**Lab 2 Report - Odometry**

**Data:**

**Data Analysis:**

**Observation and Conclusion:**

**Is the error you observed in the odometer (without correction) tolerable for larger distances (i.e. circumnavigating the field requires a travel distance five (5) times larger than that used for this lab)? Do you expect the error to grow linearly with respect to travel distance? Explain briefly.**

The error observed for the small 2x2 square was overall negligible (millimetres) as we took the time to ensure that the *SquareDriver* method was properly calibrated. However over longer distances these errors may grow. They would not grow linearly with respect to traveled distance however. This is because if the robot is not moving evenly or not turning exactly 90 degrees a small offset is created

* Something about how as theta error grows position error grows faster

**Further Improvement:**

1. One way to reduce the slipping of the robot through software means would be reducing the acceleration that the motors experience. By decreasing the rate that the motors speed changes it would allow the motor more time to grip the surface and properly relate the movement of the robot to the tachometer readings
2. i) If we were to place both light sensors on the front of the robot however separate them horizontally (place them in front of each motor) we could determine through software means the robots theta. If both sensor detect the line at the same time it is perpendicular to the line. If however they detect the lines separately the separation of the light sensors and the speed of the robot can be used to calculate theta.

ii) Since we know the orientation of the lines we could use one light sensor to calculate the theta of the robot. If we can find the line and position the robot in a way that it will follow the line we could determine it is travelling solely in the x or y axis.