Prague 19.6.2018

Bachelor thesis review

Student: Timur Uzakov

Thesis title: Design of a robotic hand

The goal of the bachelor thesis was to design a hand for a humanoid robot. The design is a continuation of a previous bachelor thesis done by Bc. Ondřej Šulc who designed a palm for the robot. In this thesis the goal was to continue with the hand design and complete the design up to the shoulder (excluding the shoulder joint). The existing palm design had to be reused or only slightly modified.

The student fist started with a review of existing humanoid robots and their hands, such as ASIMO robot, Atlas robot, iCub etc.

The next step was to work on sketches and propose some suitable solution for the forearm. This part had to contain all the servos for the palm. It had to be redesigned in order to allow 2 degrees of freedom motion in the wrist. The student has chosen a ball joint actuated with wires.

After designing the parts were 3D printed. The student has assembled the parts and tested the design.

Next step was the elbow design. Here the student has examined multiple possibilities, including gears. Gears have been finally included into the final design. The gears are 3D printed as well.

Finally, the parts were also 3D printed and assembled. The student has also created a simple demo sequence to show the basic motion of the hand. The program was made for the Arduino board and the student had to learn the programming as well.

I recommend the bachelor thesis for presentation and evaluate it with grade:

A – excellent

Doc. Ing. Martin Novák Ph.D.

Thesis supervisor

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