



OPPONENT'S EVALUATION OF THE MASTER'S THESIS

Student: OWOH, Dalton
Chukwuezugbo

Opponent: prof. RNDr. PaedDr. Eva
Volná, PhD.

Study program: Information Technologies
Study course/Specialization: Software Engineering
Academic year: 2023/2024

Master's Thesis topic: **Detecting Potential Violent Behavior Using Deep Learning**

Evaluation of the thesis:

The thoroughness of the elaboration, its validity and the difficulties resolved in the thesis.

The main goal of this work was to detect potential violent behaviour using deep learning. Here several deep learning models were implemented. The proposed models were tested on real data and their performances were evaluated using standard metrics. At the end of the paper, the outputs of these models were analysed and compared with each other. The results of the experiments conducted in this work showed the best performance with accuracy values of 98%.

The method and level of the concepts resolved in the thesis.

In this work, four deep learning models including DenseNet-121, Inception-v3, ResNet50 and VGG-16 were used for the purpose of detecting potential violent behaviour using transfer learning principles. All these models were described in the theoretical section. The models evaluated in this thesis were chosen with the scope of this work in mind. The main focus of this thesis is the practical part, which involved conducting a comparative experimental study and a thorough analysis of the results obtained from it. Experimental results for different model configurations were presented. The analysis showed that DenseNet-121 and Inception-v3 were the most suited for violence behaviour detection task in this work.

The level of the student's thesis topic and elaboration and its contribution(s).

In the theoretical section, a review of the literature in the field of human violence detection was conducted to identify prevalent strengths and gaps in existing research work.

The design, implementation and evaluation of the experiments is the student's own work.

The author of this work also recommends that future research could focus on exploring the generalization of the results from this experiment across larger datasets with adaptations to a broader domain.

Consideration should be given to publishing certain parts of this work.

The formal aspects of the thesis, errors and mistakes in the technical aspects.

Regarding the formal aspect of the thesis, I don't have any major comments. The selection of literature is satisfactory and corresponds to the topic of the thesis. The thesis has a coherent structure and the individual chapters are suitably interconnected.

Questions relating to the defence of the thesis.

- What methodology was used to select the deep learning models in this work?
- How might the findings of this thesis be useful for researchers in computer vision and robotics?

The evaluation may be extended to cover further pages.

Overall evaluation of the thesis:

The Opponent shall grant a mark according to the ECTS classification scale:

A – Excellent, B – Very Good, C – Good, D – Satisfactory, E – Sufficient, F – Insufficient

An “F” grade also means "I do not recommend the thesis for defence."

I recommend this thesis to be defended and suggest the following evaluation:

A - Excellent

In the case of an evaluation grade of “F – Insufficient”, please supply the main shortages and reasons for this assessment.

Date: 20 May 2024

Thesis Opponent's Signature: