

ALEXANDER NEERGAARD OLESEN

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EDUCATION AND RESEARCH EXPERIENCE

Technical University of Denmark PhD, Biomedical Engineering. Thesis title: Deep Learning Methods for Clinical Sleep Analysis	2016–2020 Kgs. Lyngby, DK
Stanford University Visiting student researcher hosted by Professor Emmanuel Mignot, MD, PhD	2017–2019 Palo Alto, CA, USA
Technical University of Denmark MScEng, Biomedical Engineering	2013–2016 Kgs. Lyngby, DK
Stanford University Visiting student researcher hosted by Professor Emmanuel Mignot, MD, PhD	2014 Palo Alto, CA, USA
Technical University of Denmark BScEng, Biomedical Engineering	2010–2013 Kgs. Lyngby, DK

EMPLOYMENT HISTORY

Somnoscience Research Engineer, Owner	May 2020–present Copenhagen, DK
Technical University of Denmark PhD student in the Department of Health Technology	2016–2020 Kgs. Lyngby, DK
Trackman Development Engineer	2016 Vedbæk, DK
Cathvision Development Engineer (internship)	2016 Copenhagen, DK
Oticon Student assistant	2015–2016 Smørum, DK
Novo Nordisk Student assistant	2013–2014 Smørum, DK
Polyteknisk Forening Student tutor	2012–2013 Kgs. Lyngby, DK
Technical University of Denmark Teaching assistant, various courses in the Department of Electrical Engineering	2012–2015 Kgs. Lyngby, DK

TECHNICAL SKILLS

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

FUNDING AND AWARDS

Best poster award: 37th National Meeting on Biomedical Engineering, DMTS19 (DKK 1.000)	2019
Travel grant: Otto Mønstedts Fond (DKK 7.500)	2019
Travel grant: Otto Mønstedts Fond (DKK 7.500)	2018
Various travel grants for PhD research stay at Stanford University (total DKK 362.500)	2017
Travel grant: Otto Mønstedts 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 Biomedical 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]*.

2020

- **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*, zsaa161, 2020. DOI:10.1093/sleep/zsaa161 (*in press*)
- **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. 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*, zsaa086, 2020. DOI:10.1093/sleep/zsaa086 (*in press*)
- 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