Michael P. Notter

Machine Learning Engineer & Neuroscientist

Contact

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Lausanne, Switzerland
Date of birth: 24. April 1987

Languages

German (native)
English (fluent)
French (fluent)

Method Skills

Machine and deep learning
Signal processing, Time Series Analysis & Computer vision
Neuroimaging (MRI & EEG)
Biomedical & Optical Solutions
Human-Computer Interfaces

Computer Skills

Python, Shell, R, MATLAB
SciPy ecosystem, Numpy, Pandas, OpenCV, Scikit-Learn, TensorFlow, PyTorch, MNE
Git(hub/-lab), CircleCI, Travis
Docker, Singularity, BIDS

Interests

Programming
Collaborative R & D projects
Knowledge Dissemination
Open Source
Skill challenges (Kaggle)
Designing visual art

Find me also on

miykael.github.io
miykael
Linkedin
miyka_el
Publications

About me

As a Machine Learning Engineer and Neuroscientist, I'm captivated by hidden patterns at the intersection of machine learning, neuroimaging, and computer vision. I develop sophisticated models & processing pipelines to bridge the gap between cutting-edge applied research & real-world applications, innovating wearable technology for AR/VR & vital signs monitoring. Known for leading technical projects with autonomy, precision, and adaptability, I tackle complex challenges in high-stakes environments, minimize computational and energy costs while maximizing the functional impact of AI innovations. Holding patents in machine learning and optical solutions that enhance human-computer interfaces, I thrive in collaborative projects across academia and industry and am committed to pushing the boundaries of what is possible.

Professional Experience

07/2023 to present — **Senior Machine Learning Staff Engineer** — *ams OSRAM, Martigny*
As a technical lead in AI algorithm development for next-gen wearable devices, I optimize signal processing pipelines and minimize computational costs for applications in human-computer interfaces, eye-tracking, AR/VR, vital signs, and spatial computing. My role, showcasing rapid skill acquisition, involves extensive collaboration with cross-functional engineering teams to translate complex research findings into robust, scalable AI solutions.

03/2022 to 06/2023 — **Machine Learning Staff Engineer** — *ams OSRAM, Martigny*
Spearheaded projects in sensor fusion, signal processing and optical solutions, using machine learning to enhance the performance of spatial and biomedical sensing devices. Developed real-time processing capabilities for vital signs monitoring and pioneered innovative technologies, such as self-mixing interferometry (SMI), aiming for high-accuracy, low-power solutions at remarkable speeds.

04/2019 to 03/2022 — **Data Scientist** — *EPFL, Lausanne*
As **Content Director** for That's AI, I led the creation of an informative multilingual AI education platform, coordinating with content creators, designers, marketing, and front-end developers. As a **Course Developer and Instructor** for the "Applied Data Science: Machine Learning" program, I guided 100s of participants through hands-on machine learning projects from various industries & optimized numerous company internal processes. I created and executed AI workshops, hackathons, conference talks, and collaborated with academic and private sector partners to identify opportunities for data-driven solutions across multiple industries.

04/2014 to 04/2016 — **Research Scientist** — *CHUV, Lausanne*
Developed, executed, and analyzed over 8 neuroimaging studies using MRI, EEG, and eye-tracking. Developed several software tools to enhance the analysis and interpretation of complex MRI and EEG data, showcasing my expertise in quantitative research methods and skill in handling complex, high-dimensionality data and real-time signals.

02/2013 to 03/2014 — **Research Assistant** — *INAPIC, Zürich*
Supported a wide range of projects by developing software tools for the analysis of behavioral, physiological, & MRI data. Extensive support to research collaborators for data analysis, enhancing the accuracy & efficiency of research outcomes.

01/2011 to 05/2011 — **Internship at MIT** — *MIT, Cambridge, MA, USA*
Design & execution of neuroimaging research, development & optimization of signal processing software. Extended internship due to exceptional performance, emphasizing my ability to work autonomously & effectively in a research setting.

Education

04/2016 to 07/2021 — **PhD in Neuroscience** — *University of Lausanne*
Thesis: Innovation and standardization of processing pipelines for functional MRI data analysis; Focused on optimizing neuroimaging data analysis pipelines, my research enhanced methods for studying human cognitive processes using advanced machine learning techniques. This involved developing 8 neuroimaging toolboxes that facilitate the processing and analysis of MRI, EEG, & eye-tracking data, & executing 7 research studies, incorporating novel measuring techniques.

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02/2012 to 07/2014 **MSc in Neuroscience; minor in Neuroinformatics** *University of Zurich*
Explored computational models in neuroscience, with a thesis comparing neurological patterns in ASD (autism spectrum disorder) and ADHD via structural MRI data analysis. Lectures covered neuroinformatics, neurobiology, cognitive psychology, neuroimaging methods, AI, signal processing & computational vision.

09/2007 to 02/2012 **BSc in Psychology; minor in Neuroinformatics** *University of Zurich*
Studied the intersection of psychology and technology, focusing on how technological tools can enhance our understanding of cognitive and emotional processes, with lectures in neuroinformatics, statistics, neuroscience, informatics, biology, mathematics & AI.

