Brno University of Technology
Faculty of Information Technology

Review of Bachelor's Thesis

Student: Sloup Ondřej
Title: Algorithmic Evaluation of the Quality of Dactyloscopic Traces (id 25028)
Reviewer: Tinka Jan, Ing., DITS FIT BUT

1. Assignment complexity   **more demanding assignment**

I consider the assignment of this thesis to be of above average difficulty due to the requirement of having to learn about and design an algorithm for computer aided analysis and evaluation of dactyloscopic trace image quality, which is not in the scope of the bachelor's degree program.

2. Completeness of assignment requirements   **assignment fulfilled with enhancements**

Implementing and evaluating a single algorithm would have probably been enough to meet the requirements of the assignment. However, the software makes it possible to use and evaluate multiple algorithms of various complexity, for the task of evaluating dactyloscopic trace quality in images.

3. Length of technical report   **exceeds requirements**

With the conclusion being on page 50 the thesis is longer than usual. I do not see it as a problem, however, as I found the thesis to be rich in information relevant to the topic and the author's own contribution constituted slightly above half of its extent.

4. Presentation level of technical report   **80 p. (B)**

The thesis has a logical structure at all levels. However, there is room for a few improvements. It seems that nowhere in the thesis are there mentions of the thesis itself or its parts, with the exception of numerical references to topics described in previous chapters. Information about what the reader should be expecting in a section, chapter or the entire thesis might have improved the readability substantially. Short summaries at the end of each chapter would have also been helpful.

5. Formal aspects of technical report   **77 p. (C)**

There are many incorrectly used definite articles ("the") which make it more difficult for the reader to figure out what exactly is the author referring to. The extensive use of first-person plural has a similar effect regarding authorship. Distracting mistakes, such as using incorrect word order, are also not rare, but they mostly do not worsen legibility. However, typographically, the thesis is mostly without problems. The level of English is above average and the text shows the author's effort put into diversifying phrases and sentences and making them sound more natural.

6. Literature usage   **90 p. (A)**

The use and selection of literature is adequate and cited sources are relevant to the topic. I would prefer not mixing lengthy paragraphs citing multiple sources and in-sentence citations of different sources in the same paragraphs. However, it seems that Mr. Sloup placed all the citations deliberately, with the intent to communicate to which part of the text they relate.

7. Implementation results   **95 p. (A)**

The resulting software does what it is supposed to and was both implemented and experimented with in a manner that shows enthusiasm. It is implemented in Python, is available on Github and follows conventions usual for both Python and Github, including the LICENCE file and the README file which documents the installation and usage of the software. The code is properly commented and Mr. Sloup made it clear what code originated from other authors and how it was modified on several occasion.

8. Utilizability of results

While the work is in great part a compilation of existing algorithms, it does exactly what it is supposed to, contains additional algorithms designed by Mr. Sloup and evaluates their performance on the task of dactyloscopic trace image quality evaluation. Both the software and the observations made by Mr. Sloup might be useful for further research.

9. Questions for defence

- Can you explain the terms *authentication, authorization, identification* and *verification* related to computer security and biometric systems?
- Can you describe how the sine function and the ridges signal are aligned before you perform integration to assess their similarity?

10. Total assessment   **85 p. very good (B)**

Overall, the work has left a good impression on me as it was carried out with care. The main negatives pertain

only to the text, where I did not like the reduced readability due to certain linguistic choices and missing outlines or summaries.

In Brno 3 June 2022

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Tinka Jan, Ing.

reviewer
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