

Ana Luísa Pinho

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Research Interests

Cognitive and Systems Neuroscience:

- Development of deep-behavioral-phenotyping strategies to inspect cognitive components of the phenotype and their network consistency/variability across individuals
- Investigation of high-order neurocognitive mechanisms involved in both musical performance and perception

Neuroimaging

- Focus in Functional Magnetic Resonance Imaging (fMRI)

Functional Brain Atlasing

- Development of encoding models to perform functional mapping of cognition in the human brain
- Development of a common framework of psycho-physiological constructs

Data Science:

- Development of data-sharing facilities
- Reproducibility in systems neuroscience and neuroimaging

Current position

2021 – Present	Tier I <i>BrainsCAN Postdoctoral Fellow</i> , University of Western Ontario, London ON, Canada Faculty Advisors: Jörn Diedrichsen and Jessica Grahn
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Appointments held

2015 – 2020 *Postdoctoral Researcher*, Parietal Team, Inria Saclay–Île-de-France, France
Advisor: Bertrand Thirion

Education

2009 – 2015 PhD in Health Sciences (branch: Biomedical Sciences)
Institutions: University of Coimbra (Coimbra, Portugal) and
Karolinska Institutet (Stockholm, Sweden)
Thesis title: *Inside of the Creative Mind: Unravelling the Neurocognitive Mechanisms of Musical Creativity* (<http://hdl.handle.net/10316/27005>)
Faculty advisors: Fredrik Ullén, Örjan de Manzano, Peter Fransson, Miguel Castelo-Branco

1999 – 2008 MSc + LICENTIATE DEGREES (Integrated Master) in Engineering Physics
Institution: Instituto Superior Técnico, University of Lisbon (Lisbon, Portugal)
Thesis title: *Probabilistic non-linear earthquake location in a 3-D velocity model*
(<https://fenix.tecnico.ulisboa.pt/cursos/meft/dissertacao/2353642196027>)
Faculty advisor: João Fonseca

Fellowships, Grants & Awards

2021 – Present Tier I [BrainsCAN Postdoctoral Fellowship](#), Canada First Research Excellence Fund (CFREF), Canada
Amount (3y): **225.000 CAD**

2013 – 2014 Research Fellowship, Sven and Dagmar Saléns Foundation (Stockholm, Sweden)
Amount: **~144.000 SEK**

2013 Prize of *The Best Poster Communication* in the Symposium “Music, Poetry & The Brain - Celebrating Wagner’s Bicentennial”, Rectory of NOVA University Lisbon (Lisbon, Portugal)

2009 – 2013 PhD Studentship from Foundation for Science and Technology (FCT) (SFRH/BD/33895/2009) under the PHD Programme in Experimental Biology and Biomedicine of Center for Neuroscience and Cell Biology, University of Coimbra (Coimbra, Portugal)
Amount: **~80.153 €**

2006 – 2007 Scientific Initiation Grant in Seismology from FCT, Instituto Superior Técnico (Lisbon, Portugal)
Amount: **~3.600 €**

Research

RESEARCH EXPERIENCE

2021 – Present *Postdoctoral Fellow*: application of brain atlas techniques and musical tasks to chart the cortico-striatal-cerebellar circuitry involved in the cognitive ability of forming temporal predictions during rhythmic and non-rhythmic sequences of events; development of encoding models to improve functional specificity in neuroimaging relative to elementary cognitive components that modulate behavior.

- 2015 – 2020 *Postdoctoral Researcher*: development of a multimodal neuroimaging dataset for large-scale functional atlas and cognitive mapping of the human brain; application of mega-analytic encoding models to fMRI data for brain atlas.
- 2010 – 2014 *Graduate Researcher*: investigation of the neural correlates of musical creativity, using fMRI as neuroimaging technique and musical improvisation as model behavior.
- 2005 – 2006 *Undergraduate Research Assistant*: process and analysis of seismic data and maintenance of the IST seismic stations.

