

I. IDENTIFICATION DATA

Thesis name:	Visual image search and geolocation
Author's name:	Andrii Zakharchenko
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Computer Science
Thesis supervisor:	Giorgos Tolias
Supervisor's department:	Cybernetics

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging
<i>Evaluation of thesis difficulty of assignment.</i>	
<p>Training for proxy tasks is common in deep learning because directly training for the target task and the exact approach used for inference raises challenges. This was exactly the goal of this project for the task of image-based geo-localization using visual similarity and KDE; to optimize an objective that is as close as possible to the target task. This was an ambitious goal and a challenging assignment.</p>	

Satisfaction of assignment	fulfilled with major objections
<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>	
<p>Andrii did great work with the first 3 points of the assignment. The objections are for the last point which was anyways very challenging. When it looks like improvements are insignificant and potentially a random artifact, one should rather focus on improving the loss/batch formulation, design appropriate sanity checks, or deconstruct the task and try intermediate formulations (eg. smaller steps towards directly optimizing the target task), instead of working with multiple models (eg. the mlp). The last point in the assignment requires further exploration as the work had to stop at the relatively early stages of exploration.</p>	

Activity and independence when creating final thesis	C - good.
<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>	
<p>Andrii was able to understand technical details to a good extend, to digest discussions during consultations and then work independently. He was able to spot some of the technical and implementation challenges by himself and tackle them until the next consultation. The main weakness is the amount of time spent and focus on the work of the thesis.</p>	

Technical level	B - very good.
<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>	
<p>During the thesis the student was able to obtain new knowledge and develop skills on a variety of tasks such as representation learning, retrieval, and localization. He was able to autonomously study the relevant material, improve his understanding, and come back with specific questions about unclear parts.</p>	

Formal and language level, scope of thesis	B - very good.
<i>Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.</i>	
<p>The structure and language of the manuscript is at a very good level. The presentation is good and easy to follow. The main weakness is that the critical judgement of the results is missing and what is done is merely their presentation. Since further exploration is required, elaborating on the possible future steps is also missing from the manuscript.</p>	

Selection of sources, citation correctness	C - good.
<i>Present your opinion to student's activity when obtaining and using study materials for thesis creation. Characterize selection</i>	

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 most relevant sources from the literature are added which are needed for someone to follow the evaluation performed in the thesis and the discussed improvements. Nevertheless, the literature study has space for improvements as it is currently a bit narrow.

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.

Please insert your commentary (voluntary evaluation).

III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

Summarize thesis aspects that swayed your final evaluation.

The student was able to obtain new knowledge and autonomously progress and generate results for most parts of the assignment. He was able to understand, formulate and implement the challenging task. As the goal was very ambitious, it is no big surprise that improvements by training were not yet achieved, and that further exploration is needed. The work done and the provided results are useful to facilitate follow-up exploration. The student has very good background knowledge and implementation skills which were shown during his work and also were improved. Points in the grading are subtracted for two main reasons: more time and focus should have been devoted to the project and critical comments for the results and possible next steps are missing. I suggest that during his presentation Andrii discusses his take on the next steps he would do if he would work more on this project.

I evaluate handed thesis with classification grade **C - good**.

Date: **18.1.2022**

Signature: