PERSONAL INFORMATION

Name: Fernanda Lenita Ribeiro
Date and place of birth: 30/11/1993, São Paulo, Brazil
Google Scholar: https://scholar.google.com.au/citations?user=Rp4--S4AAAAJ&hl=en

PROFILE SUMMARY

I am a passionate young scientist with extensive research experience in interdisciplinary projects at the intersection of neuroscience, artificial intelligence, and imaging. I completed my PhD at the University of Queensland in 2022 with Dr Alexander M Puckett and Prof Ross Cunnington in Computational Imaging. Specifically, my primary work involved developing a deep learning model for predicting the retinotopic organisation of human visual cortex and investigating interindividual variability in retinotopic maps of early visual areas. This work revealed that retinotopic organisation is more diverse than previously thought. Through this research agenda, the Australasian Cognitive Neuroscience Society awarded me an **Emerging Researcher Award**, and I have recently been awarded a prestigious **Marie Skłodowska-Curie Actions** Postdoctoral Fellowship. Currently, I am working as a Postdoctoral Research Fellow at the Computational Imaging Group, led by Dr Steffen Bollmann, with whom I am evolving my skills in computational modelling, magnetic resonance imaging, supervision, and open science practices. Particularly, I've been learning typical software development practices, which has allowed me to expand my PhD work into a command-line interface, allowing other researchers to predict retinotopic maps using structural MRI data. In the next few years, by expanding my research agenda and collaborations, I aim to become an independent vision scientist with a deep understanding of human vision at the functional, computational, and behavioural levels.

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.

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

HONOURS AND AWARDS

- 2024 – Awarded a **Marie Skłodowska-Curie Actions** Postdoctoral Fellowship (189,687.36 EUR)
- 2024 – Selected for a **Humboldt Research Fellowship** for Postdocs
- 2023 – Australasian Cognitive Neuroscience Society **Emerging Research 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**
- 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 – **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.
- 2018 – **OHBM Travel Stipend Award** for the 2018 OHBM Annual Meeting in Singapore
- 2017 – **Graduate Student Research Scholarship**, Federal University of ABC. Brazilian government research fellowship (CAPES) awarded through the Center for Mathematics, Computing and Cognition.
- 2016 – **Undergraduate Student Research Scholarship**, University of Sao Paulo. Undergraduate research scholarship granted by the Sao Paulo Research Foundation (FAPESP).
- 2014 – **Science without Borders Scholarship**, University of Nottingham. Brazilian government fellowship (CNPq) to study at the University of Nottingham (England).

RESEARCH

NATIONAL AND INTERNATIONAL PROFILE

Research Output. My research skills and experiences are reflected by (co-)authoring 11 articles (7 published, 3 pre-print, 1 under preparation – 7 of them as first-author). I have also contributed to many high-quality, awarded abstracts at international symposia. ***Research Quality.*** My work is published in top-ranking journals, such as **NeuroImage** (1 first-author paper, ranked 7/109 in Cognitive Neuroscience), **eLife** (1 first-author paper, ranked 13/110 in General Neuroscience), and **Nature Methods** (1 co-author paper, ranked 2/428 in Biochemistry, Genetics and Molecular Biology). ***Research Collaboration.*** I have multiple current collaborations with researchers in Australia (UQ: Saskia Bollmann and Thomas Shaw; Monash University: Marcello Rosa and Liz Zavitz; University of Wollongong: Mark Schira), New Zealand (University of Auckland: Sam Schwarzkopf), the USA (University of Washington: Noah Benson), the UK (DeepMind: Ira Ktena), and Germany (University of Giessen: Martin Hebart).

PUBLICATIONS (✦ Corresponding author)

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.

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. * Equal contribution.

Preprints

2024 – Xu, M.*, **Ribeiro, F.L.***, *et al.* VesselBoost: A Python toolbox for small vessel segmentation in human magnetic resonance angiography data, *bioRxiv*.* Equal contribution. (*Under review at Aperture Neuro*)

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

2022 – **Ribeiro, F.L.✦**, Bollmann, S., Cunnington, 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

INVITED TALKS

- 2024 – "Exploring Human Vision using Machine Learning: New Insights from a deep learning model of retinotopy on the functional organization of human visual cortex" at **Imaging, Sensing and Biomedical Engineering (ISB) monthly seminar** at the School of EECS at UQ, Australia.
- 2024 –"Retinotopic mapping of human visual cortex with geometric deep learning" at **SUSTech-UQ Centre for Neuroscience and Neural Engineering** joint scientific symposium in Brisbane, Australia.
- 2024 –"Deep learning and automation of medical imaging tasks" at **ISMRM ANZ Workshop on AI in MRI Research** (online).
- 2023 –"Improving the robustness of deep learning segmentation models for medical image segmentation" at **MRI Together** (online).
- 2023 – "Exploring Human Vision using Computer Vision: New Insights from a deep learning model of retinotopy on the functional organization of human visual cortex" at the **Australasian Cognitive Neuroscience Society** in Sydney, Australia.
- 2023 – "Exploring Human Vision using Computer Vision: New Insights from a deep learning model of retinotopy on the functional organization of human visual cortex" at the **Maths in the Brain** in Melbourne, Australia.

ORAL PRESENTATIONS

- 2024 – National Imaging Facility Scientific Symposium in Brisbane, Australia. *DeepRetinotopy: Towards a Comprehensive Toolkit for Human Visual Cortex Parcellation*
- 2023 – Annual Meeting of the ISMRM ANZ Chapter, Brisbane, Australia. *Test-time adaptation in a real-world application: improving the robustness of deep learning segmentation models for medical image segmentation*
- 2023 – ISMRM Workshop on Current Issues in Brain Function, Padua, Italy. *Characterising the Pial Arterial Vasculature of the Human Brain using Deep Learning Segmentation and Graph Analysis.*
- 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 (first-author only)

- 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 Science Society, 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, 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, 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.

TEACHING

EXPERIENCE

- 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.

SUPERVISION

- **Ph.D. students:**
  - 2024 – current: Marshall Xu (co-supervisor with Saskia Bollmann and Markus Barth)
  - 2023 – current: Xincheng Ye (co-supervisor with Steffen Bollmann and Ashley Stewart)
  - 2023 – current: Thuy Dao (co-supervisor with Steffen Bollmann and Ashley Stewart)
- **Thesis students:**
  - 2024 – current: Shikang Ma
  - 2023 – 2024: Manan Bhatia
  - 2023 – 2023: Chen Chen (co-supervisor with Thomas Shaw); Kotaro William Harui-Philp;
- **Summer student:**
  - 2023 – 2023: Torin Bambridge-Lozan (AI Collaboratory summer student)

SERVICE

INVITED PARTICIPATION IN PANEL DISCUSSIONS

- 2023 – OHBM Australia panel discussion on "*A Beginner's guide to starting a new project*" along with Adeel Razi, Megan Campbell, and Kelly Garner

EVENT ORGANISATION

- 2024 – MRI together (organising committee)
- 2024 – "Neurodesk Workshop: An accessible open-source platform for image data analysis" at the National Imaging Facility Annual Scientific Meeting 2024 in Brisbane, Australia.
- 2024 – Satellite event on "Computational Neuroimaging of the Visual Cortex" with Noah C. Benson and Mark Schira at Vision Science Society 2024 in St. Pete Beach, USA.

REVIEWING ACTIVITY

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

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)