Accomplished this week and current problems:
We started this week’s work by doing a linear test on the dc motor. This provided us with some information about the relationship between the input voltage and the velocity and the current respectively. We came to the conclusion that we will construct a linear model to begin with.

We then started to collect some proper data for the system identification. The final grey box identification of the discrete system provided us with a model that fit the data to approximately 65%. At the same as we will try to improve the model by an iterative process, we can start to test some of our regulators that we have constructed.

A major problem the IT project had was that the robot didn’t have a smooth brake implemented, and thereby increasing the risk for motor damage and that the robot will fall over in a down slope. A lot of work during the last weeks has been focused on improving the code and implementing this. Together with Johan from IT we have implemented our solution in their old code. System testing of this has also been done with satisfying results. This is the first time in the IT project history that they will enter the RoboCup competition in April with new improved code, so we are happy to contribute so early in their project.

We arranged a meeting with Egi on Tuesday to discuss our model and the torque estimation problem. We did get some useful pointers and we sent him some related articles so he can continue to help us with some issues.

Another thing we spent one hour on during this week was the slipping problem. We discussed how we can use the current, although very unreliable, to get the robot out of slipping. We found that we can create certain areas in a graph for different cases. If the current differ a certain amount from the expected value for a specific speed we can declare the motor to be spinning and thereby obtain traction again by trying to change the speed. We made a rough plan how the test can be done to find these areas in a graph. But this problem is for the moment put on hold so we can focus on creating a regulator.

Actions points for next week:
- Create a PID and a LQ regulator in Matlab.
- Improve the system identification by an iterative process.
- Continue writing the report.
- Test some regulators on the robot.