Peer Review Form for Scientific Articles AE2223-I

Fill in this form by typing, not by handwriting. Adjust space to need. The criteria correspond to those mentioned more elaborately on the checklist scientific articles, to be found on Blackboard. Use that checklist for a more elaborate description of the criteria.

Elements

1. Abstract
Readable as stand-alone text – Informative on research and results – Clear key words

Comments:

The abstract is readable as a stand-alone text but does not include a conclusion. There are some elements in the keywords that are less important such as Doppler effect, atmospheric absorption and geometric spreading. These could be removed.

Furthermore, there is a sentence that runs from line 3 to line 6 which is too long. For example: "However, the most common certification metrics to determine annoyance used today were developed in the 1960s. They were designed for the aircraft of that time. It is not yet known how the acoustic signature of aircraft has evolved and which components may have gained or lost importance. "

2. Introduction
Background information on problem – Clear motivation for research – Research question stated clearly – Structure article discussed if necessary

Comments:

The introduction contains enough background information and the last paragraph clearly indicates the structure of the report. However, there is not a clear motivation for the report mentioned. Although, one could argue that the development of the program is the motivation of the report, but this could be stated more clearly. Furthermore, the introduction does not contain any research question or hypothesis.

The third paragraph of the introduction (bottom of page 1) contains a rather extensive discussion on the methods for the corrections. The discussion on the methods for the metrics is much less extended, which should be equally extensive as the one on on the corrections.

3. Method
Well-argued – Sufficient definition of concepts – Connection to research question

Comments:

Well-argued

There certain parts in the method section that are not well-argued. In the second paragraph of geometrical spreading correction for example it states: "The only reliable part of the spectrum is the interval of time when the aircraft is directly overhead the microphone; this limitation was due to the fact that the microphone directionality was not taken into account.". Why can this not be corrected? The first sentence of the part on atmospheric absorption also states that this has a limited impact on the overall signal. It is not well-argued why this correction is than performed. In the introduction of the metric determination, in the third line it states: "and others". Which others? In the tonality section the following is stated: "A component was chosen to be tonal, when over time a frequency range of 100-150 Hz was seen to have a higher power, than the neighbouring frequencies". It took me a while to understand what was meant. The psychoacoustic section was well-argued except for the part that explains the figure. Certainly the sentence "It can be observed that the two terms W_S

and W_{RF} form the cathetus of a right-angled-triangle." Was not that clear. This should be explained better.

Sufficient definition of concepts

There are certain words and concepts that are used that should have been explained. They are listed below in chronological order.

L_P in eq. 3
f in $L_P(r_0,f)$ since f is not used in that formula
ISO 226:2003
The weighted first moment
The loudness function N'(z)

Connection to research question

It feels like the method section is made out of multiple smaller section that are not well connected with each other. Furthermore, it is not clear whether all these metrics are defined in order to be able to define the final criteria (psychoacoustic annoyance) or whether they each have their own importance on the annoyance but are not rated equally important. In the beginning it feels like they should all be taken into account, but at the end it feels like psychoacoustic annoyance already takes all the other metrics into account.

Other comments

In the Doppler effect section, it states: "between the ground and the aircraft", better would be "between the ground at the location of the microphone and the aircraft".

First, atmospheric absorption correction is abbreviated as AAC and later as ACC.

The equations are inconsistent. Use either a dot or nothing for multiplications and in eq. 5 10-11 should be 10^{-11}. I think that in eq. 6 and eq. 7 F_r,o and F_r,N should be $F_{r,o}$ and $F_{r,N}$. finally, in eq. 4 it is written that alpha is only dependent of f since it is written as alpha(f), but in the text above it is stated that it is dependent of multiple other variables as well. There are many equations were a constant is involved, this is called c each time. Try to find another name for each constant.

The unit of loudness is first referred to as "phone" and later as "phon".

