Review report of a final thesis

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

Student:	Bc. Pavel Goncharov
Reviewer:	Ing. Jan Kubr
Thesis title:	Interactive Network Simulator for Analysis and Visualization of Protocols
Branch of the study:	Computer Systems and Networks

Date: 30. 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:
I consider the assignment as average.

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.

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 work size is in accordance to the expectancies for a diploma thesis. The work contains useless chapters while missing relevant ones.
The author explains the agile development, explains Unreal Engine 4, explains datalink, network, transport and application layers. Then, the author explains the graphical interface and properties of his developed simulator.

From the work are missing: the analysis of the requirements which result in the development of a new network simulator, the analysis of existing simulators and the comparison between the developed one with the existing ones, the analysis of existing libraries which were used in the development of the simulator, the decision to use Unreal Engine 4. The choice of Unreal Engine 4 was for me very surprising and this is why the explanation of the decision is so important. I have not previously seen Unreal Engine 4 used before in such simulators and thus I do not consider the choice as a mistake but because the explanation is missing, I cannot say if the choice was or not a correct one.

The implementation is described in just a couple of sentences and thus it is not sufficient.

There is no comparison with different other simulators and thus I cannot see the benefit brought by this simulator.

Evaluation criterion:	*The evaluation scale: 0 to 100 points (grade A to F).*
4. Factual and logical level of the thesis	*55 (E)*

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 work is influenced by the missing chapters. In a strange way the author classifies different protocols and devices onto wrong ISO layers: why is the router on the datalink layer? Why is EIGRP on the transport layer and why is RIP on application layer? IPv6 contains a much broader address domain than 4.3 billion addresses (page 24). The simulator description is rather a user manual.

Evaluation criterion:	*The evaluation scale: 0 to 100 points (grade A to F).*
5. Formal level of the thesis	*70 (C)*

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:
Considering the Czech abstract it is clear that choosing English was a far better idea. The author did not perform an automatic spellcheck, for example on page 43 "left-clicking" is written in different ways.

Evaluation criterion:	*The evaluation scale: 0 to 100 points (grade A to F).*
6. Bibliography	*70 (C)*

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 reference contains 10 publications related to agile development and 16 related to Unreal Engine and its functions. The last publication is related to TCP/IP. It is strange that the author did not cite any publications related to simulations.

Evaluation criterion:	*The evaluation scale: 0 to 100 points (grade A to F).*
7. Evaluation of results, publication outputs and awards	*55 (E)*

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:
The simulator was implemented but it lacks any testing. From the work the results are missing.

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:
The work contains the required results. It is difficult to refer to the work.

Evaluation criterion:	*No evaluation scale.*
9. Questions for the defence	

Criteria description:
Formulate any question(s) that the student should answer to the committee during the defence (use a bullet list).

Questions:
What are the new functions brought by this simulator compared towards the existing ones?
How is the simulator implemented? Is it time-driven, otherwise?
Were multiple libraries analysed? Why Unreal Engine 4?
How was TCP implemented? Is this a new implementation according to a standard? Was it a newer implementation?

Evaluation criterion:	*The evaluation scale: 0 to 100 points (grade A to F).*
10. The overall evaluation	*60 (D)*

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:
The work answers the requirements. The choice of Unreal Engine 4 is not "traditional" and interesting. The newly development simulator has a very nice perspective. The text part of the work contains the less important parts and the major ones are missing. It is difficult to relate to the work.

Signature of the reviewer: