

## PERSONAL INFORMATION

Name: Fernanda Lenita Ribeiro

Date and place of birth: 30/11/1993, São Paulo, Brazil

## PROFILE SUMMARY

- Interdisciplinary background in Biophysics, Neuroscience, and Computer Science
- Expertise in large-scale medical imaging data analysis, deep learning, and interindividual variability in brain function

## PROFESSIONAL EXPERIENCE

- 26/08/2022 – Current: **Postdoctoral Research Fellow** at the Computational Imaging Group, School of Electrical Engineering and Computer Science, University of Queensland, Queensland, Australia. Supervisor: Steffen Bollmann

## EDUCATION

- Oct/2018 – Nov/2022: **Ph.D. in Computational Imaging**, School of Psychology, University of Queensland, Queensland, Australia. Supervisors: Alexander M. Puckett and Ross Cunnington (award date: 29/11/2022)
- Sept/2016 – Sept/2018: **Master in Neuroscience and Cognition**, Center for Mathematics, Computing and Cognition, Federal University of ABC, Sao Paulo, Brazil. Supervisors: Claudinei E. Biazoli Jr. and Walter H. L. Pinaya
- Feb/2011 – July/2016: **Bachelor in Physical and Biomolecular Sciences**, Sao Carlos Institute of Physics, University of Sao Paulo, Sao Paulo, Brazil.

## AWARDS

- 2024 – **Marie Skłodowska-Curie Actions fellowship**, Germany
- 2023 – Australasian Cognitive Neuroscience Society **Emerging Researcher Award**
- 2023 – Poster award of **First Place** for the work entitled “*Variability of visual field maps in human early extrastriate cortex challenges the canonical model of organization of V2 and V3*” presented at the **ISMRM Workshop on Current Issues in Brain Function** in Italy
- 2023 – **Trainee Stipend Award** for the **ISMRM Workshop on Current Issues in Brain Function** in Italy
- 2022 – **MRI Together Abstract Merit Award** in recognition of the merit of its content and presentation
- 2022 – **Runner-up winner of the 2022 School of Psychology Postgraduate Student Research Excellence Award** in recognition of outstanding published research, as indicated by the quality and potential impact of the research itself, as well as the relative standing of the journals within the field in which it appears
- 2021 – **Tutor citation** in recognition of the outstanding contribution made by an individual tutor for the course PSYC1040
- 2020 – **ISMRM Magna Cum Laude Merit Award** for the work entitled "Predicting brain function from anatomy with geometric deep learning using high-resolution MRI data" presented at the ISMRM & SMRT Virtual Conference and Exhibition
- 2018 – **OHBM Travel Stipend Award** for the 2018 OHBM Annual Meeting in Singapore

## PUBLICATIONS

### Peer-reviewed scientific journals

2024 – Renton, A.I., Dao, T.T., Johnstone, T., Civier, O., Sullivan, R.P., White, D.J., Lyons, P., Slade, B.M., Abbott, D.F., Amos, T.J., Bollmann, S., Botting, A., Campbell, M.E.J., Chang, J., Close, T.G., Dorig, M., Eckstein, K., Egan, G.F., Evas, S., Flandin, G., Garner, K.G., Garrido, M.I., Ghosh, S.S., Grignard, M., Halchenko, Y.O., Hannan, A.J., Heinsfeld, A.S., Huber, L., Hughes, M.E., Kaczmarzyk, J.R., Kasper, L., Kuhlmann, L., Lou, K., Mantilla-Ramos, Y.J., Mattingley, J.B., Meier, M.L., Morris, J., Narayanan, A., Pestilli, F., Puce, A., **Ribeiro, F.L.**, Rogasch, N.C., Rorden, C., Schira, M.M., Shaw, T.B., Sowman, P.F., Spitz, G., Stewart, A.W., Ye, X., Zhu, J.D., Narayanan, A., Bollmann, S., Neurodesk: An accessible, flexible, and portable data analysis environment for reproducible neuroimaging, *Nature Methods*. DOI: <https://doi.org/10.1038/s41592-023-02145-x>

✦ 2023 – **Ribeiro, F.L.**, York, A., Zavitz, E., Bollmann, S., Rosa, M.G.P., Puckett, A.M., Variability of visual field maps in human early extrastriate cortex challenges the canonical model of organization of V2 and V3, *eLife*. 12:e86439.

✦ 2021 – **Ribeiro, F.L.**, Bollmann, S., Puckett, A.M., Predicting the retinotopic organization of human visual cortex from anatomy using geometric deep learning, *NeuroImage*, <https://doi.org/10.1016/j.neuroimage.2021.118624>

2021 – **Ribeiro, F.L.\***, Santos, F.R.C.\*, Sato, J.R., Pinaya, W.H.L., Biazoli, C.E., Inferring the heritability of large-scale functional networks with a multivariate ACE modeling approach, *Network Neuroscience*, 5(2): 527–548. \* Equal contribution.

2019 – Rodrigues, J.S, **Ribeiro, F.L.**, Sato, J.R., Mesquita, R.C., Biazoli, C.E., Identifying individual using fNIRS-based cortical connectomes, *Biomedical Optics Express*, 10 (6): 2889-2897.

2019 – Quilles, J.C. Jr., Tezuka, D.Y., Lopes, C.D., **Ribeiro, F.L.**, Laughton, C., de Albuquerque, S., Montanari, C.A., Leitao, A., Dipeptidyl nitrile derivatives have cytostatic effects against *Leishmania* spp. Promastigotes, *Experimental Parasitology*, 200: 84-91

### Peer-reviewed conference proceeding

2022 – **Ribeiro, F.L.\***, Shumovskaia, V.\*, Davies, T., Ktena, I., How fair is your graph? Exploring fairness concerns in neuroimaging studies, *Proceedings of the 7th Machine Learning for Healthcare Conference*, PMLR 182:459-478.

### Preprints

2024 – Xu, M.\*, **Ribeiro, F.L.\***, *et al.* VesselBoost: A Python package for small vessel segmentation in human magnetic resonance angiography data. \* Equal contribution.

2024 – **Ribeiro, F.L.**, Benson, N.C., Puckett, A.M. Human Retinotopic Mapping: from Empirical to Computational Models of Retinotopy

2022 – **Ribeiro, F.L.**, Bollmann, S., Cunningham, R., Puckett, A.M., An explainability framework for cortical surface-based deep learning, arXiv.

### Peer-reviewed conference short papers

2022 – **Ribeiro, F.L.\***, Shumovskaia, V.\*, Davies, T., Ktena, I., Evaluating graph fairness in transductive learning, Medical Imaging with Deep Learning.

2020 – **Ribeiro, F.L.**, Bollmann, S., Puckett, A.M., DeepRetinotopy: Predicting the Functional Organization of Human Visual Cortex from Structural MRI Data using Geometric Deep Learning, Medical Imaging with Deep Learning, Virtual.

### Book chapter

2018 – Alves, V.S., **Ribeiro, F.L.**, Oliveira, D.R., Oliveira, F.A., Calcium Deregulation in Alzheimer's Disease, In Cellular Mechanisms in Alzheimer's Disease, Volume 2, pp.202–215

### ORAL PRESENTATIONS

- 2023 – ISMRM Workshop on Current Issues in Brain Function, Padua, Italy. *Characterizing the Pial Arterial Vasculature of the Human Brain using Deep Learning Segmentation and Graph Analysis*. \*Presenting on behalf of Marshall Xu and Saskia Bollmann.
- 2022 – MRI Together, Virtual. *An open-source framework for predicting brain functional maps with geometric deep learning*
- 2022 – Annual Meeting of the ISMRM ANZ Chapter, Sydney, Australia. *Improving the robustness of deep learning segmentation models by analysing intensity distribution shifts between data sets*

- 2022 – Responsible Machine Learning In Healthcare, Copenhagen, Denmark. *How fair is your graph? Exploring fairness concerns in neuroimaging studies*
- 2021 – UQ Workshop on Artificial Intelligence, Brisbane, Australia. *Predicting brain function from anatomy in humans using neuroimaging and geometric deep learning*
- 2020 – International Society for Magnetic Resonance in Medicine, Virtual. *Predicting brain function from anatomy with geometric deep learning using high-resolution MRI data*
- 2019 – Australasian Cognitive Neuroscience Society, Tasmania, Australia. *Predicting brain function from anatomy using deep learning*
- 2018 – 5th BRAINN Congress, Campinas, Sao Paulo, Brazil. *Genetic factors influence on connectome fingerprints and functional networks*

## CONFERENCE POSTERS

- 2024 – **Ribeiro, F.L.**, Bambridge-Lozan, T., Benson, N.C., Schwarzkopf, D.S., Puckett, A.M., Bollmann, S., *Building a Comprehensive Toolkit for Human Visual Cortex Parcellation*, Vision Sciences Society, Florida, U.S.A.
- 2023 – **Ribeiro, F.L.**, York, A., Zavitz, E., Bollmann, S., Rosa, M.G.P., Puckett, A.M., *Variability of visual field maps in human early extrastriate cortex challenges the canonical model of organization of V2 and V3*, ISMRM Workshop on Current Issues in Brain Function, Padua, Italy.
- 2022 – **Ribeiro, F.L.**, Bollmann, S., Cunnington, R., Puckett, A.M., *An explainability framework for cortical surface-based geometric deep learning*, Organization of Human Brain Mapping, Glasgow, Scotland.
- 2020 – **Ribeiro, F.L.**, Bollmann, S., Puckett, A.M., *Predicting brain function from anatomy in humans using neuroimaging and geometric deep learning*, Organization of Human Brain Mapping, Virtual.
- 2020 – Puckett, A.M., Bollmann, S., **Ribeiro, F.L.**, *Predicting the functional organization of human visual cortex from anatomy using geometric deep learning*, Vision Sciences Society, Virtual.
- 2018 – **Ribeiro, F.L.**, Pinaya, W.H.L., Biazoli, C.E., *Genetic Factors Influence on Connectome Fingerprints and Functional Networks*, Organization of Human Brain Mapping, Singapore.

## INVITED TALKS

- 2023 – **MRI Together**, online.
- 2023 – **Australasian Cognitive Neuroscience Society** in Sydney, Australia.
- 2023 – **Maths in the Brain** in Melbourne, Australia.

## INVITED PARTICIPATION IN PANEL DISCUSSIONS

- 2023 – OHBM Australia panel discussion about “*A Beginner’s guide to starting a new project*” along with Adeel Razi (Monash University), Megan Campbell (University of Newcastle), and Kelly Garner (University of New South Wales)

## SCHOLARSHIPS

Oct/2018 – June/2022: **UQ Research Training Scholarship**, University of Queensland. Living allowance stipend and tuition fee offset granted by the Australian Research Council (ARC) and the University of Queensland.

Feb/2017 – Sept/2018: **Graduate Student Research Scholarship**, Federal University of ABC. Brazilian government research fellowship (CAPES) awarded through the Center for Mathematics, Computing and Cognition.

Jan/2016 – Aug/2016: **Undergraduate Student Research Scholarship**, University of Sao Paulo. Undergraduate research fellowship granted by the Sao Paulo Research Foundation (FAPESP).

July/2014 – Aug/2015: **Science without Borders Scholarship**, University of Nottingham. Brazilian government scholarship (CNPq) to study at the University of Nottingham (England).

## SUPERVISION

- **Ph.D. students:**
  - o 2024 – current: Marshall Xu (co-supervisor with Saskia Bollmann and Markus Barth)
  - o 2023 – current: Xincheng Ye (co-supervisor with Steffen Bollmann and Ashley Stewart)
  - o 2023 – current: Thuy Dao (co-supervisor with Steffen Bollmann and Ashley Stewart)

- **Master's students:**
  - o 2023 – 2023: Chen Chen (co-supervisor with Thomas Shaw)
- **Undergraduate students:**
  - o 2023 – current: Manan Bhatia
  - o 2023 – 2023: Kotaro William Harui-Philp (thesis student)
  - o 2022 – 2023: Torin Bambridge-Lozan (AI Collaboratory summer student)

## TEACHING ACTIVITIES

Semester 1/2021: Tutor for the Psychological Research Methodology I (PSYCH1040), University of Queensland. Introduction to descriptive/inferential statistics for Psychology students.

July/2020: Teaching assistant for the Inaugural Neuromatch Academy on Computational Neuroscience, Neuromatch. Summer school on computational neuroscience.

Semester 2/2019: Tutor for the Psychological Research Methodology I (PSYCH1040), University of Queensland. Introduction to descriptive/inferential statistics for Psychology students.

## REVIEWING ACTIVITY

- Scientific reports
- IEEE Transactions on Neural Networks and Learning Systems
- Brain Structure and Function
- Journal of Neural Engineering

## ADDITIONAL TRAINING

- 2022 – CIFAR Deep Learning and Reinforcement Learning Summer School, Virtual.
- 2021 – Neuromatch Academy - Deep Learning, Virtual.
- 2021 – London Geometry and Machine Learning Summer School, Virtual.
- 2019 – The 5th Whistler Scientific Workshop, Noosa, Queensland, Australia

## CONTRIBUTION TO OPEN SOURCE PROJECTS (excluding my primary work)

- 2022 – current: Neurodesk (<https://www.neurodesk.org/>)
- 2023 – current: VesselBoost ([https://github.com/KMarshallX/vessel\\_code](https://github.com/KMarshallX/vessel_code))

## SKILLS AND TECHNIQUES

### Medical Imaging

- Bash scripting for data download and pre-processing;
- Medical image segmentation with deep learning;
- Brain data visualization with nilearn, Connectome Workbench, FreeSurfer, and ITK-SNAP

### Deep Learning

- PyTorch;
- PyTorch Geometric;
- MONAI;
- High-performance computing;
- SLURM job scheduler;

### Data Science

- NumPy;
- Pandas;
- Scikit-learn;
- Seaborn;
- Matplotlib;
- Jupyter notebook;
- Inferential statistics;
- Git version control;
- Continuous integration testing with GitHub Actions;

### Open Science

- Preprinting;
- Code sharing using GitHub;
- Data sharing using the Open Science Framework;
- Scientific communication on social media;

## **Other**

- Programming languages: Python, Bash, MATLAB
- Software containers: Docker, Singularity
- Integrated development environment (IDE): VS code, PyCharm
- Operating systems: Linux, Microsoft Windows
- Document preparation systems: LaTeX, Microsoft Office, Google docs/slides
- Scientific illustration: Inkscape
- AI tools: ChatGPT, GitHub Copilot
- Student supervision
- Project management software: Trello, Microsoft To Do
- Team player
- Willing to develop new technical, theoretical, and soft skills

## **LANGUAGES**

English (fluent; TOEFL 116/120), Portuguese (native)