ČESKÉ VYSOKÉ UČENÍ TECHNICKÉ V PRAZE

SUPERVISOR'S OPINION OF FINAL THESIS

I. IDENTIFICATION DATA

Thesis name:	**Label propagation for one-shot video object segmentation**
Author's name:	**Davidek Hynek**
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Computer Science
Thesis supervisor:	Giorgos Tolias
Supervisor's department:	Cybernetics

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment **challenging**

Evaluation of thesis difficulty of assignment.

The assignment corresponds to a very challenging task. The required background knowledge covers a wide spectrum including deep learning in general, deep metric learning as a more specialized task, and graph-based approaches for transductive learning. There are implementation difficulties raised by the fact that the approach is dealing with propagation of information across small regions of video frames; the temporal and spatial dimensions significantly increase the number of considered elements, therefore the computational and memory complexity.

Satisfaction of assignment **fulfilled**

Assess that handed thesis meets assignment. Present points of assignment that fell short or were extended. Try to assess importance, impact or cause of each shortcoming.

The student managed to develop the understanding of the underlined paper and of the necessary background to a good extend. The results of the original approach were reproduced; despite the provided code this was not possible in the off-the-shelf way. The student managed to explore both directions of improved training and improved inference. In conclusion Hynek managed to cope well with all points of the original assignment.

Activity and independence when creating final thesis **B - very good.**

Assess that student had positive approach, time limits were met, conception was regularly consulted and was well prepared for consultations. Assess student's ability to work independently.

Hynek was well prepared for consultations and had a systematic way for reporting the progress, the new findings, and encountered problems. He followed a very good time plan for writing up the thesis, early enough, so that there is time for some feedback not only for the manuscript, but also for the experimental part whose formal presentation helped to provide feedback. The amount of autonomy was satisfactory to a good extend, and the ability for critical thinking seemed to improve from the beginning until the end of the work.

Technical level **B - very good.**

Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.

The student managed to develop a good level of understanding of the theoretical and technical background. He additionally gained good hands-on experience for implementing deep learning approaches and experimenting with recent and widely used research benchmarks as they are used in the top computer vision conferences.

Formal and language level, scope of thesis **B - very good.**

Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.

The thesis does a good job in including the necessary preliminaries and background knowledge in all the related fields. The use of the English language is at a very good level. There are cases where the technical descriptions could be more rigorous, eg. by relying more on appropriate mathematical notation and less on textual descriptions. The presentation of results in the manuscript is done in a good way, with some space for improvements in some cases.

Selection of sources, citation correctness	**A - excellent.**
Present your opinion to student's activity when obtaining and using study materials for thesis creation. Characterize selection of sources. Assess that student used all relevant sources. Verify that all used elements are correctly distinguished from own results and thoughts. Assess that citation ethics has not been breached and that all bibliographic citations are complete and in accordance with citation convention and standards.	
Hynek managed well to explore the relevant literature just by some initial indications by me. During our consultations he seemed excited by the topic and to be reading literature that is relevant to the topic in several different ways and for various directions.	

Additional commentary and evaluation
Present your opinion to achieved primary goals of thesis, e.g. level of theoretical results, level and functionality of technical or software conception, publication performance, experimental dexterity etc.
Here is one thing that Hynek could have done better to work in a more efficient and effective way on his thesis: to focus on one component of a complex approach/system at a time, so that there is better understanding of why things work. Changing many things at a time does not help in understanding the key ingredients.

III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

Summarize thesis aspects that swayed your final evaluation.

Hynek has made a good progress during the work of the thesis and obtained a significant amount of knowledge on the examined field and methodologies. The produced manuscript is valuable for a future reader, but still has space for improvements in terms of clarity of the presentation and more careful technical presentation. He managed to investigate all of the predefined goals up to a good extend and showed the ability to work independently. The experimental results suggest that the explored directions are promising for future work too.

I evaluate handed thesis with classification grade **B - very good.**

Date: **16.6.2021** Signature: