Test Document

Project: LIBERTY

Task: Additional Hook Test

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McGill

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1.TESTS:

Test 1: mounting on the zip-line
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1. This test will validate the approximate range of the angle that the robot will mount onto the zip-line successfully with and without the additional hook.
2. The objective of this test is to determine the range of the angle difference between the actual angle and the expected angle at which the center of the pulley facing right towards the zip-line, which the robot will mount onto the zip-line.
3. First, measure the actual angle that the robot is facing at the point that is 20 cm away from the start of the zip-line. Then, calculate and record the difference between the actual angle and the expected angle. Next, run the test code without the additional hook. Record if the robot mount onto the zip-line successfully. Then, repeat the procedure from the first step with the additional hook.
4. A larger range of angle difference of the robot with the additional hook is expected.
5. Results:

	Without hook		**With hook**	
Trial	**Angle Difference(±1°)**	**Mounting**	**Angle Difference(±1°)**	**Mounting**
1	1	yes	1	yes
2	2	yes	2	yes
3	3	yes	3	yes
4	4	no	4	yes
5	5	no	5	yes
6	6	no	6	no
7	-1	yes	-1	yes
8	-2	yes	-2	yes

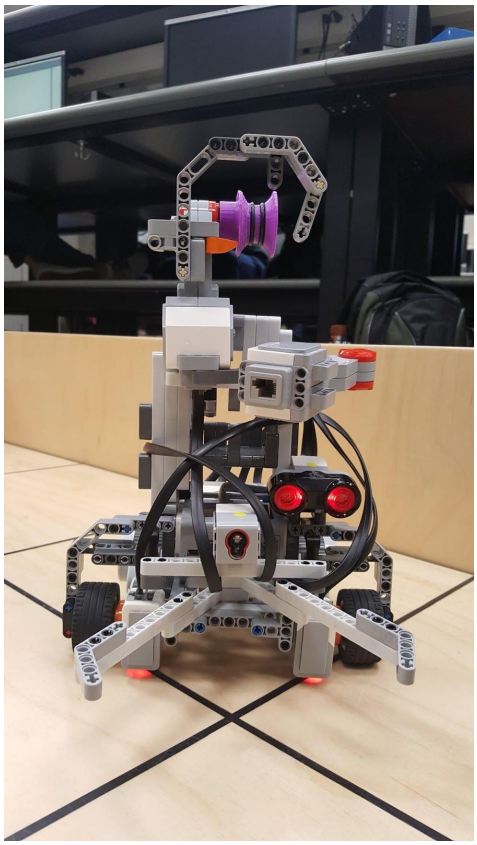
9	-3	yes	-3	yes
10	-4	no	-4	no

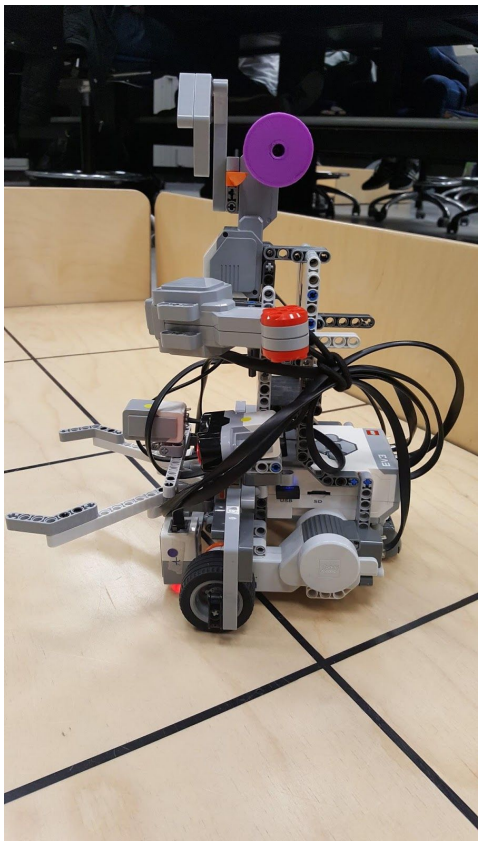
Figure 6: Mounting result varies by angle difference

6. From this table, the angle difference range of the robot without hook is approximately [-3° , 3°], while the range of the robot with hook is [-3° , 5°], where the range indeed becomes larger after adding the additional hook on.

7. From this data, we are able to obtain the range of the angle difference and get the robot mount onto the zip-line successfully. It is better to get the additional hook on the robot.

2. Hardware used





See ***HARDWARE - 2.0.***

3. Source Code used

See github group repository at commit: c9018e75f05fee69e773d5fb70e9d7ff0b3ed406