THESIS REVIEWER'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Automatic Assessment of Facial Movement in Multiple Sclerosis Patients**
Author's name:	**Louis Kälble**
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Circuit Theory
Thesis reviewer:	Jiri Mekyska
Reviewer's department:	Department of Telecommunications, FEEC, Brno University of Technology

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment   **challenging**
How demanding was the assigned project?

The objective of the thesis was ambitious and challenging. To the best of my knowledge, the potential of the automatic assessment of facial palsy in patients with multiple sclerosis has not been sufficiently explored before.

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.

All objectives of the thesis were fulfilled.

Methodology   **correct**
Comment on the correctness of the approach and/or the solution methods.

The methodology was relevant and well-designed (especially when considering the sample size and distribution of data). The student did not perform a correction for multiple comparisons, nevertheless, this has been mentioned in the study limitations.

Technical level   **A - excellent.**
Is the thesis technically sound? How well did the student employ expertise in the field of his/her field of study? Does the student explain clearly what he/she has done?

This multidisciplinary thesis has a very high level from both technical and clinical points of view. In fact, it can be considered as a scientific work and I encourage the student to publish these results at a top-tier conference or in a peer-reviewed journal with IF.

Formal and language level, scope of thesis   **A - excellent.**
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?

Generally, the thesis is very well written, i.e. it has a very good background, a comprehensive review of related works, identification of knowledge gaps, clear objectives, relevant methodology, well-presented results and sufficient discussion. The level of English is very good.

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 very intensively and very well worked with relevant studies.

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.

As already mentioned, the thesis is excellent and brings new insights to the field of quantitative analysis of multiple sclerosis manifestations. The outcomes of this research could bring benefits to patients as well as clinicians. The student proved to have strong multidisciplinary knowledge (e.g. in the field of image signal processing, statistical analysis, machine learning, and neuroscience).

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

Summarize your opinion on the thesis and explain your final grading. Pose questions that should be answered during the presentation and defense of the student's work.

The student did an excellent job.

Questions:

Table 1 suggests that patients had mainly mild paralysis. Could this be the reason the differences between both groups were not that significant?

Have you tried to calculate how many percent of the patients are outside normative values (for each marker)?

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

Date: **29.5.2023**   Signature: