Supervisor's statement of a final thesis

Czech Technical University in Prague   **Faculty of Information Technology**

Student:	Bc. Ondřej Texler
Supervisor:	doc. Ing. Daniel Sýkora, Ph.D.
Thesis title:	Example-Based Stylization of Navigation Maps on Mobile Devices
Branch of the study:	Web and Software Engineering

Date: 29. 1. 2018

Evaluation criterion:	The evaluation scale: 1 to 5.
1. Difficulty and other comments on the assignment	1 = extremely challenging assignment, **2 = rather difficult assignment,** 3 = assignment of average difficulty, 4 = easier, but still sufficient assignment, 5 = insufficient assignment
Criteria description: *Characterize this final thesis in detail and its relationships to previous or current projects. Comment what is difficult about this thesis (in case of a more difficult thesis, you may overlook some shortcomings that you would not in case of an easy assignment, and on the contrary, with an easy assignment those shortcomings should be evaluated more strictly.)*	
Comments: The thesis deals with a problem of example-based style transfer which became recently popular mainly thanks to advances made by guided texture synthesis as well as neural-based techniques. A common drawback of these approaches is relatively sizeable computational overhead. The task of Ondrej Texler was to implement and optimize state-of-the-art methods to allow for interactive style transfer to navigation maps on mobile devices. A principal difficulty here is that interactive example-based style transfer on mobile devices is currently not very well explored and therefore it was necessary to come up with new ideas on how to improve state-of-the-art techniques to operate interactively on mobile devices.	

Evaluation criterion:	The evaluation scale: 1 to 4.
2. Fulfilment of the assignment	**1 = assignment fulfilled,** 2 = assignment fulfilled with minor objections, 3 = assignment fulfilled with major objections, 4 = assignment not fulfilled
Criteria description: Assess whether the thesis meets the assignment statement. In Comments indicate parts of the assignment that have not been fulfilled, completely or partially, or extensions of the thesis beyond the original assignment. If the assignment was not completely fulfilled, try to assess the importance, impact, and possibly also the reason of the insufficiencies.	
Comments: The assignment was fulfilled. State-of-the-art techniques were implemented using OpenCL which enables parallel processing as was required. Also, some further optimizations were proposed and implemented to speed-up the transfer and allow interactive response.	

Evaluation criterion:	The evaluation scale: 1 to 4.
3. Size of the main written part	**1 = meets the criteria,** 2 = meets the criteria with minor objections, 3 = meets the criteria with major objections, 4 = does not meet the criteria
Criteria description: Evaluate the adequacy of the extent of the final thesis, considering its content and the size of the written part, i.e. that all parts of the thesis are rich on information and the text does not contain unnecessary parts.	
Comments: The central part of the thesis is written with sufficient detail, and there are no unnecessary parts discussed.	

Evaluation criterion:	The evaluation scale: 0 to 100 points (grade A to F).
4. Factual and logical level of the thesis	100 (A)
Criteria description: Assess whether the thesis is correct as to the facts or if there are factual errors and inaccuracies. Evaluate further the logical structure of the thesis, links among the chapters, and the comprehensibility of the text for a reader.	
Comments: The logical structure of the thesis is adequate. Mentioned technical details are correct and described in sufficient detail so that reader can understand the key algorithmic concepts.	

Evaluation criterion:	The evaluation scale: 0 to 100 points (grade A to F).
5. Formal level of the thesis	85 (B)
Criteria description: Assess the correctness of formalisms used in the thesis, the typographical and linguistic aspect s, see Dean's Directive No. 26/2017, Article 3.	

Comments:

All terms are well defined, the notation is correct, equations are accurate, and algorithms easy to follow. Typographical quality of the thesis is sound. It is written in English which is highly appreciated. The language quality is sufficient although there is space for improvement.

Evaluation criterion:	*The evaluation scale: 0 to 100 points (grade A to F).*
6. Bibliography	*90 (A)*

Criteria description:
Evaluate the student's activity in acquisition and use of studying materials in his thesis. Characterize the choice of the sources. Discuss whether the student used all relevant sources, or whether he tried to solve problems that were already solved. Verify that all elements taken from other sources are properly differentiated from his own results and contributions. Comment if there was a possible violation of the citation ethics and if the bibliographical references are complete and in compliance with citation standards.

Comments:

The student was very diligent in the exploration of current state-of-the-art. An excellent overview of relevant related previous work is presented in the thesis. It can be easily identified which parts of the thesis are implemented according to previous work and which are new. In the list of references, there are little inaccuracies such as slightly inconsistent citation style, missing article numbers, page numbers unreasonably terminated by a full stop, etc.

Evaluation criterion:	*The evaluation scale: 0 to 100 points (grade A to F).*
7. Evaluation of results, publication outputs and awards	*100 (A)*

Criteria description:
Comment on the achieved level of major results of the thesis and indicate whether the main results of the thesis extend published state-of-the-art results and/or bring completely new findings. Assess the quality and functionality of hardware or software solutions. Alternatively, evaluate whether the software or source code that was not created by the student himself was used in accordance with the license terms and copyright. Comment on possible publication output or awards related to the thesis.

Comments:

I was thoroughly satisfied with the results as well as the quality of final implementation. I highly appreciated the comparison with concurrent techniques based on the usage of deep neural networks. It is apparently visible that the implemented non-parametric patch-based synthesis produces notably better results. The whole system can be considered as the first attempt to interactive example-based style transfer to navigation maps on mobile devices.

Evaluation criterion:	*No evaluation scale.*
8. Applicability of the results	

Criteria description:
Indicate the potential of using the results of the thesis in practice.

Comments:

I believe the thesis has great practical potential. Although the implementation still needs to be further improved it already has a potential to become a real commercial product.

Evaluation criterion:	*The evaluation scale: 1 to 5.*
9. Activity and self-reliance of the student	*9a:* *__1 = excellent activity,__* *2 = very good activity,* *3 = average activity,* *4 = weaker, but still sufficient activity,* *5 = insufficient activity* *9b:* *1 = excellent self-reliance,* *__2 = very good self-reliance,__* *3 = average self-reliance,* *4 = weaker, but still sufficient self-reliance,* *5 = insufficient self-reliance.*

Criteria description:
Review student's activity while working on this final thesis, student's punctuality when meeting the deadlines and consulting continuously and also, student's preparedness for these consultations. Furthermore, review student's independency.

Comments:

Ondrej Texler was very diligent and enthusiastic during the whole thesis preparation period. He actively informed me about the progress and always tried to address all comments that I gave him.

Evaluation criterion:	*The evaluation scale: 0 to 100 points (grade A to F).*
10. The overall evaluation	*95 (A)*

Criteria description:
Summarize the parts of the thesis that had major impact on your evaluation. The overall evaluation **does not** have to be the arithmetic mean or any other formula with the values from the previous evaluation criteria 1 to 9.

Comments:

I was satisfied with the thesis. It fulfilled my original expectations and confirmed that Ondrej Texler is capable of doing engineering as well as research work. I was particularly pleased by the overall quality of results as well as the provided comparison to concurrent neural-based approaches.

Signature of the supervisor: