

## I. IDENTIFICATION DATA

<b>Thesis title:</b>	<b>Automatic Classification of Social Interactions of Rats from Video</b>
<b>Author's name:</b>	<b>Bc. Fadi Kanout</b>
<b>Type of thesis :</b>	master
<b>Faculty/Institute:</b>	Faculty of Electrical Engineering (FEE)
<b>Department:</b>	Department of Circuit Theory
<b>Thesis reviewer:</b>	Ing. Lukáš Neumann, Ph.D.
<b>Reviewer's department:</b>	Department of Cybernetics

## II. EVALUATION OF INDIVIDUAL CRITERIA

<b>Assignment</b>	<b>challenging</b>
The assignment was quite challenging, because it involved assembling hardware components, collecting the data and then creating and evaluating software components for given task.	

<b>Fulfilment of assignment</b>	<b>fulfilled</b>
The assignment was fulfilled, including the optional analysis of the proposed method on differentiation between transgenic (AD) and wild-type rodents.	

<b>Methodology</b>	<b>correct</b>
The methodology is correct, the proposed algorithm is clearly able to correctly recognize the different kind of behaviours. On the other hand, it is not immediately obvious why the intermediate step of recognizing different types of behaviours is specifically needed in the context of deep neural network models, which could equally be trained on the final task (differentiation between AD and WT rodents), and as such might possibly achieve higher accuracy.	

<b>Technical level</b>	<b>A - excellent.</b>
The technical level is very good, the student successfully used statistical as well as computer vision methods. The source code is well-structured and well-documented.	

<b>Formal and language level, scope of thesis</b>	<b>B - very good.</b>
The level of English is very good, the text is easily understandable, there are only some minor grammar issues. The level of math and its formalism is also very good.	

<b>Selection of sources, citation correctness</b>	<b>B - very good.</b>
All references to previous work are correctly distinguished and cited, the selection of sources seems appropriate. The introduction of prior work might have been a bit longer, to give the reader more self-contained overview of the problem at hand, previous approaches in the literature, and current challenges.	



### III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

Overall, this was a very challenging assignment that required many different skills, and the student was able to fulfill it fully without major issues.

The grade that I award for the thesis is **A - excellent**.

#### Questions:

1. Is the intermediate step of rodent behavior classification actually necessary when deep neural network models are considered? Would training an end-to-end model for AD/WT classification likely achieve better performance, or is this not possible because of some underlying limitations?
2. In the comparison between model and human expert classification (Section 4.19), it is mentioned that one person labelled the training set and another person labelled the set where the model was evaluated. It there actually some level uncertainty in human labels of this problem, ie. it is possible two different experts would label the same activity differently?

Date: **18.1.2024**

Signature: