Daniel **Michelsanti**

Speech Processing and Computer Vision Scientist

Copenhagen, Denmark

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Deep learning enthusiast. Dealing with speech processing and computer vision while enjoying hygge in Denmark. Currently investigating cutting-edge technologies for next-generation hearing assistive devices with the goal of improving the quality of life in people with a hearing loss.

Work Experience

Industrial PostDoc
Smørum and Aalborg, DENMARK

Oticon and Aalborg University (AAU) — *Apr 2021 - Today*

- Project: Vision-assisted hearing aid systems using deep learning.

Research Assistant
Aalborg, DENMARK

Aalborg University (AAU) — *Sep 2020 - Feb 2021*

- Project: Analysis of acoustic signals for industry 4.0 applications.

Visiting Researcher
Barcelona, SPAIN

Universitat Pompeu Fabra (UPF) — *Sep 2019 - Dec 2019*

- Collaboration with the image processing and the music technology groups to conduct research on speech reconstruction from silent videos.

Machine Learning Intern
Struer, DENMARK

Bang and Olufsen A/S (B&O) — *Sep 2016 - Dec 2016*

- Design and implementation of a multimodal identification system based on machine learning techniques.

Algorithm Development Intern
Terni, ITALY

Aspasiel — *Oct 2012 - Dec 2012*

- Implementation of an algorithm to be used at Acciai Speciali Terni, the market leader of flat rolled stainless steel products in Italy.

Teaching Experience

Master Thesis Supervision 2021-2022 Co-supervision of three master students working on deep learning projects: Dennis Grøndahl Andersen (Mathematical Engineering), Mikkel Fjord Olsen (Mathematical Engineering) and Daria Oskina (Vision, Graphics and Interactive Systems).

Platforms and Methods for Multi-Modal System Architectures 2020 (Teaching) (10h) Aalborg University, Aalborg.

Machine Learning 2018 (Teaching Assistant + Exam Censor) (60h) Aalborg University, Aalborg.

Platforms and Methods for Multi-Modal System Architectures 2018 (Teaching + Exam Censor) (6h) Aalborg University, Aalborg.

Education

PhD Fellow
Aalborg, DENMARK

Aalborg University (AAU) — *Sep 2017 - Aug 2020*

- Project: Audio-visual speech enhancement based on deep learning.
- Supervisors: Prof. Zheng-Hua Tan and Prof. Jesper Jensen.

MSc in Vision, Graphics and Interactive Systems
Aalborg, DENMARK

Aalborg University (AAU) — *Sep 2015 - Jun 2017*

- GPA: 11.5/12.
- Thesis Title: Generative adversarial networks for speech processing.
- Supervisor: Prof. Zheng-Hua Tan.

BSc in Computer and Electronic Engineering
Perugia, ITALY

Università degli Studi di Perugia (UNIPG) — *Sep 2009 - Feb 2014*

- Final Grade: 110/110 cum laude.
- Thesis Title: Sorting algorithm implementation to optimise the input sequence of the annealing and pickling line at Acciai Speciali Terni.
- Supervisor: Prof. Emilio Di Giacomo.

Liceo Classico (High School Equivalent)
Todi, ITALY

Liceo Classico Jacopone da Todi — *Sep 2004 - Jul 2009*

- Humanistic studies. - Final Grade: 100/100.

Selected Publications

A complete list of publications with common metrics on their impact can be found on Google Scholar and Scopus.

Morrone, G., **Michelsanti, D.**, Tan, Z.-H. and Jensen, J. "Audio-visual speech inpainting with deep learning". Proceedings of ICASSP. 2021.

Michelsanti, D., Tan, Z.-H., Zhang, S.-X., Xu, Y., Yu, M., Yu, D. and Jensen, J. "An overview of deep-learning-based audio-visual speech enhancement and separation". IEEE/ACM Transactions on Audio, Speech, and Language Processing, 29, pp.1368–1396. 2021.

