

# Supervisor's statement of a final thesis

Czech Technical University in Prague

Faculty of Information Technology

**Student:** Bc. Herbert Waage  
**Supervisor:** MSc. Benedikt Ludwig Bergmann  
**Thesis title:** Web portal for visualizing data from the satellite instrument SATRAM / Timepix  
**Branch of the study:** Web and Software Engineering

**Date:** 11. 5. 2017

<p><i>Evaluation criterion:</i></p> <p><b>1. Difficulty and other comments on the assignment</b></p> <p><i>Criteria description:</i> 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.)</p> <p><i>Comments:</i> Considering my background as physicist, it is difficult to estimate the level of difficulty for a programmer. Since similar visualization were already created in our institute, I have chosen the "Assignment of average difficulty".</p>	<p><i>The evaluation scale: 1 to 5.</i></p> <p>1 = extremely challenging assignment, 2 = rather difficult assignment, <b>3 = assignment of average difficulty,</b> 4 = easier, but still sufficient assignment, 5 = insufficient assignment</p>
<p><i>Evaluation criterion:</i></p> <p><b>2. Fulfilment of the assignment</b></p> <p><i>Criteria description:</i> 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.</p> <p><i>Comments:</i> The assignment was fulfilled to my full satisfaction. Herbert could quickly implement requested changes, and even came up with ideas to improve the overall user friendliness and the look of the visualization.</p>	<p><i>The evaluation scale: 1 to 4.</i></p> <p><b>1 = assignment fulfilled,</b> 2 = assignment fulfilled with minor objections, 3 = assignment fulfilled with major objections, 4 = assignment not fulfilled</p>
<p><i>Evaluation criterion:</i></p> <p><b>3. Size of the main written part</b></p> <p><i>Criteria description:</i> 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.</p> <p><i>Comments:</i> The thesis extend and content is sufficient. The level of English is adequate and well understandable. As far as I am concerned, no unnecessary parts could be identified.</p>	<p><i>The evaluation scale: 1 to 4.</i></p> <p><b>1 = meets the criteria,</b> 2 = meets the criteria with minor objections, 3 = meets the criteria with major objections, 4 = does not meet the criteria</p>
<p><i>Evaluation criterion:</i></p> <p><b>4. Factual and logical level of the thesis</b></p> <p><i>Criteria description:</i> 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.</p> <p><i>Comments:</i> The thesis structure is clear and logic. The main points are clearly addressed and discussed.</p>	<p><i>The evaluation scale: 0 to 100 points (grade A to F).</i></p> <p>90 (A)</p>
<p><i>Evaluation criterion:</i></p> <p><b>5. Formal level of the thesis</b></p> <p><i>Criteria description:</i> Assess the correctness of formalisms used in the thesis, the typographical and linguistic aspects, see Dean's Directive No. 14/2015, Article 3.</p> <p><i>Comments:</i> Unfortunately, my level of Czech is not yet sufficient enough to understand the Dean's Directive No. 14/2015, Article 3. However, as far as I am concerned the thesis' formalism meets the requirements of an academic work.</p>	<p><i>The evaluation scale: 0 to 100 points (grade A to F).</i></p> <p>90 (A)</p>
<p><i>Evaluation criterion:</i></p> <p><b>6. Bibliography</b></p> <p><i>Criteria description:</i> 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.</p>	<p><i>The evaluation scale: 0 to 100 points (grade A to F).</i></p> <p>85 (B)</p>

*Comments:*

The bibliography is comprehensive and includes all necessary information. The cited physics articles are appropriate. Personally, I would have preferred to have some of the references to lecture notes replaced by references to books or publications. Lecture notes, even though currently publicly available on the internet, might be deleted, replaced or modified. However, it might not always be possible.

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

*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 results in the form of the web visualization for the data taken by a Timepix pixel detector attached to the Proba-V satellite are excellent. They exceeded our expectations when preparing the assignment text. The visualization is responsive, displays all information available in a database, and it allows the user to evaluate the data and download the results. Besides that, the response times of the visualization are very good.

<i>Evaluation criterion:</i>	<i>No evaluation scale.</i>
<b>8. Applicability of the results</b>	

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

*Comments:*

The created web visualization will be used to regularly inspect and evaluate data taken by the Timepix pixel detector launched in Low Earth Orbit (820 km). The data is valuable in a way that they can help verifying the models for trapped radiation in the Earth magnetic fields, and in particular to give the peak fluxes of electrons and protons in the defined orbit, which is an important information to define the radiation hardness of electronics launched in this orbit in the future.

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

Herbert has shown great initiative and interest in the topic. After defining the appearance of the visualization and the information to be displayed, my advise was basically not needed anymore. Herbert even pointed out some minor issues, appearing during the preprocessing of the raw data. In order to improve the overall look of the visualization, Herbert created a 3D model of the satellite. His self-reliance is excellent. All defined milestones were reached in time (typically even earlier).

<i>Evaluation criterion:</i>	<i>The evaluation scale: 0 to 100 points (grade A to F).</i>
<b>10. The overall evaluation</b>	<b>99 (A)</b>

*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 final visualization is far better than the expected outcome when preparing the assignment. Herbert was an absolute enrichment in our team, he was working absolutely self-reliant and independently. During the creation of his thesis, he was helping to increase the quality of the data preprocessing by giving valuable feedback.

Signature of the supervisor: