ENPM809T HW8

Brian Bock & Yash Savle

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Our robot is the Baron.

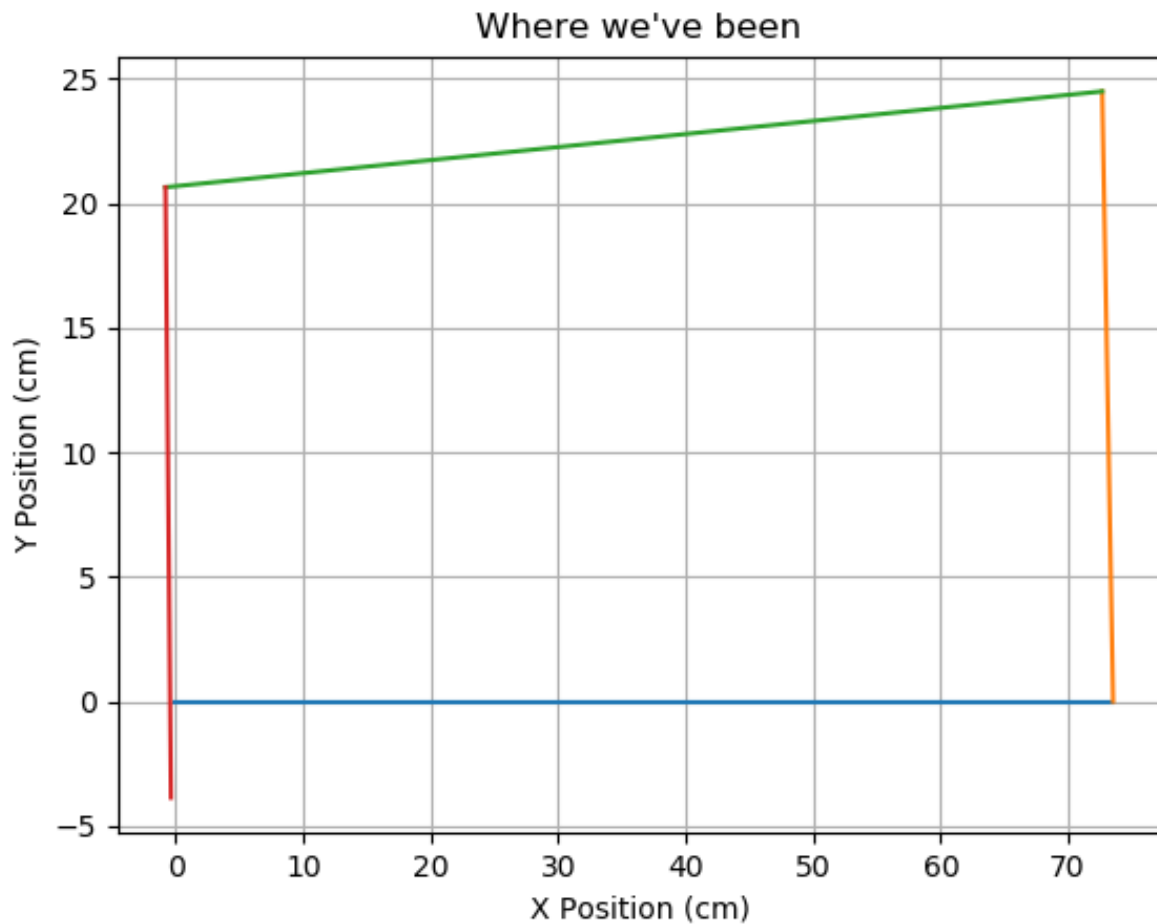## 1 Operation with just encoders

https://youtu.be/jw9OqtaGbQ4

Figure 1: Path from pure encoder motion

The left wheels of our robot are spinning faster that the right side, hence we have added a closed loop control mechanism to track the error between the Left and Right encoders, such that they travel the same distance. This helped the robot drive in a straight line. But the Turning angle is not accurate as the robot is drifting while pivoting. The robot starts with the motion in blue. Due to encoder motion error, the robot turns too much on it's second 90°

turn (yellow to green). You can see the inconsistency in its movement. The robot's first 90° is almost perfect. In the Y direction, the robot moves consistently, and the lengths of the red and yellow lines (although vertically offset) are nearly identical.

