

Robin Gutzen

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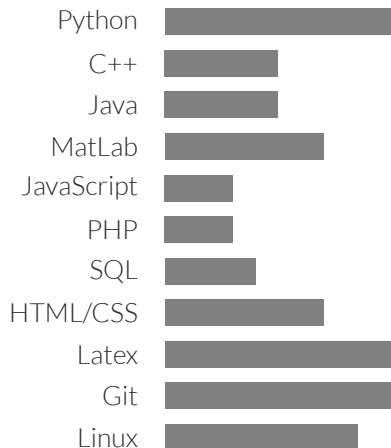
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RESEARCH INTERESTS

Neural Network Dynamics
Data Visualization
Simulation & Validation
Statistical Testing
Signal Processing
Data Management

SKILLS

PROGRAMMING/PLATFORMS



LANGUAGE



NON-RESEARCH INTERESTS

Woodworking & Pottery
Cooking & Fermentation
Writing & Reading

PROFESSIONAL EXPERIENCE

RESEARCH CENTER JÜLICH

PHD. AT INSTITUTE FOR COMPUTATIONAL AND SYSTEMS NEUROSCIENCE

Jul 2018 - today

Dissertation on "Analysis and quantitative comparison of neural network dynamics on a neuron-wise and population level"

RWTH INSTITUTE 1A

RESEARCH ASSISTANT

Mar 2014 - Aug 2014

Literature research about novel materials for neuromorphic computing

EDUCATION

RWTH AACHEN UNIVERSITY

MASTER PHYSICS

Oct 2015 - Mar 2018

Major in Nanoelectronics, Minor in Biophysics

Thesis on validation of neural network simulations (@ Research Center Jülich)

Final grade 1.2

UNIVERSITÉ MONTPELLIER II

ERASMUS EXCHANGE

Sep 2013 - Jun 2014 | Montpellier, France

RWTH AACHEN UNIVERSITY

BACHELOR PHYSICS

Oct 2011 - Sep 2015

Thesis on detection and analysis of dissolved fluorescent molecules

EXTRACURRICULAR ACTIVITY

ORGANISATOR AND MANAGER OF A BRAINART EXHIBITION

2022 | OHBM Conference, Glasgow

REPRESENTATIVE IN THE EBRAINS DATA GOVERNANCE WORKING GROUP

2020 - today

SERVING ON THE SCIENTIFIC AND TECHNICAL COUNCIL

2020 - 2022

SCIENTIFIC SUPERVISION OF STUDENTS

2017, 2022 - today

CONTENT CURATOR

2019 - 2021

| Establishing IT infrastructure for reproducible research practices

SERVING ON ADMISSION COMMITTEES

2018, 2019

ORGANISATOR AND CHAIR FOR TEDxRWTHAACHEN CONFERENCE

2016, 2017

ACADEMIC WORK

PUBLICATIONS

- 2022 **R. Gutzen**, S. Grün, M. Denker "Evaluating the statistical similarity of neural network activity and connectivity via eigenvector angles" *BioSystems*, *in review*
- 2022 C. Capone, C. De Luca, G. De Bonis, **R. Gutzen**, I. Bernava, E. Pastorelli, F. Simula, C. Lupo, L. Tonielli, A.L. Allegra Mascaro, F. Resta, F. Pavone, M. Denker, P.S. Paolucci "Simulations Approaching Data: Cortical Slow Waves in Inferred Models of the Whole Hemisphere of Mouse" *arxiv*, doi:10.48550/arXiv.2104.07445
- 2018 **R. Gutzen**, M. von Papen, G. Trensche, P. Quaglio, S. Grün, M. Denker "Reproducible neural network simulations: statistical methods for model validation on the level of network activity data" *Frontiers in Neuroinformatics* 12:90, doi:10.3389/fninf.2018.00090
- 2018 G. Trensche, **R. Gutzen**, I. Blundell, M. Denker, A. Morrison "Rigorous neural network simulations: a model substantiation methodology for increasing the correctness of simulation results in the absence of experimental validation data" *Frontiers in Neuroinformatics* 12:81, doi:10.3389/fninf.2018.00081

TALKS (SELECTION)

- 2022 **BASSES workshop, Rome**
"Blocks instead of puzzles pieces - analyzing cortical wave activity across scales in an adaptable framework"
- 2022 **Helmholtz PoF Topic 3 Talk series, Jülich**
"Rigorous comparison and validation of network activity data"
- 2022 **BrainMatters webinar, online**
"An adaptable analysis pipeline makes cortical wave phenomena comparable across heterogeneous datasets"
- 2021 **Neural Coding, online**
"Eigenangles: evaluating the statistical similarity of neural network simulations via eigenvector angles"
- 2020 **Human Brain Project Summit, Athens**
"Developing pipelines for multi- scale/species/method analysis"
- 2019 **INCF Neuroinformatics Conference, Warsaw**
"Evaluating neural network models within a formal validation framework"
- 2019 **Human Brain Project SP4 meeting, Paris**
"Comparing activity dynamics of models and living brains"

POSTER PRESENTATIONS (SELECTION)

- 2022 **Bernstein Conference, Berlin**
R. Gutzen, S. Grün, M. Denker "Using eigenvector angles to statistically evaluate the influences of connectivity structure on correlation structure"
- 2022 **OHBM Conference, Glasgow**
R. Gutzen, G. De Bonis, E. Pastorelli, C. Capone, C. De Luca, G. Mattheisen, A.L. Allegra Mascaro, F. Resta, F.S. Pavone, M.V. Sanchez-Vives, M. Mattia, S. Grün, A. Davison, P.S. Paolucci, M. Denker "Cobrawap: a modular cortical wave analysis pipeline for heterogeneous data"
- 2021 **Sfn Conference, online**
R. Gutzen, G. De Bonis, E. Pastorelli, C. Capone, C. De Luca, G. Mattheisen, A.L. Allegra Mascaro, F. Resta, F.S. Pavone, M.V. Sanchez-Vives, M. Mattia, S. Grün, A. Davison, P.S. Paolucci, M. Denker "An adaptable analysis pipeline makes cortical wave phenomena comparable across heterogeneous datasets"

WORKSHOPS & SCHOOLS (SELECTION)

- 2021 Neuromatch Academy Deep Learning Summer School, *online*
- 2020 Young Entrepreneurs in Science: From PhD to Innovator, *online*
- 2019 3 week lab visit @ APE lab, INFN, *Rome*
- 2017 Data Science Summer School, *Paris*

SERVICE

- Contributing to open source software: NetworkUnit, Cobrawap, Elephant, SciUnit, Neo
 - Peer review for *Frontiers of Neuroinformatics* (2018, 2019), and *ReScience* (2019, 2021)
- 2020, 21 Tutoring the Elephant User Workshop, & EBRAINS Infrastructure Training on Model Validation, *online*
- 2021 Presenting a workshop at the Human Brain Project Student Conference, *online*
- 2018, 19, 21 Tutoring the G-Node Advance Neural Data Analysis Course, *Barmen*
- 2018-22 Tutoring the RWTH lecture 'Introduction to Computational Neuroscience', & Seminar, *Aachen*

AWARDS

- 2020 2nd place in the John Hunter Excellence in Plotting Contest (750\$)
- 2019 INCF Neuroinformatics poster prize (sponsored by De Gruyter, 1500€)