

Pendubot Progress report 2

1. Recall of the objectives:

- **Do the simulations to find the parameters of the Pendubot**
- **Swing-up control**
 - Implementation of the Swing-up control
 - Simulink validation
- **Up-up and down-up control**
 - Finish the implementation with Labview
 - Try to simulate
- **Update the website**

2. Achieved work:

- **The web site is updated**
- **Do the simulations to find the parameters of the Pendubot**
 - Measurement of the weights, lengths for each part
 - Computation of the model parameter $m_i, l_{Gi}, J_i, l_i \dots$
- **Swing-up control**
 - Determination of the strategy
 - Implementation on Matlab
 - Design of the parameters($K_p, K_t \dots$)
 - Simulink validation
- **Up-up and down-up control**
 - The Labview implementation is finished
 - We did some simulations but we have some problems
 - Up-up simulation: we have some oscillations but except of this the controller seems to be robust.
 - Down-up simulation: the controller is not robust at all. We can observe a drift.

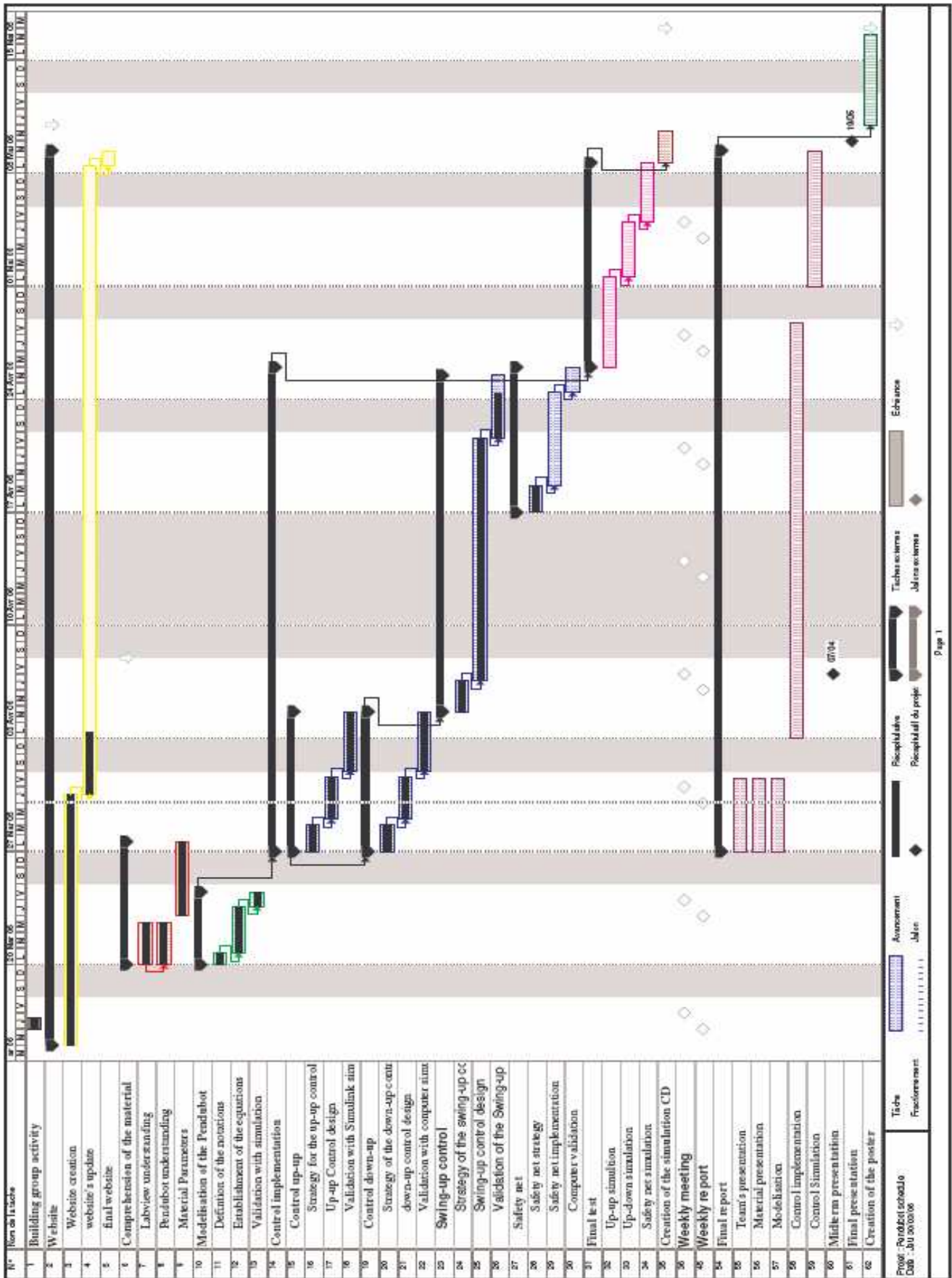
3. Problems:

- Our controllers have apparently not the same behaviour in Simulink and in reality. We don't manage to find the reason for this difference.
- We hadn't the good parameters for the motor but we sent an email to the factory and obtain the good data sheet.

4. Objectives of next week:

- Manage to simulate in reality the up-up and up-down simulation.
- Begin the Final report
- Prepare the Midterm presentation.

Global progress of the project (Schedule's update)



Conclusion:

The project is going very well. We had our first problems this week but we are still very motivated.