# Dead Reckoning Redux

As discussed in class, dead reckoning is the process of determining location using only proprioceptive sensors. Your task is to navigate a preplanned path using only dead reckoning, except this time you may use the gyroscope in addition to the encoders.

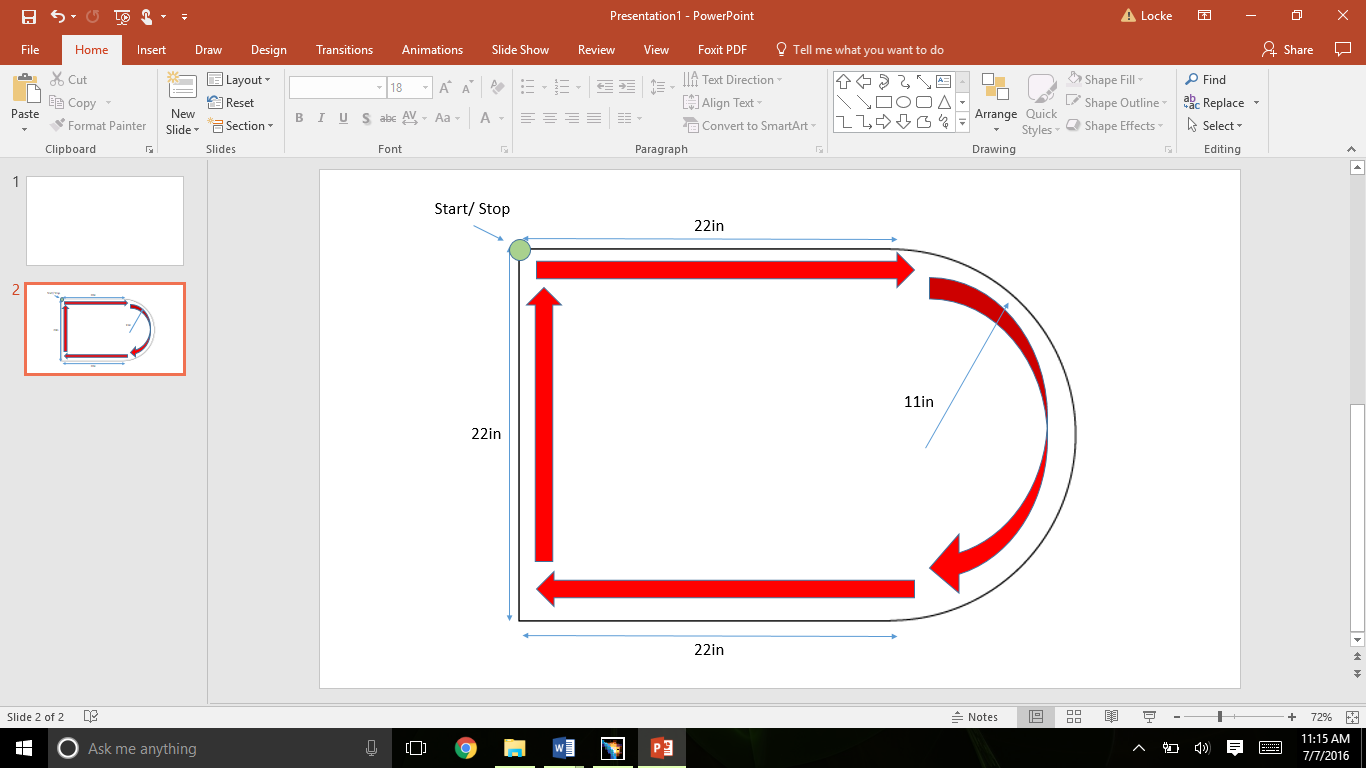


Figure 1: Path of Motion

**Part One: IMU Only (20 pts)**

Using only data from the accelerometers and the gyroscope, complete the course. Point breakdowns are as follows:  
Correct motions, incorrect path: 5 pts  
Attempts radial turn: 3 pts  
Succeeds at radial turn: 4 pts  
Attempts zero points turn: 3 pts  
Succeeds at zero point turn: 3 pts  
Successfully completes course: 2 pts

**Part Two: Encoder and IMU together (50 pts)**

Find a way to augment the encoder data with the IMU data to correctly estimate position on the track. As with the last assignment, your position on the track when it runs out determines your point score.

**Part Three: Ramp (10 pts)**

Without using timing, your robot is tasked with climbing a small ramp and stopping at the top of the ramp. The instructor will set a certain distance the robot must travel before climbing the ramp in order to ensure teams cannot cheat on the ramp climb section.

**Code and Documentation (20 pts)**

Submit a properly commented and documented code alongside any calculations used in your code explaining how you arrived at any numbers/constants in the code. Cite any websites or sources from which equations are used.