Michelsanti, D., Slizovskaia, O., Haro, G., Gómez, E., Tan, Z.-H. and Jensen, J. "Vocoder-based speech synthesis from silent videos". Proceedings of INTERSPEECH. 2020.

Michelsanti, D., Tan, Z.-H., Sigurdsson, S. and Jensen, J. "Deep-learning-based audio-visual speech enhancement in presence of Lombard effect". Speech Communication, 115, pp.38–50. 2019.

Michelsanti, D., Tan, Z.-H., Sigurdsson, S. and Jensen, J. "Effects of Lombard reflex on the performance of deep-learning-based audio-visual speech enhancement systems". Proceedings of ICASSP, pp.6615–6619. 2019.

Michelsanti, D., Tan, Z.-H., Sigurdsson, S. and Jensen, J. "On training targets and objective functions for deep-learning-based audio-visual speech enhancement". Proceedings of ICASSP, pp.8077–8081. 2019.

Michelsanti, D. and Tan, Z.-H. "Conditional generative adversarial networks for speech enhancement and noise-robust speaker verification". Proceedings of INTERSPEECH, pp.2008–2012. 2017.

Michelsanti, D., Ene, A.-D., Guichi, Y., Stef, R., Nasrollahi, K. and Moeslund, T. B. "Fast fingerprint classification with deep neural networks". Proceedings of VISIGRAPP, pp.202–209. 2017.

Selected Speaking Engagements

2021	**DEMO: Audio-visual lip reading and speech enhancement**, CASPR II opening.	*Aalborg, DENMARK*
2021	**TRAINING: Audio-visual speech enhancement and separation based on deep learning**, ODSC.	*Remote*
2021	**TUTORIAL: Audio-visual speech enhancement and separation based on deep learning**, ICASSP.	*Remote*
2021	**SEMINAR LECTURE: Speech reconstruction from silent videos using a vocoder**, Deeptails (INRIA).	*Remote*
2021	**PHD DEFENCE: Audio-visual speech enhancement based on deep learning**, Aalborg University.	*Remote*
2019	**SEMINAR LECTURE: Audio-visual speech enhancement for hearing assistive devices**, UPF.	*Barcelona, SPAIN*

Academic Service

Reviewer for: Computer Modeling in Engineering & Sciences, Tech Science Press; Computer Speech & Language, Elsevier; IEEE Access; IEEE/ACM Transactions on Audio, Speech, and Language Processing; IEEE ICASSP; IEEE Signal Processing Letters; Neural Networks, Elsevier.

Metrics about the reviews for IEEE journals can be found on Publons.

Grants, Honors and Awards

Christian Benoit Award - **2021** Issued by International Speech Communication Association (ISCA) and Association Francophone de la Communication Parlee. Award given biannually to a promising young scientist in the domain of speech communication. The award is valued at 7,500 Euros to be used for a short-term research project.

Research Grant - 2021 Issued by Danmarks Innovationsfond. Grant obtained to support an industrial postdoc research project. The grant application was written together with Prof. Jesper Jensen and Prof. Zheng-Hua Tan. The total granted amount was 1,242,000 Danish Krone.

ICVSS Reading Group Competition - **2018** Issued by ICVSS Organizing Committee. Winner of the competition. The prize was in the form of AWS credits, with a total of 5,000 US Dollars to be distributed among the winners.

Merit-Based Scholarship - 2010 Issued by Fondazione Franco Todini. Best high school student of the year 2009 at Liceo Classico Jacopone da Todi. The prize was valued at 1,500 Euros.

Additional Information

Languages	Italian (Native Speaker), English (Full Professional Proficiency), Danish (Elementary Proficiency).
Programming	Python (PyTorch, Tensorflow), MATLAB.
Writing and Presentation	LaTeX, Word, PowerPoint.
Professional Membership	IEEE (Member). ISCA Speech (Member). Auditory-Visual Speech Association (Member).
Photo and Video Editing	Affinity Photo, OmniGraffle, iMovie.
Driving License	Danish kørekort (Categories: AM/B/LK/TM).
Hobbies	Photography, hiking, reading, cooking, board games, movies.