ALEXANDER NEERGAARD ZAHID

Bernhard Olsens Vej 17 ⋄ 2830 Virum ⋄ Denmark
+45 29 84 09 68 ⋄ alexander.neergaard@gmail.com ⋄ aneol@dtu.dk

EMPLOYMENT HISTORY

Technical University of Denmark — Sep 2021–present
Postdoctoral researcher, Department of Applied Mathematics and Computer Science — Kgs. Lyngby, DK

Stanford University — May 2020–Sep 2021
Postdoctoral researcher, Stanford School of Medicine — Copenhagen, DK (remote)

Technical University of Denmark — 2016–2020
PhD student, Department of Health Technology — Kgs. Lyngby, DK

Trackman — 2016
Development Engineer — Vedbæk, DK

Technical University of Denmark — 2012–2015
Teaching assistant, Department of Electrical Engineering — Kgs. Lyngby, DK

EDUCATION AND RESEARCH EXPERIENCE

Technical University of Denmark — 2016–2020
PhD, Biomedical Engineering. Thesis title: Deep Learning Methods for Clinical Sleep Analysis — Kgs. Lyngby, DK

Stanford University — 2017–2019
Visiting student researcher hosted by Professor Emmanuel Mignot, MD, PhD — Palo Alto, CA, USA

Technical University of Denmark — 2013–2016
MScEng, Biomedical Engineering — Kgs. Lyngby, DK

Stanford University — 2014
Visiting student researcher hosted by Professor Emmanuel Mignot, MD, PhD — Palo Alto, CA, USA

Technical University of Denmark — 2010–2013
BScEng, Biomedical Engineering — Kgs. Lyngby, DK

GRANTS AND AWARDS

Lundbeck Foundation: LF Postdoc Grant (DKK 2.4 mio)	2021
Best poster award: 37th National Meeting on Biomedical Engineering, DMTS'19 (DKK 1,000)	2019
Travel grant: Otto Mønsteds Fond (DKK 7,500)	2019
Travel grant: Otto Mønsteds Fond (DKK 7,500)	2018
Various travel grants for PhD research stay at Stanford University (total DKK 362,500)	2017
Travel grant: Otto Mønsteds Fond (DKK 9,076)	2016
Various travel grants for MScEng research stay at Stanford University (total DKK 141,500)	2014

INVITED TALKS

26th Congress of the European Sleep Research Society — Sep 2022
Megaron – Athens Concert Hall — Athens, Greece

Danish Sleep Research Day — Nov 2021
Panum Institute — Copenhagen, DK

Danish Society for Neuroscience: Brain States and Beyond Symposium — Oct 2021
DGI-Byen — Copenhagen, DK

Annual Meeting of the Neuroscience Centre Faculty Group — Mar 2021
Neuroscience Centre, Rigshospitalet — Copenhagen, DK

SCIENTIFIC SERVICE

Volunteer work	EMBC'19
Review experience	Fondation Leenaards, IEEE Journal of Biomedical Health Informatics (J-BHI), IEEE Access, Scientific Reports, SLEEP, IEEE Transactions on Neural Networks and Learning Systems (TNNLS), IEEE Transactions on Biomedial Engineering (TBME).

SUPERVISION

PhD

- **Javier Garcia Cíudad** 2023–present
  Co-supervised with Professor Morten Mørup and Associate Professor Birgitte Kornum.
- **Laura Rose** 2021–present
  Co-supervised with Professor Morten Mørup and Associate Professor Birgitte Kornum.

MSc

- **Marius Jonika** Spring 2023
  Thesis title: *Sleep Spindle Detection and Characterization using Deep Learning*
  Co-supervised with Professor Morten Mørup.
- **Anna Chukwunonso Eze** Spring 2023
  Thesis title: *Characterizing subject and task responses in electroencephalography data using deep autoencoders*
  Co-supervised with Professor Morten Mørup.
- **Javier Garcia Cíudad** Fall 2022
  Thesis title: *Modeling Electroencephalography Data using Deep Learning and Explainable AI*
  Co-supervised with Professor Morten Mørup and Associate Professor Birgitte Kornum.
- **Kristina Pilgaard Jacobsen** 2018
  Thesis title: *Automatic Detection of Respiratory Events During Sleep*
  Co-supervised with Professor Emmanuel Mignot, Professor Poul Jennum, and Associate Professor Helge B. D. Sørensen

BSc

- **Peter Fabritius Hulgaard & Mark Yishi Chen** Spring 2023
  Thesis title: *Detection of sleep events in polysomnographic data using transformers*
  Co-supervised with Professor Morten Mørup.
- **Anders Vestergaard Nørskov** 2022–2023
  Thesis title: *Characterizing Biological Signatures and Individual Variability in EEG Data using Deep Learning*
  Co-supervised with Professor Morten Mørup.

LIST OF PUBLICATIONS

Also published under: Alexander Neergaard Olesen. * shared first authorship
477 citations, h-index 11, i-index 12, as of September 26, 2023.

