SUPERVISOR'S REVIEW OF MASTER THESIS

Author: Néstor Caro
Thesis title: Gesture classification based on electromyography
Supervisor: Ing. Petr Pošík, Ph.D., CTU in Prague, FEE, Dept. of Cybernetics
                  `petr.posik@fel.cvut.cz`

The project aims at methods of using surface electromyography to identify hand movements intended by a human. The ultimate goal here is to allow persons with limb amputations to control their prosthetic devices using the muscles left after amputation (which was however not the topic of this thesis). I consider the thesis topic to have higher than average difficulty.

The thesis is well structured, contains 25 figures (providing their source if not created by the student himself) and 28 references.

The student fully fulfilled the thesis requirements. He applied knowledge from a broad range of areas, from building a hardware device for data collection based on Arduino, to low-level programming of communication between the Myo device and computer in C, to high-level programming in MATLAB, to knowledge of signal processing and machine learning methods, to a successfull integration of all these parts. The signal processing and machine learning methods used in the project are rather basic, than sophisticated, but I consider this to be a plus: it was shown that the goal can be reached using the right combination of simple methods, and there is still room for potential improvement using more sophisticated techniques.

The most positive aspect of this project for me was the student's extremely enthusiastic attitude. He chose the topic himself and approached me as a potential supervisor with a clear idea of what needs to be done. He invested his own money and purchased the Myo armbend device and other electronic components (Arduino) needed during the project. When he encountered a problem, he tirelessly tried to solve it, and/or provided one or two workarounds. The best example is the case of data labeling when we found that the Myo SDK does not provide easy access to the detected gesture. The student first proposed and implemented a glove allowing automated data collection, and after having some issues, came up with another method of data labeling which is used in the thesis.

The student expanded this project also in other courses, e.g. he developed a 3D virtual reality model of an arm that can be controlled by the Myo armband. He published a few videos of his work on youtube, and got a job offer from a foreign company as a response.

I think that due to all the above features the committee shall consider this master thesis to be a **candidate for the dean's prize for outstanding diploma theses**.

My final evaluation of the master thesis is

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A — excellent.

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In Prague, June 7, 2016   Ing. Petr Pošík, Ph.D., supervisor