

Review report of a final thesis

Czech Technical University in Prague

Faculty of Information Technology

Student: Bc. Adam Prášil
Reviewer: Ing. Josef Kokeš
Thesis title: Website user tracking
Branch of the study: Computer Security

Date: 17. 1. 2016

<i>Evaluation criterion:</i>	<i>The evaluation scale: 1 to 5.</i>
1. Difficulty and other comments on the assignment	<i>1 = extremely challenging assignment, 2 = rather difficult assignment, 3 = assignment of average difficulty, 4 = easier, but still sufficient assignment, 5 = insufficient assignment</i>
<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.)	
<i>Comments:</i> This thesis describes the current state-of-the-art in methods for identifying web browser instances through the use of various methods, both those intended for storing information and those intended for other purposes. The included program demonstrates how the listed methods work in actual practice.	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 1 to 4.</i>
2. Fulfilment of the assignment	<i>1 = assignment fulfilled, 2 = assignment fulfilled with minor objections, 3 = assignment fulfilled with major objections, 4 = assignment not fulfilled</i>
<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.	
<i>Comments:</i> The assignment was fulfilled perfectly.	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 1 to 4.</i>
3. Size of the main written part	<i>1 = meets the criteria, 2 = meets the criteria with minor objections, 3 = meets the criteria with major objections, 4 = does not meet the criteria</i>
<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.	
<i>Comments:</i> The thesis is very detailed and somewhat longer than usual, but it has just the right amount of content and level of complexity. Any reduction in length would decrease the work's quality.	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 0 to 100 points (grade A to F).</i>
4. Factual and logical level of the thesis	<i>99 (A)</i>
<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.	
<i>Comments:</i> A perfect work. I didn't find any factual errors in the thesis. It is logically organized and while complex, it is also easy to understand. The figures are particularly well made and significantly help in understanding the discussed topics; the occasional minor errors (e.g. protocols in URLs in figure 3.8) are not detrimental to the figures' value.	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 0 to 100 points (grade A to F).</i>
5. Formal level of the thesis	<i>95 (A)</i>
<i>Criteria description:</i> Assess the correctness of formalisms used in the thesis, the typographical and linguistic aspects, see Dean's Directive No. 12/2014, Article 3.	
<i>Comments:</i> The thesis is written in English, and while the text isn't entirely error-free*), its language is far superior to what we can see in an average thesis (Czech AND English). In fact, it's written better than most works by native speakers that I've ever seen (including books by professional writers). *) Errors: Incorrect prepositions, extra articles, problematic order of words, incorrect commas.	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 0 to 100 points (grade A to F).</i>

6. Bibliography

100 (A)

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:

146 references are listed in the thesis, all of them relevant to the section of the text where they are used. Most references are web-based, but that's to be expected in this kind of work. It might be better if the less-critical references were placed into footnotes or a separate section of the Bibliography, as it is quite difficult to determine which references are crucial for the content work and which just illustrate a point or support a claim. The only unsupported claim that I've found is the student's contention that the removal of caching would significantly affect the user's experience with web pages, but the discussion of that belongs in a follow-up work rather than here, anyway.

Evaluation criterion:

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

7. Evaluation of results, publication outputs and awards

95 (A)

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 work as a whole is excellent. It doesn't provide any new information, but that wasn't its purpose. It summarizes current state-of-the-art beautifully and is an excellent reference for further works. The included program illustrates the discussed topic well, too. I have just two minor complaints regarding that:

1) The current implementation only serves to locally demonstrate how the individual techniques work. While that in itself is very useful and was the actual goal of the work, it would be even more beneficial if the work went a step further and the demonstration was publicly available on some server, where the users could test their privacy. This would also allow us to gather information useful for fixing the privacy leaks.

2) Only two aspects were tested for the individual techniques, regarding their functionality in browsers: Whether they work in normal mode, and whether they can break from the normal mode into the anonymous mode. I would appreciate if a test was made whether the techniques work in the anonymous mode (i.e. whether they break the privacy across multiple instances of a private tab). Also, it would be interesting to see how a privacy-enhanced browser such as Tor Browser compared to regular browsers.

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:

I would definitely recommend that this work be a required reading for all students in computer security study programs, and strongly recommended for every Internet user. I have no doubt whatsoever that it will be used in future works -- the listed privacy issues in current browsers need to be fixed.

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:

Do you have any recommendation for a privacy-conscious user as to which browser she should use and how should she configure it?

Evaluation criterion:

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

10. The overall evaluation

100 (A)

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:

This is very much a perfect work. Very complete, very detailed, yet easy to understand. While it didn't bring any solution to the discussed problems, that wasn't its purpose; it will serve well for follow-up works which will handle the discussed issues. I recommend that the work be graded A and considered for both the Dean's Award for excellent works.

Signature of the reviewer: