

# Michael P. Notter



## 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 interaction (HCI), I thrive in collaborative projects across academia & industry and am committed to pushing the boundaries of what is possible.

## Machine Learning Engineer & Neuroscientist

### Contact

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Tel.: +41 (0)797864717

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 Interaction

### 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

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[Publications](#)

## Professional Experience

07/2023 to present	<b>Senior Machine Learning Staff Engineer</b> As a technical lead in AI algorithm development for next-gen wearable devices, I optimize signal processing pipelines, exploit nuanced information in intricate latent spaces using specialized loss functions, and minimize computational costs for applications in HCI, eye-tracking, AR/VR, vital signs, and spatial computing. My role involves extensive collaboration with cross-functional engineering teams to translate complex research findings into robust, scalable AI solutions.	<b>ams OSRAM, Martigny</b>
03/2022 to 06/2023	<b>Machine Learning Staff Engineer</b> 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.	<b>ams OSRAM, Martigny</b>
04/2019 to 03/2022	<b>Data Scientist</b> As <b>Content Director</b> for <a href="#">That's AI</a> , I led the creation of an informative multilingual AI education platform, coordinating with content creators, designers, marketing, and front-end developers. As a <b>Course Developer and Instructor</b> 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.	<b>EPFL, Lausanne</b>
04/2014 to 04/2016	<b>Research Scientist</b> 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.	<b>CHUV, Lausanne</b>
02/2013 to 03/2014	<b>Research Assistant</b> 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.	<b>INAPIC, Zürich</b>
01/2011 to 05/2011	<b>Internship at MIT</b> 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.	<b>MIT, Cambridge, MA, USA</b>

## Education

04/2016 to 07/2021	<b>PhD in Neuroscience</b> <b>Thesis:</b> 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.	<b>University of Lausanne</b>
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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.**, Bindschäedler, 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](mailto: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](mailto: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](mailto:eveline.geiser@unil.ch))