SCIENTIFIC PROJECTS

- 2021 – Present BrainsCAN Project: *Novel brain atlas techniques to reveal the cerebellar role in music cognition* / Investigator: Ana Luísa Pinho (with supervision from Faculty Advisors)
- 2015 – 2020 *Individual Brain Charting* (IBC): SP2 Human Brain Organization – Work Package 2.1 “Multimodal whole mapping” of the *Human Brain Project* (HBP) / Principal Investigator (PI): Bertrand Thirion
- 2011 – 2014 *Kartläggning av hjärnområden involverade i hierarkisk kontroll av långa motoriska sekvenser hos musiker och icke-musiker* (“Mapping of brain areas involved in the hierarchical control of long motor sequences of musicians and non-musicians”) – *Swedish Research Council* (Grant: 521-2010-3195) / PI: Fredrik Ullén

News&Views

- 2023 Uddin, L. Q., Betzel, R. F., Cohen, J. R., Damoiseaux, J. S., De Brigard, F., Eickoff, S. B., Fornito, A., Gratton, C., Gordon, E. V., Laird, A., Larson-Prior, L. J., McIntosh, A. R., Nickerson, L. D., **Pinho, A. L.**, Poldrack, R., Razi, A., Sadaghiani, S., Shine, J. M., Yendiki, A., Yeo, B. T. T., Spreng, R. N. Controversies and current progress on large-scale brain network nomenclature from OHBM WHATNET: Workgroup for HArmonized Taxonomy of NETworks. (*journal article under review*) preprint: [10.31219/osf.io/25za6](https://doi.org/10.31219/osf.io/25za6)
- 2023 **Pinho, A. L.**, Richard, H., Eickenberg, M., Amadon, A., Dohmatob, E., Shankar, S., Aggarwala, H., Denghien, I., Torre, J. J., Ginisty, C., Becuwe-Desmidt, S., Roger, S., Lecomte, Y., Berland, V., Laurier, L., Joly-Testault, V., Médiouni-Cloarec, G., Doublé, C., Martins, B., Varoquaux, G., Dehaene, S., Hertz-Pannier, L., & Thirion, B. - Individual Brain Charting dataset: probing the visual, auditory and language systems with naturalistic stimuli (*journal article in preparation*)
- 2023 Panel Member at OHBM2023 podcast “Neurosaliency”, Montreal
- 2023 Poster presentation at OHBM2023 – “Individual Brain Charting dataset: probing large-scale functional networks with naturalistic stimuli”, Montreal

Publications

JOURNAL ARTICLES

- 2021 Levitis, E., Gould van Praag, C. D., Gau, R., Heunis, S., DuPre, E., (...), **Pinho, A. L.**, (...), Maumet, C. Centering inclusivity in the design of online conferences—An OHBM–Open Science perspective. *GigaScience*; 10(8):giab051. doi: [10.1093/gigascience/giab051](https://doi.org/10.1093/gigascience/giab051)

