# Michael P. Notter

Research Scientist & Neuroscientist


## Contact

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Lausanne, Switzerland


## Languages

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

## Method Skills

Machine & Deep Learning
Signal Processing
Neuroimaging (MRI & EEG)
Statistical Analysis
Data Presentation

## Computer Skills

Python, Shell, R, MATLAB
Jupyter, TensorFlow, Scikit
Git, Github, CircleCI, Travis
Docker, Singularity

## Interests

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

## Find me also on

miykael.github.io
miykael
Linkedin
miyka_el
Publications

## About me

I am a research scientist working at the intersection of machine learning, signal processing, neuroscience, and knowledge transfer. I have strong scientific, analytical, teaching, and interpersonal skills, and experience working on challenging projects, both as a team member and project leader, collaborating with stakeholders from academia and industry. My background is in programming, numerical analysis, and systems modeling, with particular interest in neuroscience and computer vision. I enjoy working in a stimulating and vibrant environment and have a knack for quality, efficiency, and transparency. My passion for my work stems from a general curiosity and deep desire to understand complex systems, and the wish to keep up with the potential of artificial intelligence.

## Professional Experience

04/2019 to present — **Data Scientist** — *EPFL, Lausanne*

**Content director** for That's AI, an informative online platform about Artificial Intelligence in three languages. ***Managing*** tasks involved coordination with marketing, front-end developers, business customers, and ***supervision*** of multiple content creators, web designers, language translators and illustrators.
**Course developer and instructor** for the "Applied Data Science: Machine Learning" program at the EPFL Extension School. Direct mentoring of 100s of proof of concepts projects from numerous industries, optimization of company internal processes, development of new teaching tools, creation and execution of multiple AI workshops, hackathons, and conference talks, plus collaborating 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*

Development, execution and analysis of +8 neuroimaging experiments using MRI, EEG and eye-tracking, plus general software development and teaching.

02/2013 to 11/2014 — **Research Assistant in Neuroscience & Neuroimaging** — *INAPIC, Zurich*

Development and maintenance of analysis software of behavioral, physiological & MRI data. Extensive support to research collaborators for data analysis.

01/2011 to 05/2011 — **Internship at Massachusetts Institute of Technology** — *MIT, Cambridge, USA*

Design and execution of experiments, development of neuroimaging software, technical support & teaching. 1-month extension due to very satisfactory work.

## Education

04/2016 to 07/2021 — **PhD in Neuroscience** — *University of Lausanne*

**Thesis**: Innovation and standardization of processing pipelines for functional MRI data analysis
**Work**: Development of 8 neuroimaging toolboxes to facilitate the processing and analysis of MRI, EEG and eye-tracking data, with a focus on human cognitive mechanisms, such as multisensory integration and rhythm perception. Planning and execution of 7 research studies, including the acquisition of various datasets, using novel measuring techniques. Analysis methods included classical statistical analysis, as well as machine learning approaches.

02/2012 to 07/2014 — **MSc in Neuroscience with minor in Neuroinformatics** — *University of Zurich*

**Thesis**: Differences and similarities between brains of children with attention deficit hyperactivity disorder and children with autism spectrum disorder - An analysis of 700 anatomical MRI scans.
**Lectures** in neuroinformatics, neurobiology, cognitive psychology, neuroimaging methods, neural networks, models of computation & computational vision.

09/2007 to 02/2012 — **BSc in Psychology with minor in Neuroinformatics** — *University of Zurich*

**Thesis**: On achieving satisfaction and subjective well-being. A review of intervention studies from positive psychology.
**Lectures** in psychology, neuroinformatics, statistics, neuroscience, informatics, biology, mathematics & AI.

