Project report, week 8

Group 4
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The week we actually started working on the project! We’ve had several meetings discussing our goals and the best way to go ahead with the work. We divided the project into 4 different components and spent some time pondering the different aspects of each of them.

The actual LegoWay model
The model should be robust and easy to construct. Should the center of mass be high or low? Do we need to gear up or down the engines?

Modelling the behavior of the segway
How do we describe the segway mathematically?

The building of a good control structure
What kind of performance do we need to make the segway stand upright? To make it move and turn?

- PID controllers (P, PI, PD, PID)
- Model based controllers (LQ, LQG, MPC)
- Other?

Programming a good skeleton with interchangeable functions
Do we need several threads? Is it possible to make skeleton code with interchangeable controllers in order to easily compare them?

We started with the modeling work and also trying to implement a simple pid controller. We use the light sensor which is not very accurate but should hopefully be able to make the segway balance. We’ve also looked into how to log the data and export it into matlab.