

REVIEW OF THE DISSERTATION THESIS

PhD candidate: Ing. Ondřej HUIJŇÁK, FIT VUT
Title: SECURITY OF WIRELESS COMMUNICATION FOR IOT DEVICES

The dissertation thesis has 108 pages. It is divided into 8 chapters, including Introduction and Conclusions. The citation part has 127 sources.

1. The relevance of the chosen topic,

Thesis is focused on IoT analysis, specifically on measurement, security and privacy. Chapters 2, 3 and 4 are introductory chapters detailing state of the art. Chapter 5 focus on BLE monitoring especially the advertising messages. The BLE parallel monitoring is provided here. Based on the measurements, the advertising messages are identified applying various methods, including AI, which gives the best results. Chapter 6 focus on the private solution IQRF (abbreviation not explained) giving thoughts on security implementation. Chapter 7 deals security of wireless communication for IOT devices. Chapter 7 deals with privacy in IOT including anonymization of IP and non-IP devices.

The topic is highly relevant. The research questions stated in the test are up-to-date. However, I would appreciate more focused thesis, with more details on one topic.

2. Achievement of the dissertation objective

In the thesis, there is no clearly stated goals of the dissertation thesis. There are state research questions and the answers to the research questions. However, not all research questions are correctly elaborated including similar works and methodology, and therefore are very hard to evaluate if they were correctly responded.

Personally, I would prefer less broad study but more focused. Many approaches are very hard to reproduce as they are not well described.

3. The chosen research methods

Solution description is given in chapters 5, 6 and 7. Each chapter contains description, research questions, and results. This approach is not usual in dissertation thesis. Selected research methods are not completely described; therefore it is difficult to find out the approaches and literature review.

4. Dissertation results, advancing scientific knowledge

Main results of the dissertation thesis is improvements of security to various aspects of IoT devices. However, I would appreciate if during presentation the candidate will give clear statement of advancing scientific knowledge.

5. The relevance for practice or for further development of science,

Achieved results can be further used for research and innovation tasks. I would consider mainly cooperation with master's and bachelor's degree students on application of achieved results to respective final thesis.

Chapter 6 dealing with IQRF can be directly applied in practice.

6. Remarks and questions

Formal remarks:

- The equations should be numbered. It is difficult to reference them as now (e.g. why you used 1/ in eq. At page 74)
- In conclusions I suggest not to use "I believe "
- In Conclusions, what do you understand under non-trivial issue?
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Questions:

- Did you considered any other approach to moving mean in Algorithm 1?
- Precision in Table 5.6 is very low. Is it worth to put this part into thesis?
- In Chapter 5, did you try also with publicly available sources? Can you provide comparison with literature sources?
- In IQRF, can you clearly state your own contribution, including its publication?
- Can you provide future work vision?

Finally, I stated that the dissertation thesis of Mr. Ondřej Hujňák fulfills the requirements for dissertation thesis and therefore I recommend it for presentation.

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