2 Operation with encoders and IMU
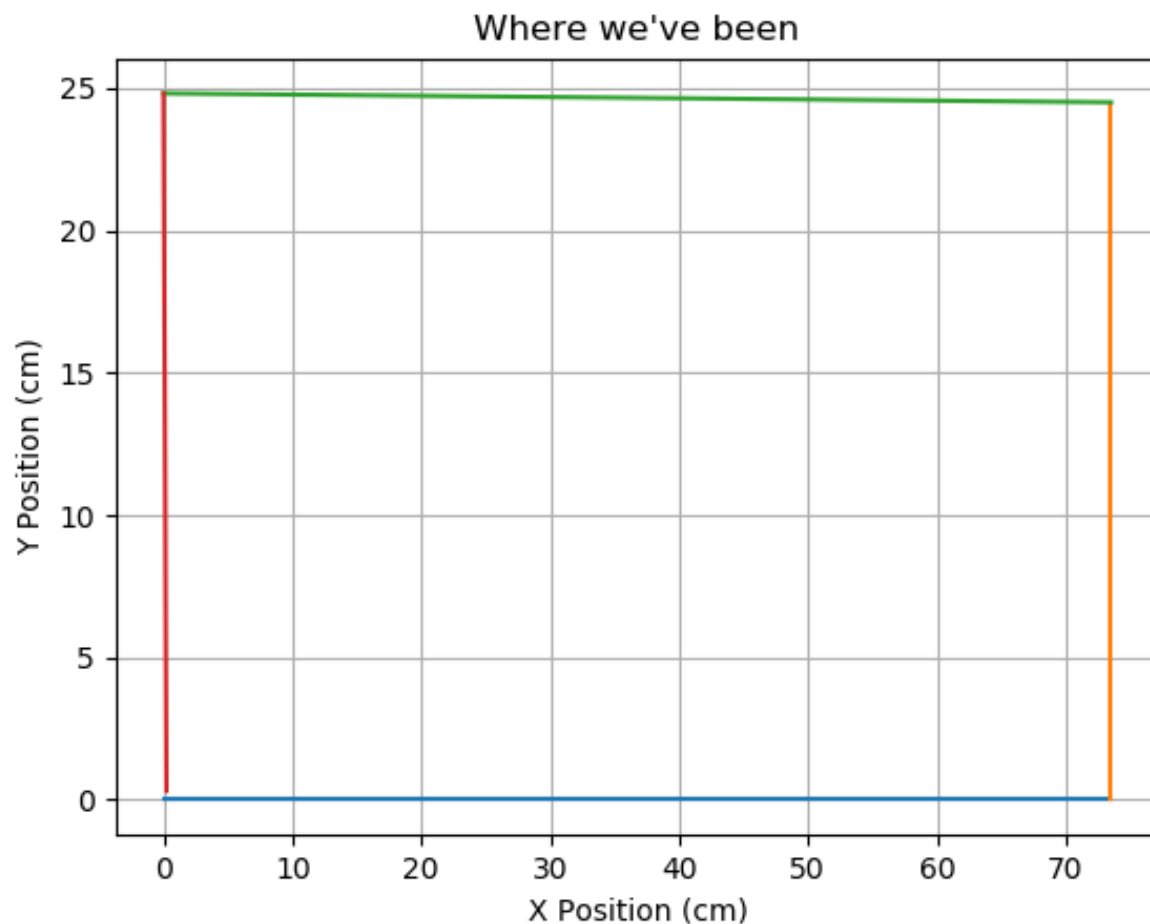
https://youtu.be/Ok4Kk876cPM

Figure 2: Path from IMU motion

The robot starts with the motion in blue. The IMU data forms nearly a perfect rectangle. We added the grid overlay to compare how perpendicular the motions are. The slow turns with the IMU correction provide much more repeatable and accurate turning.