THESIS SUPERVISOR'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Automatic Analysis of Facial Wrinkle Characteristics in People with Parkinson's Disease**
Author's name:	**Jan Vaník**
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Cybernetics
Thesis reviewer:	Ing. Michal Novotny, Ph.D.
Reviewer's department:	Department of Circuit Theory (FEL)

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment **challenging**

How demanding was the assigned project?

The project had large interdisciplinary overlap and student had to learn knowledge from several different fields including neurology, image processing and machine learning including deep neural networks, therefore the assignment can be considered challenging.

Fulfilment of assignment **fulfilled**

How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.

The student created a database of manually labeled training datasets and was able to train a deep neural network automatically annotating facial wrinkles. The presented results are comparable with the state-of-the-art approaches and therefore I consider the assignment as fulfilled.

Activity and independence when creating final thesis **B - very good.**

Assess whether the student had a positive approach, whether the time limits were met, whether the conception was regularly consulted and whether the student was well prepared for the consultations. Assess the student's ability to work independently.

The student was motivated with a positive attitude towards the topic. He was able to work independently, and he was well prepared for the consultations. The student was able to deliver work on time, however the schedules were sometimes pushed to the limits.

Technical level **B - very good.**

Is the thesis technically sound? How well did the student employ expertise in his/her field of study? Does the student explain clearly what he/she has done?

Thesis is technically sound, and the proposed approaches were well described. The expertise in the engineering field was well employed, however the neurology part could be better elaborated. On the other hand, as the topic was mainly focused on the application of the engineering approaches the medical rigorousness was not as crucial for the thesis and the student provided more than sufficient medical background.

Formal level and language level, scope of thesis **C - good.**

Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?

Formalisms and notations were used properly, study was organized in a logical manner with excellent technical background. The medical background could benefit from a more rigorous approach. The language was clear and understandable yet sometimes drifted away from the scientific style. The level of English was appropriate.

Selection of sources, citation correctness **A - excellent.**

Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?
The student was able to work with a large body of scientific literature and provide relevant references. The student's original contribution was clearly distinguished and the results were discussed with relevant state-of-the-art literature.

Additional commentary and evaluation (optional)
Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.
Please insert your comments here.

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

The student was able to create a publicly available hand annotated database of facial wrinkles which by itself brings merits to the scientific community. Moreover, the student was able to train end-to-end system for fully automatic annotation of facial wrinkles in people with Parkinsons disease and provide tool for the assessment of hypomimia which is a understudied hallmark of the disease and therefore provides actual contribution for understanding of underlying pathomechanisms and overall scientific knowledge.

The grade that I award for the thesis is **B - very good.**

Date: **3.6.2024** Signature: