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Team 2 Progress Report

Self-Balancing Robot

Milestones Achieved:

- We have successfully controlled two DC motors simultaneously using a motor shield. We were able to vary both speed and direction. We can make the motor accelerate & decelerate or change direction instantaneously.
- We have successfully interfaced with our accelerometer sensor and were able to retrieve the acceleration data in X and Y axis as the sensor is tilted.
- We located a plug for our battery pack that is compatible with our Arduino Uno and can successfully power the motors as well as additional devices that is placed on the robot. Making our robot operate independently without corded power supply.

Next Steps:

- We have placed an order for an additional DC motor. We only had one on hand. We had two larger gear motors , but we felt they could not handle the precise changes in speed and direction we need for this project. Since they are using a reduction gear, they are meant for more torque specific application than speed.
- We will be building the robot 3 layer platforms no later than Tuesday.
- On Tuesday, we plan on integrating our individual parts together to begin testing our robot.
- We plan to work on writing and testing the PID control algorithm
- Once we have completed the algorithm for calculating compensation and coordinate it to direction and speed of the wheels, we will move on to fine tuning the numbers to improve balance.
- Our robot will be considered done when it can fully balance itself following rapid changes in velocity or force applied to the top of the robot.

We are currently on track to successfully complete the project within the scope originally specified. By the end of the project, we hope to have a fully self balancing dual-track robot consisting of a three layer structure with two wheels, a sensor on the top, and an arduino uno for

control. The robot should be able to function independent of a grounded power source with its own battery pack. The robot should also stay within a 2 feet offset from its original location while balancing itself, since the wheels should only rotate with enough speed to maintain balance instead of moving the robot forwards or backwards.