# Michael P. Notter

## Publications

2021 **Notter, M.P.**, Herholz, P., Da Costa, S., Gulban, O.F., Isik, A.I., & Murray, M.M. (2021). fMRIflows: a consortium of fully automatic univariate and multivariate fMRI processing pipelines. *bioRxiv*. https://doi.org/10.1101/2021.03.23.436650

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

Zeugin, D., **Notter, M.P.**, Knebel, J.F., & Ionta, S. (2020). Temporo-parietal contribution to the mental representations of self/other face. *Brain and Cognition, 143, 105600*. https://doi.org/10.1016/j.bandc.2020.105600

Franceschiello, B., Di Sopra, L., Minier, A., Ionta, S., Zeugin, D., **Notter, M.P.**, ... & Murray, M.M. (2020). 3-Dimensional magnetic resonance imaging of the freely moving human eye. *Progress in Neurobiology, 194, 101885*. https://doi.org/10.1016/j.pneurobio.2020.101885

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

Yarkoni, T., Markiewicz, C. J., de la Vega, A., Gorgolewski, K. J., Salo, T., Halchenko, Y. O., ..., **Notter, M.P.**, & Blair, R. (2019). PyBIDS: Python tools for BIDS datasets. *Journal of open-source software, 4(40)*. https://dx.doi.org/10.21105%2Fjoss.01294

Franceschiello, B., Di Sopra, L., Ionta, S., Zeugin, D., **Notter, M.**, Bastiaansen, J. A., ... & Murray, M. (2019). Motion-Resolved 3D Magnetic Resonance Imaging Of The Human Eye. *Investigative Ophthalmology & Visual Science, 60(9), 6112-6112*. https://iovs.arvojournals.org/article.aspx?articleid=2746110

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

Zeugin, D., Arfa, N., **Notter, M.**, Murray, M.M., & Ionta, S. (2017). Implicit self-other discrimination affects the interplay between multisensory affordances of mental representations of faces. *Behavioural brain research*, 333, 282-285. https://doi.org/10.1016/j.bbr.2017.06.044

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

Gorgolewski, K. J., Ghosh, S., **Notter, M.**, Varoquaux, G., Waskom, M., & Ziegler, E. (2012). Nipype 2012: more packages, reusable workflows and reproducible science. In 18th Annual OHBM Meeting, http://edin.ac/1KNHL8k

## Awards & Fellowships

2020 Solo gold medal achievement (11th place out of 1047 teams) in Kaggle's TReNDS Neuroimaging challenge.
2018 Travel Fellowship to 3-day code sprint at MIT, focused on neuroimaging toolbox Nipype and dataflow engine Pydra.
2018 SSN Travel Fellowships for Student & Postdoc Members for 1'500.00 CHF.
2018 Chosen from 400 applicants to be one of 60 participants at the Neurohackademy 2018 in Seattle, a two-week hands-on summer school in neuroimaging and data science.

## Professional Activities & Teaching

2019 to 2022 **Supervision of learners for the EXTS course "Applied Data Science: Machine Learning"** *EPFL, Switzerland*
*https://www.extensionschool.ch* *daily*
**Teaching** of applied data science skills to more than 1000 learners with very heterogeneous background. Content covers full data science pipeline with equal focus on data preparation, exploration, modeling, post-analysis investigation, and results visualization and communication.
**Mentoring** of 100s of proof-of-concept projects from industry and research, covering computer vision, consumer service, energy, finance, geography, insurance, predictive maintenance, manufacturing, marketing, medicine, meteorology, music, NLP, recommender systems, robotics, sales, service optimization, system control and transportation.

2020 **MRI analysis in Python using Nipype, Nilearn and more (2nd version)** *University of Cambridge, UK*
*https://github.com/miykael/workshop_pybrain* *2-day workshop*
Due to great success and high demand, second and improved installment of the 2018 workshop at Cambridge.

EPFL Extension School Workshop - Machine Learning — *EPFL, Switzerland*
https://appliedmldays.org/events/amld-epfl-2020 — *3.5-hour talk*
Workshop given to 400 participants during the Applied Machine Learning Days at the SwissTech Convention Center, covering hands-on Machine and Deep Learning use cases about computer vision, NLP and anomaly detection.

