Dr. PAUL RIGNANESE
PhD

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RESEARCH EXPERIENCE

Post-Doctoral Research Fellow Position   January 2023 – Today
Kind Lab, Center for Discovery and Brain Sciences, University of Edinburgh.
- **Development of tools for collection and processing of neural dynamics**
- **Programming of analysis pipelines for various neuronal data types**
- Focus on **dysfunctional neuronal circuits in rodents models of autism spectrum disorders and intellectual disability**

PhD thesis   October 2018 – December 2022
Cortical Dynamics and Decision Making Lab, Institut Pasteur, Paris, France
Two-photon Imaging of Cortical Microcircuitry and Functional connectivity during Multimodal Sensory Integration.

Internships
Wide-scale neuronal connectivity of tactile decision making in mice
Paris, France   January 2018 – July 2018
-Wide-field calcium imaging data analysis in MATLAB, report, poster.

Congruency and reactivation aid memory integration through reinstatement of prior knowledge
Amsterdam, Netherlands   February 2017 – June 2017
- fMRI human data collection, machine learning analysis in Python, report, poster, publication as second author (see publications section below)

SKILLS

Programming languages and softwares:
- Highly proficient in **Python (+ 8 years of experience)**, PyCharm IDE, version control, testing, documentation. Also versed in MATLAB, C, C++, and for web development HTML, CSS, JavaScript.
- **Real-time hardware control** programs with OpenEphys, SpikeGLX, Raspberry Pi, Arduino...
- **3D modeling** with OpenSCAD, FreeCAD, Blender, **PCB design** with KiCad
- **Plotting** with Matplotlib, Seaborn, Plotly… **Figures rendering** with InkScape, Illustrator
- **Publication preparation** in LateX with Overleaf

Data analytics:
- **Neuroscientific analysis** packages : SpikeInterface, Pynapple (single-units electrophyiology); MNE (LFP/EEG); Suite2p, Cascade (two-photon Ca^{2+} imaging); HCTSA (time-series data mining); DeepLabCut (behavioural video pose estimation), PyNWB, Spyglass-neuro (neuronal/behavioural data management)...
- **Traditional computation** packages : Numpy, Pandas, Scipy, Statsmodels...
- **Machine learning/ Deep-learning** packages: Scikit-learn, Tensorflow, Keras, PyTorch...

Technical skills:
- **3D design and printing**, soldiering, basic electronic engineering
- **Histological data registration and probe coordinates estimation** in brain space with HERBS
- **Two-photon microscopy virtual reality setup assembly** and Two-photon calcium imaging data collection from behaving mice
- MRI operator title

Teaching:
-**Scientific Programming** with PyCharm Course, held biannually since 2024 (6x 2h sessions about clean code development, IDE usage, debug, version control, testing, documentation, LLM assistant usage)

SPOKEN LANGUAGES

French (native), English (fluent), Italian (B1 level)

CONFERENCES, WORKSHOPS & PUBLICATIONS

Creation of Neuro-Hack LTD, my neuroscientific consulting company   March 2025

SpikeInterface Hackaton   May 2024 – Edinburgh, Scotland
Official Contributor : Contribution was merged in the SpikeInterface Python Package

International collaborative meeting on SYNGAP1 - Talk   October 2023 – Edinburgh, Scotland

Simons Initiative for the Developing Brain retreat - Poster   September 2023 – Edinburgh, Scotland

Federation of Neuroscience European Societies 2022   July 2022 – Paris, France

Publication as second author :   March 2020
van Kesteren, M.T.R., Rignanese, P., Gianferrara, P.G. *et al.*
Congruency and reactivation aid memory integration through reinstatement of prior knowledge.
Sci Rep 10, 4776 (2020). https://doi.org/10.1038/s41598-020-61737-1

Interdisciplinary Research on Brain Network Dynamics summer school   June 2019 – Terzolas, Italy

Neuralnet2018 – Understanding neural networks : dynamics to function December 2018 – Paris, France

International Conference for Cognitive Neuroscience 2017   August 2017 – Amsterdam, Netherlands

British Neuroscience Association 2017 conference   April 2017 – Birmingham, England

EDUCATION

PhD in Neurosciences   October 2018 – December 2022
Institut Pasteur & Universite de Paris
Paris, France

Msc Neuroscience   September 2016 – July 2018
Vrije Universiteit Amsterdam
Amsterdam, Netherlands

Bsc Psychology (spec. Neuroscience, Ethology, Evolution)   September 2013 – June 2016

Baccalaureate (spec. Sciences)   September 2012 – June 2013