



**KTH Computer Science
and Communication**

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OPPONENT RECORD

Thesis compiled by: Richard Nordström & Annika Tängmark

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

Opponent: Sofie Thorsen

Was it easy to understand the underlying purpose of the project? Comments.

I thought it was hard to grasp the subject. Besides from simplifying the text, I would have liked to have the problem statement and purpose of the essay discussed earlier in the introduction to get a better overview. Overall I think it would be a good idea to expand the introduction and the section regarding problem statement and purpose (3.6 Aim). I've read Fredrick Chahine's report on the same subject which I found much easier to follow (I actually did not understand the work in this essay until I read Fredricks), I think it would be a good idea for the authors to read that one and compare and reflect on the differences.

Do you consider that the report title justly reflects the contents of the report?

The title is describing the content, so yes, even though the actual BCI is just briefly discussed. It would be interesting to have more background on the BCI part.

How did the author describe the project background? Was there an introduction and general survey of this area?

The background was extensive regarding the nervous cells and communications between them, but I would have liked, as mentioned earlier, a bigger discussion on BCI and why it is important/interesting. Also, the background could be less specific and more general to engage the reader more.

To what degree did the author justify his/her choice of method of tackling the problem?

There was no explicit justification, it seemed predefined to use these methods. The benefits of the methods were however discussed.

Did the author discuss the extent to which the prerequisites for the application of such a method are fulfilled?

Not really, but as the methods they conducted seemed predefined by their supervisor (they got the data from the supervisor, and the subject revolves around using the specific methods), this may not be as necessary as in other cases.

Is the method adequately described?

Once again, I think the focus is at the wrong place. Things are explained thoroughly, but not in a way that makes the reader (me at least) understand it. I think more explanation is needed before getting in to the very specific details.

Has the author set out his/her results clearly and concisely?

In comparison to the extensive background, I think they could have added more material in their results sections. The pictures is a good aid though and helps the heavy text a bit.

Do you consider the author's conclusions to be credible?

As the calculations was carried out in a controlled and thorough fashion, the results seems credible to me, but as I don't fully understand the calculations it's kind of hard to say.

What is your opinion of the bibliography? What types of literature are included? Do you feel they are relevant?

It is extensive with many different sources. I think it's good to use both books, papers and web pages which seems to be the case, the bibliography is a good selection of relevant information.

Which sections of the report were difficult to understand?

As already mentioned, I think the whole report is overly complicated and can be improved as mentioned in earlier questions.

Other comments on the report and its structure.

It would be nice with more material on the results part of the report, the report ends kind of abruptly.

What are the stronger features of the work/report?

I find the structure of the text being well written (sentence structure etc.). The background is extensive which is nice, especially if they add a better bridge between general discussion and the specific details. The included pictures are also helping the overall perception.

What are the weaker features of the work/report?

The focus seems to be on expressing as much scientific terms as possible instead of focusing on the purpose of the essay. For me, being unfamiliar with the subject, the essay gets really vague instead of specific. For example, saying "the data describes a person thinking about lifting his left or right arm" instead of "EEG-signals describes two cognitive tasks a subject performs" is much easier to comprehend and remember and does not make the essay less scientific. The basic terms get left out too much which makes the report hard to read.

What is your estimation of the news value of the work?

In comparison to the results and work conducted, I think that the report discusses the wrong things too deep where it gets hard to understand what the purpose of the essay actually is. Scale down the scientific language and shift the focus and try to intrigue the reader more, since I don't believe that the more advanced reader (readers who are familiar with the subject) will get much value from the results.

Summarize the work in a few lines.

Brain-computer interface is a research area that revolves around interpreting signals from a person's brain and interpret what they mean (e.g. the person is lifting his/hers left arm or right arm). The report compares linear and non-linear methods when it comes to classify these signals and it was found that the use of neural networks was the lesser good method.

Questions to author:

1. What programming language or aids did you use to do these calculations?
2. Was your conclusion surprising, that is, what did you expect from the beginning?
3. Which readers is this report targeted at?