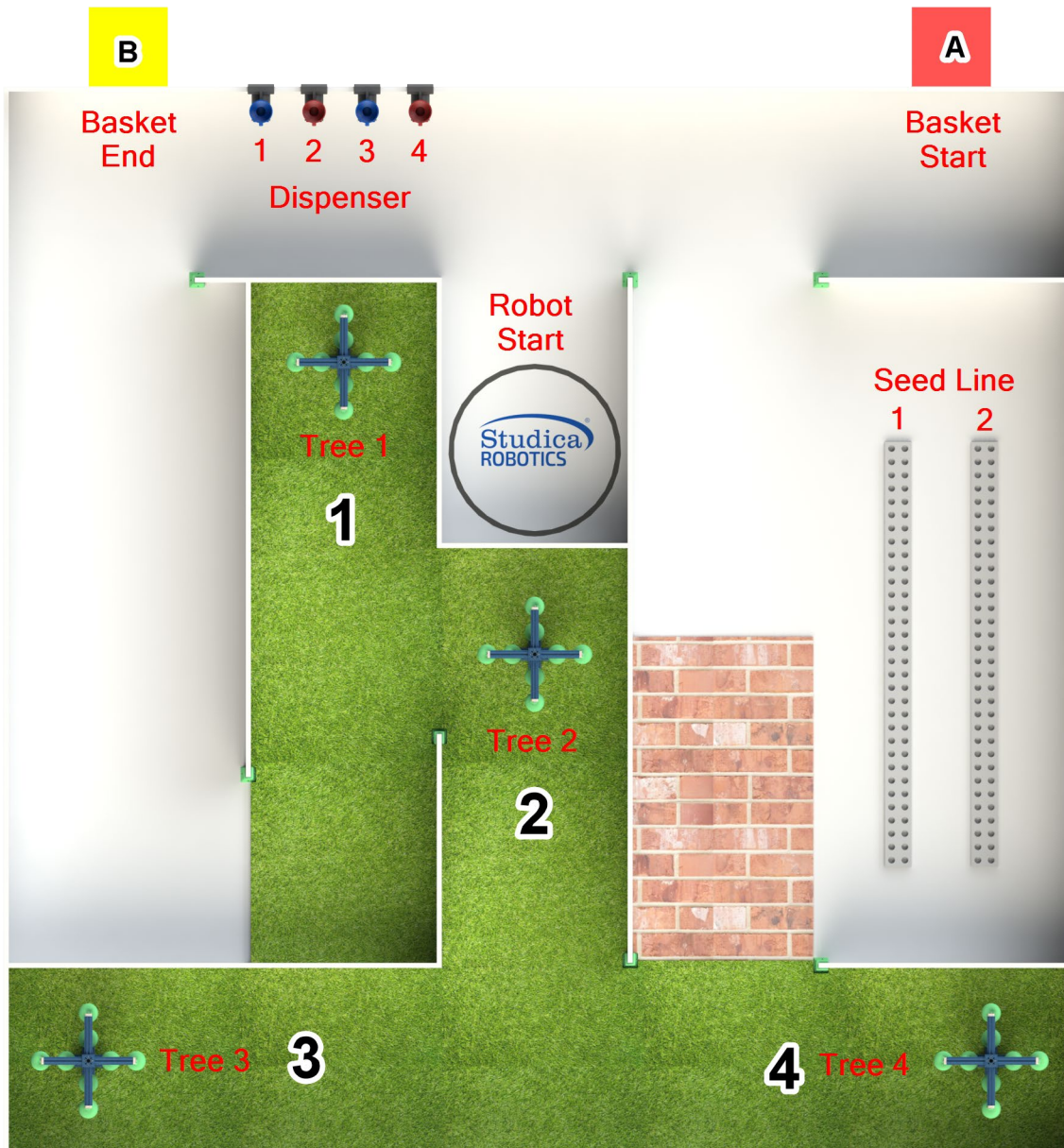
Description of project and tasks

Competitor robots are required to follow an order and pick apples for runs one and two. Run three requires Competitor robots to plant seeds in the correct order. The apple placements for runs one and two will be drawn during the morning briefing of C3. The seed planting order and the location/order of the seed dispenser for run three will be drawn during the morning briefing of C3.

