2ⁿᵈ Newsletter of the Project Pegasus

One month of progress

Special points of interest:

- What happened in the last month?
- Why modular?
- How will the project proceed, in order to reach the goals?

In the last month we were able to make important steps forward, in order to have Pegasus trotting at the Rollout!

The most significant improvement is our monopod. After seven months of hard work, we can proudly announce that we have a single leg hopping in place. Currently we are adjusting the hopping height, so that we will be able to apply the gained knowledge directly into the quadruped. We assembled also all modules together and made a cover, so that the main body is stiffer. To be able to start to test the quadruped, we need to connect all electronic devices and motors with cables together. As soon as all cables arrive, we will start.

Thanks to the 3D simulation package we received from the Autonomous Systems Lab, we could start to test our Raibert style controller. It is already working in the simulation and we are currently improving the parameters, so that it gets more robust. We have now a functioning Kalman Filter and are ameliorating its accuracy. In parallel we did the framework which will be needed for the implementation in the final quadruped.

Two weeks ago we presented our third review to our professors and supervisors of the ETH Zürich and the TU Delft. We had a positive feedback and some very interesting inputs in the following discussion.


Newsletter of the 21. April
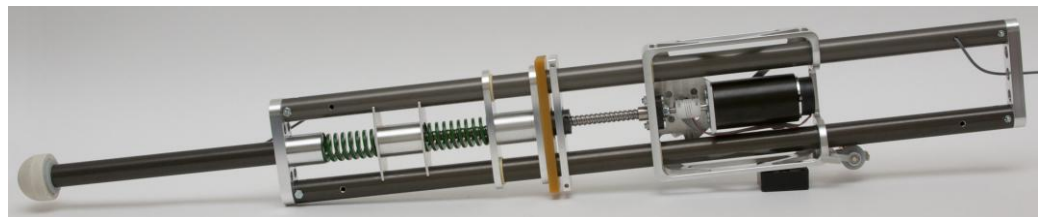
Modularity

We built our robot modularly, so that the configuration of the legs and the mass distribution can easily be changed. Specifically, *Pegasus* is composed by a number of leg-modules, a battery module and two electronics modules. One module and two electronics modules. One contains the power electronics and the other the processing units. Therefore the configuration of a biped, quadruped or a hexapod is possible. Having this modularity, it is possible to changing amount of legs and compare then the results. Furthermore if a leg brakes or gets damaged we can easily change it in less than an hour and continue the testing while the damaged leg is repaired.

Project Pegasus:

"Running like Flying"
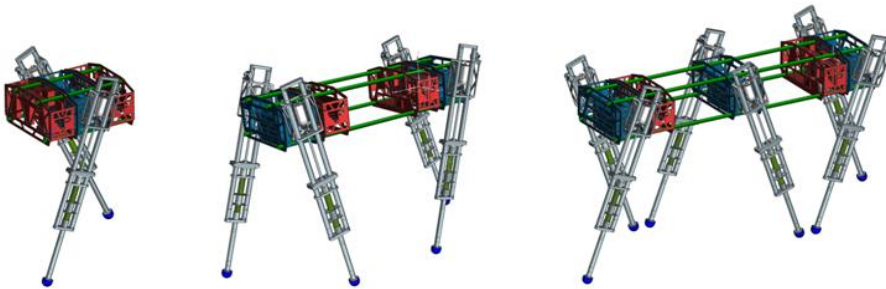
Outlook

Now that we have a one legged hopper, we will concentrate our efforts on improving it next week, in order to start the tests of the final quadruped as early as possible. Furthermore we decided not to continue with the biped, since it would cost too much time. The next two steps will consist in finishing the control and have the state estimation so accurate, that the errors are negligible. As soon as both are implemented in Pegasus, we will start the final testing. We will also shorten the legs for the first tests, since the controllability is then easier. At the beginning it will just hop in place. Here the main issue is to reach a certain hopping height and keep it stable! As soon as this will be robust enough, we will change to trotting, which is also the gait we want to show at the roll out 31st of May.

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