Review of Master's Thesis

Student: Lukáč Jakub, Bc.
Title: Tracking People in Video Captured from a Drone (id 23952)
Reviewer: Orság Filip, Ing., Ph.D., DITS FIT BUT

1.   Assignment complexity   **average assignment**

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

3.   Length of technical report   **in usual extent**

4.   Presentation level of technical report   **60 p. (D)**
The thesis is well structured, the chapters do logically divide the text into appropriate parts. The actual content is easy to understand except for the explanation of the re-identification in the chapter 4.2.2 (e.g. I do not understand the table 4.2 even after thorough reading of the text) and some other details (e.g. there are no error percentages in the experiment summary tables 4.1, 4.3 and 4.4, thus it is a bit too difficult to read). I am missing some more information about actual tracking and state-of-the-art of the tracking algorithms as stated by the assignment.

5.   Formal aspects of technical report   **85 p. (B)**
There are no big formal issues in the text. The equations, figures, and all other elements are well-typed, there are not many mistyped characters and the language quality is good, even though sometimes it is difficult to understand the idea of longer paragraphs.

6.   Literature usage   **90 p. (A)**
The selection of information sources is split among online sources, conference papers, and some books. The sources are properly cited.

7.   Implementation results   **60 p. (D)**
The software was implemented in Python, which implies the source code is well-structured by default. The code is commented sufficiently. The implementation itself is good enough and its behavior complies with the assignment. What I do not understand, though, is the performance of the person detection algorithms. According to the various sources, the success rate of the state-of-the art CNN methods range well above 80 %. Success rate of the presented SSD algorithm (if I understand the table 4.1 correctly) is only 15 %, YOLO is even worse and Tiny YOLO with roughly 30 % is subpar, too.

8.   Utilizability of results
The implementation can not be used to estimate distance of objects using camera, because it is too inaccurate.

9.   Questions for defence
- Why haven't you chosen more modern version of the CNN for the purposes of the tracking or person detection and re-identification?
- What is the reason for such a poor success rate of the person detection?

10.   Total assessment   **70 p. good (C)**
The text of the thesis is well written even though there is some vagueness in the explanation of the experiments and experimental results, and missing details about the actual tracking and state-of-the-art of the tracking algorithms. Other than that I am happy with the formal aspect of the text. The performance of the implementation is questionable. I can accept the errors in the distance estimation, but the person detection error rate is subpar, which leads to the poor tracking capabilities and possibly to the errors in the distance estimation. Overall, I assign the grade of C for the thesis.

In Brno 8 June 2021

Orság Filip, Ing., Ph.D.
reviewer