Bachelor Thesis Project Evaluation Form *FIRST READER*

The form below is intended to clarify to student, supervisors, coordinators, exam committee and accreditation panel how the final grade was built up. Please take into account this breadth when filling in the form and use the comment boxes to give argumentation, understandable for others with access to the thesis. The completed forms are sent by the first supervisor to secretary@ai.ru.nl, with CC to the student (see R&R).

Student Name	Johannes de Windt	Student number	s1019022
Thesis Title	Two-source auditory localization using a convolutional neural network.		
Assessor Name	Kiki van der Heijden		

Final Grade Calculation

Factor	Grade	Weight	Required
Process grade (scale 1-10)	7.5	40%	5
Agreed[1] thesis grade (scale 1-10)	6.5	40%	6
Presentation grade (scale 1-10)	6	20%	5
Average[2]	6.8		
Final[3]	7.0		6

■ Thesis uploaded to Brightspace and checked for plagiarism
(Note: the evaluation is incomplete if this box is not checked!)

Comments (including potential discussion on grade):

Date: 10 February 2022	Signature 

[1] *I.e., the thesis grade decided upon after deliberation with the second reader.*
[2] *All partial grades can include decimals; rounding is done after averaging.*
[3] *To the nearest half point. The exception is between 5 and 6: 5 – 5.5 becomes a 5, >5.5 a 6.*

Process (*only* graded by first supervisor)

(-- = unsatisfactory, - = weak, o = sufficient, + = good, ++ = very good)

Category	Explanation	--	-	0	+	++
Communication	Clarity, openness and timeliness of contact with supervisor, including asking questions and asking for help.				■	
Organisation	Tracking of time plan and attaining goals, preparation of meetings.				■	
Independence	Taking the lead on the project, independence in solving practical and theoretical problems, self-discipline.				■	
Collaboration	If relevant, collaboration with fellow group mates and others involved in the project.					■
Learnability	Openness to feedback and learning.				■	
Additional work	Extra products made (like software or hardware)			■		

Comments (give an indication how you came to the final grade)

The student worked independently and kept track of the time line. Friendly attitude and a good team player. Pleasant to work with.

In terms of self-discipline, the student fulfilled the requirements for a good thesis process on a basic level, but at the same time did not go the extra mile (for example, testing model performance using 2D spectrograms as input). This could be improved on future occasions.

Process grade	7.5

Thesis (*<u>independently</u>* graded by primary supervisor and second reader)

Content

(-- = unsatisfactory, - = weak, o = sufficient, + = good, ++ = very good)

Category	Explanation	--	-	0	+	++
Background and problem description	Introduction of appropriate background literature, concepts, notions and theories.				■	
Goal and research question	Clarity, relevance, originality and scope of the goal and research question.				■	
Methods and results	Appropriate research methods and clear presentation of findings.			■		
Reasoning and conclusions	Conclusion connects to question, responsible reasoning, quality of self-reflection, limitations and future directions.			■		

Comments

Introduction: Provides an introduction into the field and introduces the research question appropriately.

Related work: Adequate overview of the existing work in this field.

Methods:

- Clear but too superficial.
- The rationale for using a CNN on time-series data (rather than 2D spectrograms) is not provided. This would have been helpful, especially given the disappointing results.
- In the methods, it is stated that early stopping is not implemented because the network is not close to overfitting. However, looking at the results of the sigmoid model (Figure 3.3), the model is overfitting. For the softmax model this is indeed not the case.

Results:

- The results are reported in a structured, adequate manner.
- Figures are not always readable (see next section).

Discussion: This section is rather short. A more in-depth discussion of the findings and implications and the context would have been more appropriate.

Written product

Category	Explanation	--	-	0	+	++
Structure	Clear and consistent hierarchy, corresponding to field standards, clear line and continuous flow of sentences.				■	
Experience	Connects to knowledge of audience, good management of expectations, written in a convincing and purposeful style.			■		
Professionalism	Appropriate language and layout, objective style of writing, professional credit and usage of sources.				■	
Writing	Spelling and punctuation, clarity & conciseness of writing.			■		
Support	Appropriate usage of figures, graphs and/or tables, including labels, captions, and integration in the text.			■		

Comments

Writing style in itself is good, but more attention could be directed towards argumentation.

That is, explaining why certain choices were made. Sentences are appropriately constructed and bridges are made between sentences and paragraphs. The theses has a solid structure that is easy to follow.

The figures in themselves are good, but the labels are not readable for the network architecture and for the confusion matrices.

Sometimes small typo's, e.g. sentence two of paragraph two of the introduction is not coherent (perhaps the "with" at the end should be omitted?).