- 2021 Thirion, B., Thual, A., & **Pinho, A. L.** From deep brain phenotyping to functional atlas. *Current Opinion in Behavioral Sciences*; 40:201-202 doi: [10.1016/j.cobeha.2021.05.004](https://doi.org/10.1016/j.cobeha.2021.05.004)
- 2021 Dohmatob, E., Richard, H., **Pinho, A. L.**, & Thirion, B. Brain topography beyond parcellations: local gradients of functional maps. *NeuroImage*; 229:117706. doi: [10.1016/j.neuroimage.2020.117706](https://doi.org/10.1016/j.neuroimage.2020.117706)
- 2021 **Pinho, A. L.**, Amadon, A., Fabre, M., Dohmatob, E., Denghien, I., Torre, J. J., Ginisty, C., Becuwe-Desmidt, S., Roger, S., Laurier, L., Joly-Testault, V., Médiouni-Cloarec, G., Doublé C., Martins, B., Pinel, P., Eger, E., Varoquaux, G., Pallier, C., Dehaene, S., Hertz-Pannier, L., & Thirion, B. Subject-specific segregation of functional territories based on deep phenotyping. *Human Brain Mapping*; 42(4): 841–870. doi: [10.1002/hbm.25189](https://doi.org/10.1002/hbm.25189)
- 2020 **Pinho, A. L.**, Amadon, A., Ruest, T., Fabre, M., Gauthier, B., Clairis, N., Knops, A., Genon, S., Dohmatob, E., Denghien, I., Torre, J. J., Ginisty, C., Becuwe-Desmidt, S., Roger, S., Lecomte, Y., Berland, V., Laurier, L., Joly-Testault, V., Médiouni-Cloarec, G., Doublé, C., Martins, B., Salmon, E., Piazza, M., Melcher, D., Pessiglione, M., van Wassenhove, V., Pinel, P., Eger, E., Varoquaux, G., Pallier, C., Dehaene, S., Hertz-Pannier, L., & Thirion, B. Individual Brain Charting dataset extension, second release of high-resolution fMRI data for cognitive mapping. *Scientific Data*; 7(1): 353. doi: [10.1038/s41597-020-00670-4](https://doi.org/10.1038/s41597-020-00670-4)
- 2019 (preprint) Richard, H., Martin, L., **Pinho, A. L.**, Pillow, J., & Thirion, B. Fast shared response model for fMRI data. September 2019. [arXiv: 1909.12537](https://arxiv.org/abs/1909.12537)
- 2019 Schrouff, J., Pischedda, D., Genon, S., Fryns, G., **Pinho, A. L.**, Vassena, E., Liuzzi, A. G., & Ferreira, F. S. - Gender bias in (neuro)science: Facts, consequences, and solutions - *European Journal of Neuroscience*; 50(7):3094-3100. doi: [10.1111/ejn.14397](https://doi.org/10.1111/ejn.14397)
- 2018 Richard, H., **Pinho, A. L.**, Thirion, B., & Charpiat, G. - Optimizing deep video representation to match brain activity. CCN2018 - Conference on Cognitive Computational Neuroscience, September 2018, Philadelphia, United States. [hal id: hal-01868735](https://hal.archives-ouvertes.fr/hal-01868735)
- 2018 **Pinho, A. L.**, Amadon, A., Ruest, T., Fabre, M., Dohmatob, E., Denghien, I., Ginisty, C., Becuwe-Desmidt, S., Roger, S., Laurier, L., Joly-Testault, V., Médiouni-Cloarec, G., Doublé, C., Martins, B., Pinel, P., Eger, E., Varoquaux, G., Pallier, C., Dehaene, S., Hertz-Pannier, L., & Thirion, B. - Individual Brain Charting, a high-resolution fMRI dataset for cognitive mapping - *Scientific Data*; 5:180105, June 2018. doi: [10.1038/sdata.2018.105](https://doi.org/10.1038/sdata.2018.105).
- 2016 **Pinho, A. L.**, Ullén, F., Castelo-Branco, M., Fransson, P., & de Manzano, Ö. - Addressing a Paradox: Dual Strategies for Creative Performance in Introspective and Extrospective Networks - *Cerebral Cortex*; 26(7):3052-63, July 2016. doi: [10.1093/cercor/bhv130](https://doi.org/10.1093/cercor/bhv130). Epub 2015 Jun17.
- 2014 **Pinho, A. L.**, de Manzano, Ö, Fransson, P., Eriksson, H., & Ullén, F. - Connecting to Create: Expertise in Musical Improvisation Is Associated with Increased Functional Connectivity between Premotor and Prefrontal Areas - *The Journal of Neuroscience*; 34(18):6156-63, April 2014. doi: [10.1523/JNEUROSCI.4769-13.2014](https://doi.org/10.1523/JNEUROSCI.4769-13.2014)

BOOKS

- 2018 **Pinho, A. L.**, The Neuropsychological Aspects of Musical Creativity. (2018) In Kapoula, Z., Volle, E., Renoult, J., Andreatta, M. (Eds.), *Exploring Transdisciplinarity in Art and Sciences* (pp 77-103) Springer. doi: [10.1007/978-3-319-76054-4_4](https://doi.org/10.1007/978-3-319-76054-4_4)

NON-REFEREED CONTRIBUTIONS

- 2020 **Pinho, A. L.**, Torre, J. J., Shankar, S., & Thirion, B. Individual Brain Charting: Dataset Documentation. Available on: <https://project.inria.fr/IBC/>

