Temporary Engineering Notebook

Date: 4.11.19

Name: Ian and Devora

Title: Collision Detection

Files Used: SumoCollisionDetect.ino, SumoCollisionDetectTest.ino

**What We Did:**

1. Tested the collision file from Pololu company [SumoCollisionDetect](https://github.com/pololu/zumo-shield/tree/master/ZumoExamples/examples/SumoCollisionDetect)
   1. The program will randomly turn at an angle when it reaches the line, and when it collides it will increase its speed. More details in the code.
2. Problem: It randomly detects collisions (its speed increases). So, we decided to make a flat table arena to compare if it is because the worn-out mat causing problems. We created the table arena using tapes and coloring it to black. Since the table is white, we also inverted to codes for detecting lines in the SumoCollisionDetectTest File.
   1. Data from mat arena on ground:
      1. In 5 min, we let it go in arena without any collisions. It increases its speed 24 times.
      2. In 10 collisions, it only detects 4 of them as collisions.
   2. Data from table circle:
      1. In 5 min, we let it go in arena without any collisions. It increases its speed 22 times.
      2. In 10 collisions, it only detects 5 of them as collisions.
   3. Conclusion: Looking at the data, the flat table doesn’t seem to affect much. We still don’t know why it randomly detects a collision

**What We Learn:**

1. Company sample code makes us save a lot of time, but now we need to modify to make it work
2. The bumpy arena on the floor isn’t the reason why it randomly detects collisions. But I do see that using table is better because the problem of falsely detecting a line in the worn-out folding lines on the mat is gone.

**Future Goals:**

1. We will try to look through the code and find out how it detects a collision

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**Pictures:**

Zumo bot on a self-made flat arena circle on a FLAT TABLE