Review of Bachelor's Thesis

Student: Begáň Patrik
Title: Real-Time Processing of Intracranial EEG Signals (id 25242)
Reviewer: Malik Aamir Saeed, Ph.D., DCSY FIT BUT

1. Assignment complexity   **average assignment**

Assignment of average difficulty:
   This assignment is difficult because there is a learning curve to develop understanding of the medical and clinical concepts related to epilepsy.

2. Completeness of assignment requirements   **assignment fulfilled with minor reservations**

Assignment's requirements fulfilled with small objections:
   Overall, the assignment's requirements are fulfilled and the student has demonstrated that the offline analysis of two main biomarkers (namely, relative entropy and HFO) can be computed using the proposed method in real time. However, the explanation of the following should be included in the technical report: (1) Definition of real time analysis for this specific problem, (2) Summary of steps taken for the real time processing, (3) Group results (in addition to the individual results).

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

In the standard range:
   The work is satisfactory and in the usual range. It deals with important and essential material. The inclusion of information regarding EEG and Epilepsy makes it an easy-to-understand thesis.

4. Presentation level of technical report   **86 p. (B)**

The presentation could easily be improved by introducing figures related to real time processing related to the specific problem of intracranial EEG. In addition, figures and flowcharts showing steps of the real time processing of biomarkers will add clarity to the work done.

5. Formal aspects of technical report   **98 p. (A)**

Overall the thesis is well written with minor typos. A spell check would be beneficial to improve such mistakes.

6. Literature usage   **90 p. (A)**

The student has provided 34 references and have cited them in the text accordingly. However, he should cite them in order.

7. Implementation results   **85 p. (B)**

The student has provided number of results in chapter 6 and they appear to be convincing. However, he has not provided results of the real time analysis. He is assuming that the reader understands what is real time. However, definition of real time varies from problem to problem.

8. Utilizability of results

The work is part of the major on-going research project at St Anne's University Hospital Brno. It appears to be a good contribution that will allow real time processing of the iEEG data for the epileptic patients.

9. Questions for defence

1.   How do you define real time for this specific problem?

2.   How do you select the length and duration of the segments for relative entropy and HFO?

3.   Why group results are not presented in addition to the individual results?

10. Total assessment   **94 p. excellent (A)**

The student has done very good work in implementing the real time methods for the analysis of iEEG data for the epileptic patients. I appreciate his determination in this thesis because it involved multidisciplinary knowledge and significant time was required to understand the problem and then gain the knowledge required to implement the proposed method.

In Brno 28 May 2022

Malik Aamir Saeed, Ph.D.
reviewer