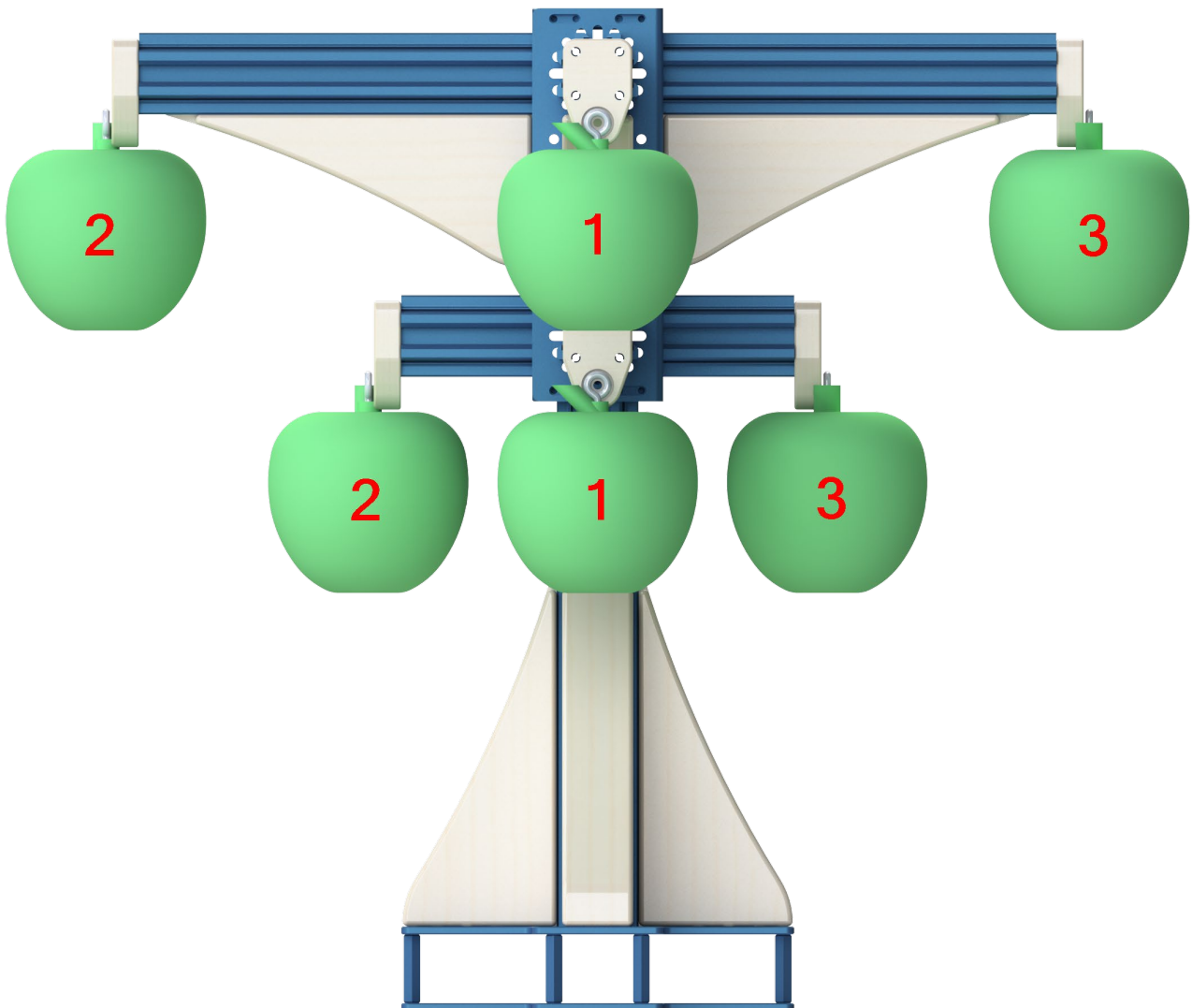
Competition Court



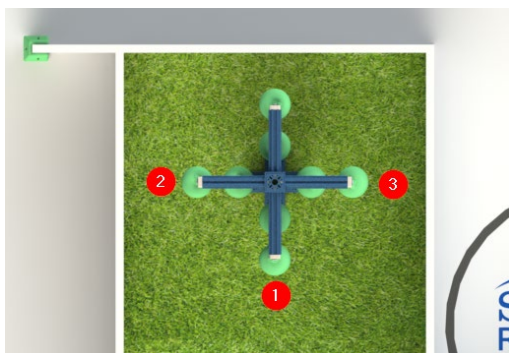
Court Item Locations



The Apple Tree



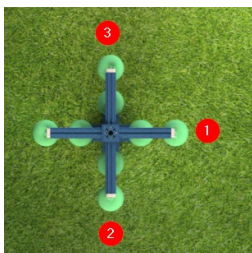
Tree two could have up to eight apples, Trees one, three, and four will have only six, The tree two apple locations are as follows: A robot can access all apples on all four sides of the tree on tree two.



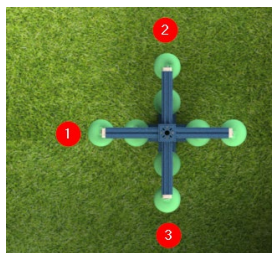
Tree one



Tree two



Tree three



Tree four

Seed Dispenser

There are four seed dispensers, two red and two blue, each seed dispenser holds 25 seeds each.



If a Competitor robot cannot spin the dispenser handle, the Competitor may do it by hand but will not get full marks.

Instructions to the Competitor

Sequence for Runs one and two

1. Robot is placed on the court on the charging pad.
2. Competitor sends the order to the robot.
3. Competitors verify that Apples are correctly placed on the trees as per the morning briefing.
4. Competitor starts the robot by hitting the start button on the robot's control panel.
5. Robot takes a basket from the red station (A).
6. Robot goes out and gets the first batch of the order.
7. Robot places the basket on the yellow/green station (B).
8. Robot repeats 5 – 7 until the order is complete
9. Robot goes back to the charging pad.
10. Robot flashes the red stopped LED on the control panel to indicate run complete. (Experts will not stop the time until this is displayed.)
11. Competitors return the court to its original setup

Note: The Competitor's robot can complete the order using any strategy they wish. A robot can carry all three baskets at once if desired. However, the baskets must start on the red platform. Competitors can place the baskets on the red platform manually as required. When baskets are placed on the yellow/green station, Competitors may remove them and place them on the court table.

There is a total of 15 minutes are allowed to complete all the steps above. The run itself will be time from the pressing of the start button to when the robot returns to the home area, the Competitor pressed the stop button and the robot flashes

Robots that complete a test run (start to finish) within 600 second or faster will receive time marks.

Sequence for Runs three

1. Robot is placed on the court, on the charging pad.
2. Competitor sends the order to the robot.
3. Competitors verify that the Seed Dispensers are setup correctly and full of seeds.
4. Competitor starts the robot by hitting the start button on the control panel.
5. Robot travels to the seed dispensers and collects the seeds.
6. Robot plants the seeds based on the order.
7. Robot repeats 5-6 as needed.
8. Robot travels to the charging pad.
9. Robot flashes the red stopped LED on the control panel to indicate run complete. (Experts will not stop the time until this is displayed.)
10. Competitors return the court to its original setup

There is a total of 15 minutes are allowed to complete all the steps above. The run itself will be time from the pressing of the start button to when the robot returns to the home area, the Competitor pressed the stop button and the robot flashes.

Robots that complete a test run (start to finish) within 600 second or faster will receive time marks.

