

I. IDENTIFICATION DATA

SUPERVISOR'S OPINION OF

FINAL THESIS

Thesis name:	Interactive Nearest Neighbor Search in High Dimensional Data
Author's name:	Prokop Černý
Type of thesis :	bachelor <input checked="" type="checkbox"/>
Faculty/Institute:	Faculty of Electrical Engineering (FEE) <input checked="" type="checkbox"/>
Department:	Department of Computer Science
Thesis supervisor:	Lasse Blaauwbroek
Supervisor's department:	Institute of Informatics Robotics and Cybernetics

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging <input checked="" type="checkbox"/>
<i>Evaluation of thesis difficulty of assignment.</i>	
The assignment required the analysis of a complex dataset of which not a lot of properties were known. An open ended machine learning question was posed to the student that could be approached from multiple directions.	

Satisfaction of assignment	fulfilled <input checked="" type="checkbox"/>
<i>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.</i>	
The student implemented a basic algorithm that was suggested by the supervisor. Then, instead of the suggested route of comparing this with other algorithms, the student found an improvement on that algorithm. After implementing this, a comparison between the basic and improved algorithm was made. To do this, effort was put into optimizing the meta-parameters of the algorithms. The final result of the algorithms was excellent. The student also found a problem with the original dataset which we were able to partially correct. The implemented algorithms are likely to be used in further research.	

Activity and independence when creating final thesis	B - very good <input checked="" type="checkbox"/>
<i>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.</i>	
The student was highly motivated to do interesting work and did not need to be motivated externally. The weekly meetings resulted in interesting discussions. As with any complicated topic it was not always easy to distinguish high-priority work from low-priority work. Management of this could have somewhat better. However, in the end a coherent research picture was created, resulting in a thesis with a good narrative. Some directional guidance was needed but not more than would be expected from a good bachelor student. The final thesis text was prepared rather late which did not allow for a lot of feedback. This was a shame, especially since it was already known that this was not the students strongest point.	

Technical level	A - excellent <input checked="" type="checkbox"/>
<i>Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.</i>	
The student has	
<ul style="list-style-type: none"> - Learned to program in the programming language Ocaml - Gained some experience in interpreting, using, and troubleshooting a real-world dataset - Researched and implemented reasonably complicated algorithms in a functional style - Designed an experimental evaluation of algorithms and did a basic optimization of meta-parameters. - Gained knowledge in the presentation of data in a human readable way. 	

- Learned about distance metric and experimented with when, why and how they are applicable to a dataset.
- Performed a good literature overview
- Learned to read and write mathematical proofs

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 structure of the thesis is good, and has improved a lot compared to the pre-thesis work. There are still some minor problems. For example, it could be made more clear how the implemented algorithms satisfy the requirements stated in the problem description. A lot of effort was put into the presentation of the work. Graphs and Figures look top-notch, are easy to interpret (as far as the data allows this) and the data that was displayed was chosen well. The presentation of formulas is good, although notations could have been slightly more consistent. The pseudocode strikes an excellent balance between terseness and understandability. The flow of the thesis from paragraph to paragraph could be improved. Sometimes it can be difficult to follow the writers line of thought. Finally, another weak point is basic grammar, which is in need of some improvement.

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.

The student did a lot of literature research, both based on pointers from the supervisor and on his own. This resulted in the discovery of a number of highly relevant papers, of which one unexpectedly changed the direction of the thesis in a very good direction. A literature review of the wider research area was also performed, although it would have been useful if this had been done earlier in the process. The thesis contains numerous citations to relevant work and the bibliography is well-organized and displayed correctly. This makes it clear what the students own work is. No ethics have been breached.

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.

III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

Overall, excellent work has been performed. The final results of the implemented algorithms are encouraging. The amount of work that has been done is very good and is of high quality. The problematic points mentioned above a relatively minor. For this reason I recommend a grade of A.

I evaluate handed thesis with classification grade

A - excellent

Date: 07-06-2019

Signature:

