



## Data Scientist & Neuroscientist

### Contact

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Lausanne, Switzerland

### Languages

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

### Method Skills

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

### Computer Skills

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

### Interests

Programming  
Designing visual art  
R & D projects  
Skill challenges ([Kaggle](#))  
Knowledge transfer

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## 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 the medical field 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	<b>Data Science Course Developer &amp; Instructor</b> <i>EPFL, Lausanne</i> Content director for <a href="#">That's AI</a> , an informative online platform about Artificial Intelligence in three languages. Managing tasks involved interaction with marketing team, front-end developers, business customers, supervision of 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. Work included advising participants and guiding their proof of concepts 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	<b>Research Collaborator in Neuroscience &amp; Neuroimaging</b> <i>CHUV, Lausanne</i> Development, implementation and analysis of behavioral and neuroimaging experiments using eye-tracking, EEG and MRI. Technical support and training of collaborators and development of MRI, EEG and eye-tracking analysis software.
02/2013 to 11/2014	<b>Research Assistant in Neuroscience &amp; Neuroimaging</b> <i>INAPIC, Zurich</i> Development and maintenance of analysis software of behavioral, physiological & MRI data. Extensive support to research collaborators for data analysis.
01/2011 to 05/2011	<b>Internship at Massachusetts Institute of Technology</b> <i>MIT, Cambridge, USA</i> Design and execution of experiments, technical support, teaching & implementation and maintenance of analysis software. The internship was extended for another month due to very satisfactory work.

## Education

04/2016 to 07/2021	<b>PhD in Neuroscience</b> <i>University of Lausanne</i> <b>Thesis:</b> Innovation and standardization of processing pipelines for functional MRI data analysis <b>Work:</b> Development of multiple 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 multiple 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	<b>Master in Cognitive Psychology &amp; Neuroscience</b> <i>University of Zurich</i> <b>Thesis:</b> 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. <b>Lectures:</b> Major in Psychology & minor in Neuroinformatics, covering neurobiology, cognitive psychology, neuroimaging methods, neural networks, models of computation & computational vision.
09/2007 to 02/2012	<b>Bachelor of Science in Psychology</b> <i>University of Zurich</i> <b>Thesis:</b> On achieving satisfaction and subjective well-being. A review of intervention studies from positive psychology. <b>Lectures:</b> Major in Psychology & minor in Neuroinformatics, covering psychology, statistics, neuroscience, informatics, biology, mathematics & AI.

## 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>

## Professional Activities & Teaching

- >2019 **Teaching & mentoring for the course "Applied Data Science: Machine Learning"** *EPFL, Switzerland*  
<https://www.extensionschool.ch> *daily*  
 Teaching of applied data science skills to learners with heterogeneous background from ages 12 to 80. This includes proper data preparation, cleaning and exploration, machine learning model creation, optimization and post-analysis investigation, as well as data presentation, communication and visualization.  
 Mentoring and guidance of proof-of-concept projects from industry and research, in the domain of computer vision, consumer service, data exploration, education, energy, finance, games, geography, insurance, maintenance, manufacturing, marketing, medicine, meteorology, music, natural language processing, recommender systems, robotics, sales, scientific research, service optimization, social media, society, sports, system control, transportation.
- 2020 **MRI analysis in Python using Nipype, Nilearn and more (2<sup>nd</sup> version)** *University of Cambridge, UK*  
[https://github.com/miykael/workshop\\_pybrain](https://github.com/miykael/workshop_pybrain) *2-day workshop*  
 Second installment of the 2018 workshop at Cambridge due to great success and high demand.
- EPFL Extension School Workshop - Machine Learning** *EPFL, Switzerland*  
<https://appliedmldays.org/events/amld-epfl-2020> *3.5-hour talk*  
 Hands-on experience of Machine Learning and Deep Learning methods by exploring different AI use cases.
- Nipype and beyond!** *University of Alabama at Birmingham, USA*  
[https://github.com/miykael/journal\\_club\\_uab](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>  
 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. *3-hour talk*
- 2018 **Neuroimaging in Python (1<sup>st</sup> version)** *University of Cambridge, UK*  
[https://github.com/miykael/workshop\\_cambridge](https://github.com/miykael/workshop_cambridge)  
 Workshop given at Cognition & Brain Sciences Unit covering many different neuroimaging topics, such as task-fMRI, diffusion imaging, functional connectivity analysis, machine learning, convoluted neural networks & Nipype. *2-day workshop*
- Open and Reproducible Neuroscience using Python (2<sup>nd</sup> version)** *Max Planck Institute Frankfurt, Germany*  
<https://openreproneuro2018frankfurt.github.io>  
 Focused on open and reproducible neuroscience using python. Teaching covered scientific toolboxes such as Nipype, Docker, Jupyter Notebook, BIDS, OpenNeuro, DataLad, Nibabel, Nilearn, and PyMPPA. *3-day workshop*
- Open and Reproducible Neuroscience using Python (1<sup>st</sup> version)** *University of Marburg, Germany*  
<https://openreproneuro2018marburg.github.io>  
 Workshop covered the same content as at Max Planck Institute, Frankfurt, Germany in May 2018. *3-day workshop*
- Brainhack Computing: Hands on in Python** *Sardar Patel Institute of Technology in Mumbai, India*  
[https://github.com/miykael/workshop\\_mumbai](https://github.com/miykael/workshop_mumbai)  
 Webinar given during Brainhack event organized by Prof. Preeti Jani, sponsored by IEEE, covering basics of neuroimaging data analysis using python toolboxes such as Nipype, Nilearn & Keras. *5-hour webinar*
- Neuroimaging with Nipype - Where are we and where are we going?** *University Magdeburg (OVGU), Germany*  
<https://brainhack.psychoinformatics.de>  
 Nipype Tutorial given during the Brainhack Global 2018. *1-hour talk*
- 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>  
 Nipype Tutorial given during the Brainhack Global 2017. *2-hour talk*
- Nipype Tutorial** *Global (used in +150 countries)*  
[https://miykael.github.io/nipype\\_tutorial](https://miykael.github.io/nipype_tutorial)  
 New and improved user's guide that uses Docker and Jupyter Notebooks for an interactive introduction to Nipype and related neuroimaging software. The homepage is visited more than 2'500 times per month. *autodidactic teaching tool*
- 2011 **Nipype Beginner's Guide** *Global (used in +148 countries)*  
<http://miykael.github.io/nipype-beginner-s-guide>  
 First comprehensive guide to Nipype with more than 1'500 visits per month. *autodidactic teaching tool*

## Awards & Fellowships

- 2018 Invitation to 3-day code sprint at Massachusetts Institute of Technology (MIT).
- 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.

## References

- Marcel Salathé** Professor at EPFL and director of the Lab of Digital Epidemiology, former academic director of the EPFL Extension School.
- Mara Pasquali** Senior Marketing and Communications Executive with 18 years of experience in the Swiss market
- Arnaud Miribel** Data science freelancer, former coworker, now at Streamlit
- Ralph Bielser** Former Vice-President IS Strategy & Planning at Philip Morris International