In the loudness section there is a sentence "The calculation of loudness starts with sorting the data points into 24 1/3 octave frequency bands." Which is confusing due to the two numbers that follow each other. Better would be "The calculation of loudness starts with sorting the data points into 24 frequency bands, each with a bandwidth of 1/3 octave."

In the caption of Figure 2 the final letter of revised is not visible.

In the tonality section it states that that is the second biggest contribution to annoyance, but it seems like loudness and sharpness are the two biggest contributions. Furthermore, weighting should be

replaced by weighted in the final sentence of this section.

In the paragraph next to Figure 3 it refers to section V in the final sentence which should be appendix A. the sentence after that one begins with "As it was explained in section B" while this is section B.

4. Results and discussion
Results presented clearly - Validity of results discussed and supported – Relation text/illustrations clear

Comments:

The results are not presented very well as psychoacoustic annoyance is the most important one, but this is not even discussed in the results. It is also not really clear what can be done with the results that are presented in Table 1. It is also not clear which of the aircrafts in the table was the most annoying.

The validity of the results is discussed and supported in a good way.

There have been some figures used in order to discuss the results, but they were put in the appendix instead of in the text. It would be better if the figures were in the text.

There is a part that is further explained in Appendix A. It would be better if this was not in an appendix. There is no real reason to put it in an appendix.

It feels like the first paragraph is more part of the method section than of the results and discussion section.

In the sentence "And, as can be seen quite clearly in the spectrogram, Fig. 5, is an overall higher power during the flyover, however the peaks in frequency are flatter." The reference to Figure 5 should be to Figure 5b I believe.

5. Conclusions
Link to research question – Follow from previous material – Recommendations further research

Comments:

There was no research question so there cannot be an answer to it although it is stated that a program has been developed.

"For loudness, the most annoying aircraft is found to be aircraft 3. For the sharpness, the most annoying aircraft is number 2 and for the Tonality aircraft 3 is ranked as the most annoying. Overall, it seems as though aircraft number 2 is the most annoying." Is not stated in the results before and is thus new information.

Recommendations for further research are clearly stated.

Reference use

6. Use of sources
Correct references – Good use of literal quotes – Good use of paraphrasing

Comments:

Most references were applied correctly although I had the feeling that there were references missing sometimes.

7. Bibliography
References meet requirements – Correspondence references in text and bibliography

Comments:

There were no issues with the bibliography, except in the final reference. Here the title of the document is Delft University of Technology which is not the title.

Content

8. Data analysis / research sufficiency
Your opinion on the data analysis and research sufficiency

Comments:

There was a lot of work done on the data, I think this took a lot of time and that that is the reason why the data was not analyzed very well or sufficiently researched.

9. Argumentation
Your opinion on the academic value of the argumentation – Critical review of literature

Comments:

I do not think that the article has a great academic value since the discussion on the results was very short and not very extensive.

Structure

10. Paragraphs
Well-constructed – One topic – Clear topic sentences – Clear paragraph structure

Comments:

The article was split up in nice paragraphs and each paragraph had its own topic. The paragraphs in all the sections were well structured

Style

11. Style and language use
Correctness – Objectiveness – Clarity – Attractiveness

Comments:

The style and language use was correct and objective, but sometimes it could be a bit clearer or attractive. I had a hard time to read bigger parts of the report in one time.

Illustrations and layout

12. Tables and figures
Functionality - Number and caption – Reference in text – Reference to source – Legend/explanation

Comments:

All the figures and the table that were put in the article were useful and captioned. There was a reference in the text to each one of them, although these references were not consistent (Fig. 1, Figure 1, Figure (1), …). I do not think that figure 2 and 3 were created by them, but they are not referenced. It would have been nice if the figures in Appendix A all had the same scale on the y-axis. Now it seems like they all have equal influence.

13. Format

Font – Headings – Page lay-out – Adherence to template
Comments: The format was decent. The only thing I did not like was the title. Try to look for another title.