Other

Remember that you have 15 minutes to complete all the steps in the task. Time marks are only a **bonus**.

Roll of Dice for Dispensers									
Dice Roll 1						Dice Roll 2			
D1	D2	D3	D4		D1	D2	D3	D4	
Dice Roll 3						Dice Roll 3			
D1	D2	D3	D4		D1	D2	D3	D4	
Dice Roll 5						Dice Roll 6			
D1	D2	D3	D4		D1	D2	D3	D4	

Seed Planting Order 1					Seed Planting Order 2					Seed Planting Order 3				
Seed Line 1		Seed Line 2			Seed Line 1		Seed Line 2			Seed Line 1		Seed Line 2		
Row	Column	Column	Column	Column	Row	Column	Column	Column	Column	Row	Column	Column	Column	Column
1					1					1				
2					2					2				
3					3					3				
4					4					4				
5					5					5				
6					6					6				
7					7					7				
8					8					8				
9					9					9				
10					10					10				
11					11					11				
12					12					12				
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29					29					29				
30					30					30				
31					31					31				
32					32					32				

Roll of Dice for Apple Orders

Roll Dice 1						Roll Dice 2						Roll Dice 3					
Basket 1						Basket 1						Basket 1					
1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Basket 2						Basket 2						Basket 2					
Lower Branch						Lower Branch						Lower Branch					
1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Basket 3						Basket 3						Basket 3					
1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Roll Dice 4						Roll Dice 5						Roll Dice 6					
Basket 1						Basket 1						Basket 1					
1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Basket 2						Basket 2						Basket 2					
1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Basket 3						Basket 3						Basket 3					
1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6

Roll of Dice for Apple Placements on Tree											
Roll Dice 1				Roll Dice 2				Roll Dice 3			
Tree 1				Tree 1				Tree 1			
Lower Branch				Lower Branch				Lower Branch			
1	2	3		1	2	3		1	2	3	
Upper Branch				Upper Branch				Upper Branch			
1	2	3		1	2	3		1	2	3	
Tree 2				Tree 2				Tree 2			
Lower Branch				Lower Branch				Lower Branch			
1	2	3	4	1	2	3	4	1	2	3	4
Upper Branch				Upper Branch				Upper Branch			
1	2	3	4	1	2	3	4	1	2	3	4
Tree 3				Tree 3				Tree 3			
Lower Branch				Lower Branch				Lower Branch			
1	2	3		1	2	3		1	2	3	
Upper Branch				Upper Branch				Upper Branch			
1	2	3		1	2	3		1	2	3	
Tree 4				Tree 4				Tree 4			
Lower Branch				Lower Branch				Lower Branch			
1	2	3		1	2	3		1	2	3	
Upper Branch				Upper Branch				Upper Branch			
1	2	3		1	2	3		1	2	3	
Roll Dice 4				Roll Dice 5				Roll Dice 6			
Tree 1				Tree 1				Tree 1			
Lower Branch				Lower Branch				Lower Branch			
1	2	3		1	2	3		1	2	3	
Upper Branch				Upper Branch				Upper Branch			
1	2	3		1	2	3		1	2	3	
Tree 2				Tree 2				Tree 2			
Lower Branch				Lower Branch				Lower Branch			
1	2	3	4	1	2	3	4	1	2	3	4
Upper Branch				Upper Branch				Upper Branch			
1	2	3	4	1	2	3	4	1	2	3	4
Tree 3				Tree 3				Tree 3			
Lower Branch				Lower Branch				Lower Branch			
1	2	3		1	2	3		1	2	3	
Upper Branch				Upper Branch				Upper Branch			
1	2	3		1	2	3		1	2	3	
Tree 4				Tree 4				Tree 4			
Lower Branch				Lower Branch				Lower Branch			
1	2	3		1	2	3		1	2	3	
Upper Branch				Upper Branch				Upper Branch			
1	2	3		1	2	3		1	2	3	