Supervisor's statement of a final thesis

Student: Bc. Aneta Moravcová
Supervisor: Ing. Ondřej Texler
Thesis title: Example-Based Stylization on Mobile Devices
Branch of the study: Knowledge Engineering

Date: 29. 5. 2019

Evaluation criterion:
The evaluation scale: 1 to 4.

1. Fulfilment of the assignment

Criteria description:
Assess whether the submitted FT defines the objectives sufficiently and in line with the assignment; whether the objectives are formulated correctly and fulfilled sufficiently. In the comment, specify the points of the assignment that have not been met, assess the severity, impact, and, if appropriate, also the cause of the deficiencies. If the assignment differs substantially from the standards for the FT or if the student has developed the FT beyond the assignment, describe the way it got reflected on the quality of the assignment’s fulfilment and the way it affected your final evaluation.

Comments:
The thesis deals with a problem of style transfer from an artistic example to a face captured by a built-in camera of a mobile phone. The main challenge was to combine two state-of-the-art techniques to allow (1) stylization of a human face when (2) the computational budget is very limited. This has not been done before, and it was neither an easy nor an intuitive task to deal with. Aneta Moravcová did come up with a solution which works much better than I was expecting - she implemented the prototype of a mobile application capable of stylizing the face in HD resolution in real-time. Thus, the assignment was fulfilled.

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

2. Main written part

Criteria description:
Evaluate whether the extent of the FT is adequate to its content and scope: are all the parts of the FT contentful and necessary? Next, consider whether the submitted FT is actually correct – are there factual errors or inaccuracies? Evaluate the logical structure of the FT, the thematic flow between chapters and whether the text is comprehensible to the reader. Assess whether the formal notations in the FT are used correctly. Assess the typographic and language aspects of the FT, follow the Dean’s Directive No. 26/2017, Art. 3. Evaluate whether the relevant sources are properly used, quoted and cited. Verify that all quotes are properly distinguished from the results achieved in the FT, thus, that the citation ethics has not been violated and that the citations are complete and in accordance with citation practices and standards. Finally, evaluate whether the software and other copyrighted works have been used in accordance with their license terms.

Comments:
The structure of the thesis is correct, a sufficient amount of details is provided, and no unnecessary parts are discussed. All algorithms and technical details are in the thesis well described. The relevant related work is presented in a very comprehensive and sound way and strongly motivates the problem the thesis deals with. The thesis is written in English which is highly appreciated. Some minor grammatical mistakes and "weird" sentences are present; however, it is not disturbing nor confusing, and it is adequate for a master thesis.

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

3. Non-written part, attachments

Criteria description:
Depending on the nature of the FT, comment on the non-written part of the thesis. For example: SW work – the overall quality of the program. Is the technology used (from the development to deployment) suitable and adequate? HW – functional sample. Evaluate the technology and tools used. Research and experimental work – repeatability of the experiment.

Comments:
Mobile application for Android devices and its source codes were delivered. It is possible and easy to build the application from source code, install it, run it, and reproduce all of the results mentioned in the thesis.

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

4. Evaluation of results, publication outputs and awards

Criteria description:
Depending on the nature of the thesis, estimate whether the thesis results could be deployed in practice; alternatively, evaluate whether the results of the FT extend the already published/known results or whether they bring in completely new findings.
I was truly surprised by the quality of the results as well as by the real-time performance. This might open a new way on how to approach style transfer problem on mobile phones. So far, mostly end-to-end neural based approaches were released; however, the thesis shows that much better results can be obtained by non-neural based approaches. In my opinion, the thesis has great potential in further research as well as in becoming a commercial product.

### Evaluation criterion:

<table>
<thead>
<tr>
<th>5. Activity and self-reliance of the student</th>
<th>The evaluation scale: 1 to 5.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5a:</td>
<td>1 = excellent activity,</td>
</tr>
<tr>
<td></td>
<td>2 = very good activity,</td>
</tr>
<tr>
<td></td>
<td>3 = average activity,</td>
</tr>
<tr>
<td></td>
<td>4 = weaker, but still sufficient activity,</td>
</tr>
<tr>
<td></td>
<td>5 = insufficient activity</td>
</tr>
<tr>
<td>5b:</td>
<td>1 = excellent self-reliance,</td>
</tr>
<tr>
<td></td>
<td>2 = very good self-reliance,</td>
</tr>
<tr>
<td></td>
<td>3 = average self-reliance,</td>
</tr>
<tr>
<td></td>
<td>4 = weaker, but still sufficient self-reliance,</td>
</tr>
<tr>
<td></td>
<td>5 = insufficient self-reliance.</td>
</tr>
</tbody>
</table>

Criteria description:

From your experience with the course of the work on the thesis and its outcome, review the student’s activity while working on the thesis, his/her punctuality when meeting the deadlines and whether he/she consulted you as he/she went along and also, whether he/she was well prepared for these consultations (5a). Assess the student’s ability to develop independent creative work (5b).

Comments:

Aneta Moravcova was very active throughout the whole thesis preparation process and well prepared for every meeting. She came up with a lot of her own and relevant ideas, and she also satisfied all of my comments and suggestions.

### Evaluation criterion:

<table>
<thead>
<tr>
<th>6. The overall evaluation</th>
<th>The evaluation scale: 0 to 100 points (grade A to F).</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>95 (A)</td>
</tr>
</tbody>
</table>

Criteria description:

Summarize which of the aspects of the FT affected your grading process the most. The overall grade does not need to be an arithmetic mean (or other value) calculated from the evaluation in the previous criteria. Generally, a well-fulfilled assignment is assessed by grade A.

Comments:

The thesis fulfilled, and in some parts even exceeded my initial expectation - the results are surprisingly high quality, and the performance is excellent. It was not an easy task because the area of style transfer on mobile devices is not well explored - the way how Aneta Moravcova solved the problem has not been done before. It confirms that Aneta Moravcova is capable of doing engineering as well as research work.

Signature of the supervisor: