OPPONENT RECORD

Thesis compiled by: Fredrick Chahine

Title of thesis: Classification of Electroencephalographic Signals for Brain-Computer Interface

Opponent: Alexander Blom

Was it easy to understand the underlying purpose of the project? Comments.
The purpose is described right after the the introduction and is very clear and straightforward. It also describes how they approached the problem which helps in understanding the purpose.

Do you consider that the report title justly reflects the contents of the report?
Yes and no, the report clearly talks about EEG (electroencephalographic) but less about BCI (Brain-Computer Interface). BCI is briefly mentioned in the introduction but not afterwards because the report deals with classification of EEG data, not the interface part.

How did the author describe the project background? Was there an introduction and general survey of this area?
As said the introduction mentions both EEG and BCI but the report itself mainly deals with artificial neural networks, which are not mentioned at all in the introduction.

To what degree did the author justify his/her choice of method of tackling the problem?
The author refers to an article about that the general opinion is to favor linear methods whenever possible but does not have a reference for when more complicated methods are necessary.

Did the author discuss the extent to which the prerequisites for the application of such a method are fulfilled?
The prerequisites are very briefly mentioned, some more detail would have been suitable.

Is the method adequately described?
Yes, the author describes each method is good detail. Some of it is hard to follow if you don't know the domain but this is expected.

Has the author set out his/her results clearly and concisely?
Yes, the results after each try is communicated clearly, but uses different layout or style for each try which makes it harder to glance. Using the same style after each section to summarize

would have been useful.

Do you consider the author's conclusions to be credible?
Absolutely, however it would have been interesting to have more discussion about the possibility of the last try having overfitted data, perhaps comparing the classifier with a different dataset.

What is your opinion of the bibliography? What types of literature are included? Do you feel they are relevant?
The bibliography is short and focused with all references being very relevant. The references are papers about BCI and machine learning.

Which sections of the report were difficult to understand?
None very hard to understand, but adding a section about neural networks would have helped making the report more accessible.

Other comments on the report and its structure.
The structure works well and is very focused on what the report is about with very little overhead, this can however be seen as negative in some perspectives.

What are the stronger features of the work/report?
The comparisons are the main feature of the report and it works very well, it's both interesting while also having a bigger purpose.

What are the weaker features of the work/report?
The weakest feature is the lack of background about neural networks and machine learnings, which is really what most of the report is about.

What is your estimation of the news value of the work?
It has probably been done before, but to me, which doesn't know the domain, it's an interesting read.

Summarize the work in a few lines.
The report is about classifying EEG data where the subject thinks of either moving their right or left arm. This is done by using machine learning, specifically neural networks. The author compares the different methods and discusses the results.

Questions to author:
1. Did you use another dataset to check if the model was overfitted?
2. Is it possible to use anything else than neural networks for this problem?
3. Do you consider Matlab to be a good language for this type of problems?