Suggested thesis grade	6.5
Agreed thesis grade	6.5

Presentation (*<u>independently</u>* graded by primary supervisor and second reader or other staff)

Content

(-- = unsatisfactory, - = weak, o = sufficient, + = good, ++ = very good)

	--	-	0	+	++
Was the research question clearly introduced and motivated?			■		
Were the methods used clearly explained?			■		
Were the results clearly presented?			■		
Were the conclusions clearly presented? Was the 'take home message' clear?				■	
Was the argumentation sound and clear and the conclusions well-supported?			■		

Comments

Argumentation for the choice for a CNN for time-series data was not very well grounded in literature or experience. This also became evident during the questions (see remarks at 'Answer Questions').

Organization of the presentation

	--	-	O	+	++
Were the slides clear (background, color, font, size, figures, not too much text)?			■		
Were supporting illustrations and examples used in an effective way?		■			
Was the presentation well structured?				■	
Was the presentation interesting and/or inspiring?				■	

Comments

The figures of the confusion matrices were not intelligible. As this was already pointed out over a week ago to the student, this could have been adapted for the presentation.

Answer Questions

	--	-	O	+	++
Answers to the point or dodgy (content)?		■			
Answers clearly formulated (style)?			■		

Comments

Questions regarding the choice for a CNN were not answered fully satisfactory.

Presentation grade	6

Bachelor Thesis Project Evaluation Form *SECOND READER*

The form below is intended to clarify to student, supervisors, coordinators, exam committee and accreditation panel how the final grade was built up. Please take into account this breadth when filling in the form and use the comment boxes to give argumentation, understandable for others with access to the thesis. The completed forms are sent by the first supervisor to secretary@ai.ru.nl, with CC to the student (see R&R).

Student Name	Johannes van der Windt	Student number	s1019022
Thesis Title	Two-source auditory localization using a convolutional neural network		
Assessor Name	Abdullahi Ali		

Date 10-02-22	Signature 

Thesis (*<u>independently</u>* graded by primary supervisor and second reader)

Content

(-- = unsatisfactory, - = weak, o = sufficient, + = good, ++ = very good)

Category	Explanation	--	-	0	+	++
Background and problem description	Introduction of appropriate background literature, concepts, notions and theories.			x		
Goal and research question	Clarity, relevance, originality and scope of the goal and research question.				x	
Methods and results	Appropriate research methods and clear presentation of findings.		x			
Reasoning and conclusions	Conclusion connects to question, responsible reasoning, quality of self-reflection, limitations and future directions.		x			

Comments

Research was grounded in the literature and seems relevant with clear goals. Choice of loss function lacks motivation, in general choices of training procedure and architecture could use some more explanation. Results were clear but no discussion of why e.g. the network had a left bias, why single location worked so much better than both locations, no discussion of how the loss could have factored into the results.

Written product

Category	Explanation	--	-	0	+	++
Structure	Clear and consistent hierarchy, corresponding to field standards, clear line and continuous flow of sentences.			x		
Experience	Connects to knowledge of audience, good management of expectations, written in a convincing and purposeful style.		x			
Professionalism	Appropriate language and layout, objective style of writing, professional credit and usage of sources.			x		
Writing	Spelling and punctuation, clarity & conciseness of writing.			x		
Support	Appropriate usage of figures, graphs and/or tables, including labels, captions, and integration in the text.				x	

Comments

Generally decently written, some of the sections felt more appropriate as a figure description, could have spent some time introducing some terms. Narrative flow was a bit off, integrating related work and intro would have been better for the storyline. Something similar could be said for the methods & results section, where splits where made that made it hard to understand what was supposed to be the takeaway. In general the document could have benefited from a context-content-conclusion structure.

Suggested thesis grade	6/6.5
Agreed thesis grade	6.5

Presentation (*independently* graded by primary supervisor and second reader or other staff)

Content

(-- = unsatisfactory, - = weak, o = sufficient, + = good, ++ = very good)

	--	-	0	+	++
Was the research question clearly introduced and motivated?			x		
Were the methods used clearly explained?		x			
Were the results clearly presented?			x		
Were the conclusions clearly presented? Was the 'take home message' clear?			x		
Was the argumentation sound and clear and the conclusions well-supported?			x		

Comments

Introduction was a bit surface level, methods section was rushed, terms introduced without proper explanation, in general more explanation would have been helpful for following the content.

Organization of the presentation

	--	-	O	+	++
Were the slides clear (background, color, font, size, figures, not too much text)?				x	
Were supporting illustrations and examples used in an effective way?			x		
Was the presentation well structured?			x		
Was the presentation interesting and/or inspiring?			x		

Comments

Slides looked good in general, matrices on the results slides where too cluttered, different visualization would have been appropriate.

Answer Questions

	--	-	O	+	++
Answers to the point or dodgy (content)?		x			
Answers clearly formulated (style)?		x			

Comments

Student seemed to have trouble addressing the questions. Reasons for picking CNN over RNN seemed surface level. Suggestions for scaling up the model for more ecologically valid scenarios didn't address input dimensionality, potential type of network architectures etc.

Presentation grade	6