Curriculum Vitae – Anders Stevnhoved Olsen

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Current appointment

2021 – 2024 PhD student, Section for Cognitive Systems, DTU Compute, Technical University of Denmark

Previous appointments (research related)

2021 – 2021 Research assistant, Neurobiology Research Unit, Copenhagen University Hospital
2019 – 2021 Pregraduate research assistant, Neurobiology Research Unit, Copenhagen University Hospital

Scientific focus area

I research unsupervised machine learning models for uncovering functional brain networks in humans. During my PhD studies I focus on methods for evaluating synchronization in the healthy human brain at rest and while performing tasks. Unsupervised methods include directional statistics, tensor factorization, mixture modeling, archetypal analysis, and matrix-variate manifold clustering. With my work I aim to elucidate functional network responsibilities in consciousness and perturbations thereof, including psychedelic drugs and sleep.

The PhD project is titled "*Uncovering Brain Dynamics using Directional Statistics and Functional Neuroimaging Data*" and is supervised by Prof. Morten Mørup (DTU Compute) and senior researcher Patrick M Fisher (Neurobiology Research Unit).

Education

2015 – 2020 BSc & MSc in Biomedical Engineering, Technical University of Denmark
2019 – 2019 Exchange student at École Polytechnique Fédérale de Lausanne, Switzerland

Supervision, teaching, and funding

Currently supervising thesis projects for one BSc and one Msc student. Previously supervised 3 BSc student projects.
Currently TA in an introductory machine learning course and term project supervisor.
Received the DTU Compute PhD grant for the project "*Uncovering Brain Dynamics using Directional Statistics and Functional Neuroimaging Data*"

List of Publications (†first author)

1. **AS Olsen**†, A Lykkebo-Valløe, B Ozenne, MK Madsen, DS Stenbæk, S Armand, M Mørup, GM Knudsen, PM Fisher (2021). *Psilocybin modulation of dynamic functional connectivity is associated with plasma psilocin and subjective effects*. MedRXiv (minor revisions currently under review at NeuroImage).
2. KHR Jensen†, DE McCulloch†, **AS Olsen**†, SEP Bruzzone, SV Larsen, PM Fisher, VG Frøkjær (2022). *Effects of an Oral Contraceptive on Dynamic Brain States and Network Modularity in a Serial Single-Subject Study*. Frontiers in Neuroscience.
3. **AS Olsen**†, RMT Høegh†, JL Hinrich, KH Madsen, M Mørup (2022). *Combining electro-and magnetoencephalography data using directional archetypal analysis*. Frontiers in Neuroscience.

List of manuscripts in preparation

1. DE McCulloch†, **AS Olsen**†, MK Madsen, S Armand, DS Stenbæk, GM Knudsen, PM Fisher (in prep). *Navigating Chaos in Psychedelic Neuroimaging: A Rigorous Empirical Evaluation of the Entropic Brain Hypothesis*.
2. SMU Larsen†, SC Holst†, **AS Olsen**, DB Zilstoff, S Pleinert, V Kiviniemi, PJ Jennum, M Nedergaard, GM Knudsen (in prep). *NREM sleep upregulates human brain pulsation detected by Ultrafast Magnetic Resonance Encephalography*.
3. **AS Olsen**†, A Brammer, PM Fisher, M Mørup (in prep). *The healthy human brain is functionally segregated into synchronized and antizynchonized networks*.
4. **AS Olsen**†, M Mørup (in prep). *Symmetric canonical polyadic decomposition for framewise orthogonal coherence data reveals function brain coherence networks*.
5. **AS Olsen**†, E Ortvald, M Mørup (in prep). *Uncovering task-related dynamic brain coherence networks using angular central Gaussian hidden Markov models*.