ALEXANDER NEERGAARD OLESEN

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EMPLOYMENT HISTORY

Somnoscient — May 2020–present
Research Scientist, self-employed — Copenhagen, DK

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

Trackman — 2016
Development Engineer — Vedbæk, DK

Cathvision — 2016
Development Engineer (internship) — Copenhagen, DK

Oticon — 2015–2016
Student assistant — Smørum, DK

Novo Nordisk — 2013–2014
Student assistant — Smørum, DK

Polyteknisk Forening — 2012–2013
Student tutor — Kgs. Lyngby, DK

Technical University of Denmark — 2012–2015
Teaching assistant, various courses in the 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

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 (basic), german (basic).

FUNDING AND AWARDS

Lundbeck Foundation: LF Postdoc Grant (DKK 2.4 mio)	2021
Best poster award: 37th National Meeting on Biomedical Engineering, DMTS19 (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

SCIENTIFIC SERVICE

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

* shared first authorship

2021

- **A. N. Olesen**, P. J. Jennum, E. Mignot, H. B. D. Sorensen. MSED: a multi-modal sleep event detection model for clinical sleep analysis. arXiv:2101.02530 [cs.CV].
- **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

INVITED TALKS

Neuroscience Centre, Rigshospitalet — March 11, 2021
Title: *Deep Learning Methods for Clinical Sleep Analysis* — Copenhagen, DK
Invited talk, meeting of the Faculty Group