

Academic Curriculum Vitae

Dirk Gütlin

Studies

University of Osnabrück

OCT 2019 - JUN 2022

Cognitive Science (Master of Science) - with honors

Thesis title: 'Brain Reading using Transformers'

Supervisors: Prof. Peter König, Prof. Tim Kietzmann

University of Salzburg

OCT 2016 - JUN 2019

Psychology (Bachelor of Science)

Thesis title: 'The Salzburg Visual Field Trainer: A Virtual Reality Application for Visual Restoration Therapy'

Supervisors: Stefan Hawelka, Michael Leitner

University of Koblenz-Landau

OCT 2015 - JUN 2016

Mathematics, Psychology (Bachelor of Science)

Research Experience

Freie Universität Berlin, Center for Cognitive Neuroscience Berlin

MAR 2023 - CURRENT

Research Associate/PreDoc, Prediction & Memory Group:

Biologically plausible computational models of neural learning and inference.

Using Artificial Neural Networks and Neuroimaging to investigate principles of neural learning in computers and humans.

Supervisors: Prof. Ryszard Auksztulewicz, Prof. Felix Blankenburg.

University of Osnabrück, Institute of Cognitive Science

MAR 2022 - Sept 2022

Research Assistant, Machine Learning Group:

Neural Decoding using Transformer Neural Networks; Streamlining Dataset accessibility for Machine Learning use.

Supervisors: Prof. Tim Kietzmann.

University of Osnabrück, Institute of Cognitive Science

MAR 2020 - MAR 2022

Research Assistant, Neurobiopsychology:

Feature classification for eye tracking data; Concussion prediction based on eye

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for more information and work examples, visit my blog:

<https://digyt.github.io>



Interests

Cognitive Neuroscience
Machine & Deep Learning
Time Series & Statistics
Complex Systems
Data Analysis

Programming Languages

Python
MATLAB
R
C#
JS/HTML/CSS

tracking; Representational Similarity Analysis with EEG data; Investigation of automated noise removal algorithms for EEG data.

Supervisors: Artur Czeszumski, Prof. Peter König.

University of Osnabrück, Institute of Cognitive Science

MAR 2020 - SEPT 2021

Research Assistant, Cognitive Modelling Group:

Interactive online experiments for investigating language pragmatics;

Teaching Assistant: 'Experimental Psychology Lab' – teaching experimental design, implementation, and statistical evaluation.

Supervisor: Prof. Michael Franke.

Google Summer of Code Project with Stipend for Python Software Foundation/ MNE-Python

MAY 2019 - AUG 2019

Google Summer of Code Participation, submitting the project:

'MNE-Python: Improve Time Frequency Analysis in Source Space' for M/EEG data analysis software MNE-Python.

Supervisors: Alexandre Gramfort, Joan Massich.

Centre for Cognitive Neuroscience Salzburg

SEPT 2018 - AUG 2019

Research Assistant, Neurocognition Lab:

Development of research applications, Eye-Tracking measurements.

Supervisors: Michael Leitner, Prof. Florian Hutzler.

University of Salzburg, Department of Psychology

MAR 2018 - AUG 2018

Tutor: 'MATLAB - Advanced Applications':

Neurophysiological data processing with FieldTrip, experimental Designs with Psychtoolbox.

Supervisor: Gianpaolo Demarchi.

Christian-Doppler-Klinik Salzburg

DEC 2017 - SEPT 2018

Intern, Department of Neurology:

Epilepsy monitoring, EEG measurement, automated epileptic spike detection.

Supervisors: Yvonne Höller, Aljoscha Thomschewski.

University of Salzburg, Department of Psychology

NOV 2017 - JUL 2018

Intern, Salzburg Brain Dynamics Lab:

MEG measurement support, MEG Data Analysis (Time-Frequency Analysis, MVPA, Speech Reconstruction using ANN).

Supervisor: Prof. Nathan Weisz.

Publications

Gütlin, D. C. & Auksztulewicz, R. (2024). Neuromimetic Predictive Coding: Building

Biologically Valid Models with Recurrent Neural Networks [Poster presentation]. 11th MindBrainBody Symposium 2024, Berlin, Germany. www.mindbrainbody.de

Gütlin, D. C.*, McDermott H. H.*, Grundei M., & Auksztulewicz, R. (2023). Model-based approaches to investigating mismatch responses in schizophrenia. Manuscript submitted for publication.

Maleki, N., Mildt, M., Pätzold, F., Schmidt, V., Tiemann, L., Walter, J. L., Zerbe, J. A., Gütlin, D. C., Haas, A., Lang, A., Nezami F. N., König, P., & Czeszumski, A. (2021). A framework for low-level joint action in VR [Paper presentation]. Neuroergonomics Conference, Munich, Germany. www.neuroergonomicsconference.um.ifi.lmu.de

Leitner, M. C., Gütlin, D. C., & Hawelka, S. (2021). Salzburg Visual Field Trainer (SVFT): A virtual reality device for (the evaluation of) neuropsychological rehabilitation. PLOS ONE. DOI: [10.1371/journal.pone.0249762](https://doi.org/10.1371/journal.pone.0249762)

Published Software

CatEyes – Unified Categorization for Eye Tracking

Python Toolbox for simple and uniform application and visualization of popular feature classification algorithms for eye tracking.

Repository: <https://github.com/DiGyt/cateyes>

ASRpy

Python implementation of the Artifact Subspace Reconstruction Cleaning algorithm for M/EEG cleaning.

Repository: <https://github.com/DiGyt/asrpy>

pymatreader

Python Toolbox for uniform translation of MATLAB (.mat) files into Python. With Thomas Hartmann.

Repository: <https://gitlab.com/obob/pymatreader>

Awards and Scholarships

AI for Climate Hackathon – Category Winner: Cryosphere

JAN 2021

Winning Project for “AI for Climate” Hackathon 2021 hosted by Potsdam Climate Institute and University of Osnabrück. Predicting global snow sheet development based on climate data.

Google Summer of Code Stipend

MAY 2019 - AUG 2019

Stipend issued by Google LLC for acceptance and successful completion of open source software projects.