Nipype and beyond! — *University of Alabama at Birmingham, USA*
https://github.com/miykael/journal_club_uab — *1-hour talk*
Presentation of Nipype and other neuroimaging toolboxes, during UAB's Neuroimaging Journal Club.

2019 ITU Talks: AI for Everyone — *ITU Geneva, Switzerland*
https://www.itu.int/en/ITU-D/bdt-director/Pages/Speeches.aspx?ItemID=212 — *3-hour talk*
Informative talk held in front of 300 UN associates from around the world, 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 Neuroimaging in Python (1st version) — *University of Cambridge, UK*
https://github.com/miykael/workshop_cambridge — *2-day workshop*
Workshop given to 30 participants at MRC Cognition & Brain Sciences Unit covering numerous neuroimaging topics, such as task-fMRI, diffusion imaging, functional connectivity analysis, machine learning, ConvNets and Nipype.

Open and Reproducible Neuroscience using Python (2nd version) — *Max Planck Institute Frankfurt, Germany*
https://openreproneuro2018frankfurt.github.io — *3-day workshop*
Workshop given to 50 participants, with a focused on open and reproducible neuroscience using Python. Content covered toolboxes like Nipype, Docker, Jupyter, BIDS, OpenNeuro, DataLad, Nibabel, Nilearn, PyMVPA and Keras.

Open and Reproducible Neuroscience using Python (1st version) — *University of Marburg, Germany*
https://openreproneuro2018marburg.github.io — *3-day workshop*
Workshop given to 45 participants and covered same content as workshop given at Max Planck Institute in May 2018.

Brainhack Computing: Hands on in Python — *Sardar Patel Institute of Technology in Mumbai, India*
https://github.com/miykael/workshop_mumbai — *5-hour webinar*
Webinar given to 60 participants during the Brainhack event organized by Prof. Preeti Jani, sponsored by IEEE, covering basics of neuroimaging data analysis using python toolboxes such as Nipype, Nilearn and Keras.

Neuroimaging with Nipype - Where are we and where are we going? — *University Magdeburg (OVGU), Germany*
https://brainhack.psychoinformatics.de — *1-hour talk*
Nipype Tutorial given to 40 participants during the Brainhack Global 2018.

2017 Nipype Tutorial: How to analyze your MRI data in an easy and flexible way — *University of Zurich, Switzerland*
https://dynage.github.io/brainhack-zh — *2-hour talk*
Nipype Tutorial given to 30 participants, with live recording during the Brainhack Global 2017.

Nipype Tutorial — *Global*
https://miykael.github.io/nipype_tutorial — *autodidactic teaching tool*
Improved user's guide using, Docker, Jupyter Notebooks and CircleCI for an interactive introduction to Nipype and related neuroimaging software. Homepage attracts more than 2'500 visitors per month from +150 countries.

2011 Nipype Beginner's Guide — *Global*
http://miykael.github.io/nipype-beginner-s-guide — *autodidactic teaching tool*
First comprehensive user's guide to Nipype, attracting more than 1'500 visitors per month from +148 countries.

## References

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|---|---|
| Chris Gorgolewski | Senior Software Engineer at Google, co-director of Stanford Center for Reproducible Neuroscience |
| Marcel Salathé | Professor at EPFL and director of the Lab of Digital Epidemiology, former academic director of the EPFL Extension School. |
| Arnaud Miribel | Data scientist at Streamlit, co-founder of byrd valley and former coworker. |
| Mara Pasquali | Senior Marketing and Communications Executive with 18 years of experience in the Swiss market |
| Evelin Geiser | Senior R&D Specialist at Nestlé, former principal investigator at CHUV and research affiliate at Massachusetts Institute of Technology, Cambridge (MIT) |
| Ralph Bielser | Former Vice-President IS Strategy & Planning at Philip Morris International |