Pre-prints

- A. V. Nørskov, **A. N. Zahid**, M. Mørup. CSLP-AE: A Contrastive Split-Latent Permutation Autoencoder Framework for Zero-Shot Electroencephalography Signal Conversion. *Accepted for publication and presentation at NeurIPS'2023.*

2023

- **A. N. Zahid**, P. J. Jennum, E. Mignot, H. B. D. Sorensen. MSED: A multi-modal sleep event detection model for clinical sleep analysis. IEEE Transactions on Biomedical Engineering, vol. 70, no. 9, pp. 2508-2518, 2023. DOI:10.1109/TBME.2023.3252368.

2021

- **A. N. Olesen**, P. J. Jennum, E. Mignot, H. B. D. Sorensen. Automatic sleep stage classification with deep residual networks in a mixed-cohort setting. *Sleep*, Volume 44, Issue 1, January 2021, zsaa161. DOI:10.1093/sleep/zsaa161.

2020

- A. Ambati, Y.-E. Ju, L. Lin, **A. N. Olesen**, H. Koch, J. J. Hedou, E. B. Leary, V. P. Sempere, E. Mignot, S. Taheri. Proteomic biomarkers of sleep apnea. *Sleep*, Volume 43, Issue 11, November 2020, zsaa086. DOI:10.1093/sleep/zsaa086
- **A. N. Olesen**, P. Jennum, E. Mignot, H. B. D. Sorensen. Deep transfer learning for improving single-EEG arousal detection. 42nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Montreal, QC, Canada, 2020, pp. 99-103, DOI:10.1109/EMBC44109.2020.9176723
- A. Brink-Kjær, **A. N. Olesen**, P. E. Peppard, K. L. Stone, P. Jennum, E. Mignot, H. B. D. Sorensen. Automatic Detection of Cortical Arousals in Sleep and their Contribution to Daytime Sleepiness. Clinical Neurophysiology, 2020;131:1187-1203. DOI:10.1016/j.clinph.2020.02.027
- L. Carvelli, **A. N. Olesen**, A. Brink-Kjaer, E. B. Leary, P. E. Peppard, E. Mignot, H. B. D. Sorensen, P. Jennum. Design of a deep learning model for automatic scoring of periodic and non-periodic leg movements during sleep validated against multiple human experts. Sleep Medicine, 2020;69:109-119. DOI:10.1016/j.sleep.2019.12.032

2019

· **A. N. Olesen**, S. Chambon, V. Thorey, P. Jennum, E. Mignot, H. B. D. Sorensen. Towards a flexible deep learning method for automatic detection of clinically relevant multi-modal events in the polysomnogram. 2019 IEEE 41th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), pp. 556-561, Berlin, Germany, 2019. DOI:10.1109/EMBC.2019.8856570

2018

· J. B. Stephansen*, **A. N. Olesen***, M. Olsen, et al. Neural network analysis of sleep stages enables efficient diagnosis of narcolepsy. Nature Communications, 9:5229, 2018. DOI:10.1038/s41467-018-07229-3

· **A. N. Olesen**, P. Jennum, P. E. Peppard, H. B. D. Sorensen, E. Mignot. Deep Residual Networks for Automatic Sleep Stage Classification of Raw Polysomnographic Waveforms. 2018 IEEE 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), pp. 1-4, Honolulu, HI, USA, 2018. DOI:10.1109/EMBC.2018.8513080

· A. B. Klok*, J. Edin*, M. Cesari, **A. N. Olesen**, P. Jennum, H. B. D. Sorensen. A New Fully Automated Random-Forest Algorithm for Sleep Staging. 2018 IEEE 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), pp. 4920–4923, Honolulu, HI, 2018. DOI:10.1109/EMBC.2018.8513413

· M. Cesari, J. A. E. Christensen, L. Kempfner, **A. N. Olesen**, G. Mayer, K. Kesper, W. H. Oertel, F. Sixel-Döring, C. Trenkwalder, H. B. D. Sorensen, and P. Jennum. Comparison of computerized methods for REM sleep without atonia detection. Sleep, Volume 41, Issue 10, zsy133, 2018. DOI:10.1093/sleep/zsy133

· **A. N. Olesen***, M. Cesari*, J. A. E. Christensen, H. B. D. Sorensen, E. Mignot, and P. Jennum. A comparative study of methods for automatic detection of rapid eye movement abnormal muscular activity in narcolepsy. Sleep Medicine, vol. 44, pp. 97–105, 2018. DOI:10.1016/j.sleep.2017.11.1141

2016

· **A. N. Olesen**, J. A. E. Christensen, H. B. D. Sorensen, and P. J. Jennum. A Noise-Assisted Data Analysis Method for Automatic EOG-Based Sleep Stage Classification Using Ensemble Learning. 2016 IEEE 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), pp. 3769–3772, Orlando, FL, USA, 2016. DOI:10.1109/EMBC.2016.7591548

TECHNICAL SKILLS

Programming languages	Python, MATLAB, R, C++.
Machine learning libraries	PyTorch, Keras, TensorFlow, NumPy, Pandas, scikit-learn.
Developer tools	UNIX shell/bash, git, HPC systems, LaTeX.
Operating systems	Linux (Ubuntu, CentOS), Mac OS X, Microsoft Windows
Languages	danish (native), english (fluent), french (conversational), german (basic).