Selected Publications

2023 **Notter, M.P.**, Herholz, P., Da Costa, S., Gulban, O.F., Isik, A.I., Gaglianese, A., & Murray, M.M. (2023). fMRIflows: a consortium of fully automatic univariate and multivariate fMRI processing pipelines. Brain Topography, 36(2), 172-191. https://doi.org/10.1007/s10548-022-00935-8

2020 Botvinik-Nezer, R., Holzmeister, F., Camerer, C. F., Dreber, A., Huber, J., Johannesson, M., ..., **Notter, M.P.**, ..., & Rieck, J. R. (2020). Variability in the analysis of a single neuroimaging dataset by many teams. *Nature, 582(7810), 84-88*. https://doi.org/10.1038/s41586-020-2314-9

2019 **Notter, M.P.**, Gale, D., Herholz, P., Markello, R. D., Notter-Bielser, M.-L., & Whitaker, K. (2019). AtlasReader: A Python package to generate coordinate tables, region labels, and informative figures from statistical MRI images. *Journal of Open-Source Software, 4(34)*, 1257. https://doi.org/10.21105/joss.01257

Notter, M.P., Hanke, M., Murray, M.M., & Geiser, E. (2019). Encoding of Auditory Temporal Gestalt in the Human Brain. *Cerebral Cortex, 1*, 29, 2, 475–484. https://doi.org/10.1093/cercor/bhx328

2017 Crottaz-Herbette, S., Fornari, E., **Notter, M.P.**, Bindschaedler, C., Manzoni, L., & Clarke, S. (2017). Reshaping the brain after stroke: the effect of prismatic adaptation in patients with right brain damage. *Neuropsychologia*, 104, 54-63. https://doi.org/10.1016/j.neuropsychologia.2017.08.005

2016 Gorgolewski, K.J., Esteban, O., Ziegler, E., **Notter, M.P.**, ... Ghosh, S. (2016). Nipype: a flexible, lightweight and extensible neuroimaging data processing framework in Python. *Zenodo*. https://doi.org/10.5281/zenodo.596855

2012 Geiser, E., **Notter, M**, & Gabrieli, J.D.E. (2012). A corticostriatal neural system enhances auditory perception through temporal context processing. *The Journal of Neuroscience, 32(18)*, 6177-6182. https://doi.org/10.1523/JNEUROSCI.5153-11.2012

Professional Activities & Teaching

Supervisor for the EXTS course "Applied Data Science: Machine Learning" at **EPFL**, Switzerland, from 2019 to 2022. **Teaching**: Empowered over 1000 learners from various backgrounds, covering the full data science pipeline with an equal focus on all stages including data preparation, exploration, modeling, post-analysis investigation, results visualization and communication. **Mentoring**: Guided 100s of proof-of-concept projects from industry and research, across diverse sectors including finance, medicine, consumer service, energy, insurance, marketing, meteorology, robotics, transportation, and manufacturing, tailoring guidance to meet the unique needs of each domain.

Workshops and Talks

2020 Conducted a comprehensive **2-day** MRI analysis workshop at the University of Cambridge, UK (2nd invitation), held a **3.5-hour** interactive hands-on Machine Learning talk to 400 participants at the SwissTech Convention Center, EPFL, Switzerland, and gave a **1-hour** talk at the University of Alabama at Birmingham, USA on neuroimaging toolboxes.

2019 Delivered a **3-hour** talk to 300 UN associates from around the world, at ITU Geneva, Switzerland about what AI is, how it is applied in academia and the private sector, and how it will change our private, professional and social lives.

2018 Led multiple workshops and talks focusing on neuroimaging, including a **2-day** workshop at University of Cambridge, UK, a **3-day** workshop at Max Planck Institute Frankfurt, Germany, a **3-day** workshop at University of Marburg, Germany, and a **5-hour** webinar at Sardar Patel Institute of Technology in Mumbai, India.

2017 Presented a **2-hour** tutorial at University of Zurich, Switzerland on MRI data analysis.

Autodidactic Teaching Tools

2017 Updated the user's guide to a more interactive Nipype Tutorial using Docker, Jupyter Notebooks, and CircleCI. This has attracted over 2,500 visitors per month from +150 countries.

2011 Launched the Nipype Beginner's Guide, the first comprehensive guide to Nipype, drawing more than 1,500 monthly visitors from +148 countries.

References

Hugues Salamin ML research team lead in the innovation office **at ams OSRAM** (hugues.salamin@ams-osram.com)

Marcel Salathé Professor **at EPFL** and director of the Lab of Digital Epidemiology, former academic director of the EPFL Extension School (marcel.salathe@epfl.ch)

Evelin Geiser Science journalist at Neue Zürcher Zeitung (NZZ); former senior R&D specialist at Nestlé; principal investigator **at CHUV** and research affiliate **at MIT, Cambridge (USA)** (eveline.geiser@unil.ch)