DATASETS

- 2020c **Pinho, A. L.**, Hertz-Pannier, L., Thirion, B. IBC. *OpenNeuro*, ds002685. DOI: [10.18112/openneuro.ds002685.v1.0.0](https://doi.org/10.18112/openneuro.ds002685.v1.0.0)
- 2020b **Pinho, A. L.** et al. Individual Brain Charting (IBC, release 2). *EBRAINS*. DOI: [10.25493/XX28-VJ1](https://doi.org/10.25493/XX28-VJ1)
- 2020a **Pinho, A. L.** et al. Individual Brain Charting dataset extension, second release of high-resolution fMRI data for cognitive mapping. *NeuroVault*, id collection=6618. Persistent Identifier: <https://identifiers.org/neurovault.collection:6618>

SOFTWARE

- 2022 – Present Contributor to *NeuroCausal*: “An open data sharing and metadata synthesis platform for clinical data”, URL: <https://neurocausal.github.io>
- 2021 – Present Contributor to *WiNRepo*: “Women in Neuroscience Repository” URL: <https://github.com/WomenInNeuroscience/winrepo>
- 2017 – Present Contributor to *Nilearn*: Statistics and Machine Learning for NeuroImaging in Python URL: <https://github.com/nilearn/nilearn>
- 2015 – Present Contributor to the *Repository of Public Analysis Code for the IBC Project*. URL: https://github.com/hbp-brain-charting/public_analysis_code
- 2015 – 2020 Contributor to the *Repository of Public Protocols for the IBC Project*. URL: https://github.com/hbp-brain-charting/public_protocols

BLOG POSTS

- 2020 “The Individual Brain Charting project, a high-resolution, task-fMRI dataset for a comprehensive cognitive mapping of the human brain.”, Behind the Paper, Springer Nature - Research Data Community. URL: <https://researchdata.springernature.com/posts/the-individual-brain-charting-project>

REVIEW ASSIGNMENTS

Ad hoc reviewer for: *Cerebral Cortex*, *NeuroImage*, *Scientific Data*, *Scientific Reports*, *Brain Structure and Function*, *Brain Imaging and Behavior* and *Frontiers in Psychology*

MEDIA

- 2014 Interview *Inside Neuroscience - Tuning the Brain to Music: Creativity and Connetivity*, Neuroscience Quarterly (newsletter produced by Society for Neuroscience), Spring 2014
- 2014 Interview to American Association for the Advancement of Science (AAAS) - [Musical Creativity - Science Update](#)
- 2013 Participation in the Press Conference of Neuroscience 2013, SfN Conference - *Musical training shapes brain anatomy and affects function*, November 2013
- 2013 Interventions in the portuguese media with interviews to the radio TSF and the tv-channel ETV, November 2013

Conferences and Seminars

TALKS

- 2023 “Deep behavioral phenotyping in functional MRI for cognitive mapping of the human brain”, Seminar at MNI Feindel Brain and Mind Lecture Series organized by The McConnell Brain Imaging Centre (BIC) and Montreal Neurological Institute (The Neuro), McGill University, Montreal
- 2023 “Deep behavioral phenotyping in functional MRI for cognitive mapping of the human brain”, Seminar at Cognitive Science Lab, International Institute of Information Technology in Hyderabad (IIIT-H)
- 2022 “Deep behavioral phenotyping in functional MRI for cognitive mapping of the human brain”, Seminar at SIMEXP Lab, Institut universitaire de gériatrie de Montréal (IUGM), University of Montreal
- 2021c “The Women in Neuroscience Repository (WiNRepo)”, BrainHack Fall 2021
- 2021b “Individual functional atlasing of the human brain with multitask fMRI data: leveraging the IBC dataset”, Online Seminar for the Stockholm University Brain Imaging Centre
- 2021a “Individual functional atlasing of the human brain with multitask fMRI data: leveraging the IBC dataset”, Online Seminar for the Diedrichsen Lab – Western University
- 2020e “Individual functional atlasing of the human brain with multitask fMRI data: leveraging the IBC dataset”, Online Seminar for the Poldrack Lab – Stanford University
- 2020d “Individual functional atlasing of the human brain with multitask fMRI data: leveraging the IBC dataset”, Online Seminar for the Institute of Neuroscience and Medicine, Brain and Behaviour (INM-7) – Jülich Research Center

2020c	“The Women in Neuroscience Repository (WiNRepo): improving the visibility of women neuroscientists”, Open Theatre Sessions, Federation of European Neuroscience Societies (FENS) 2020 Virtual Forum
2020b	“Segregation of functional territories in individual brains”, Oral presentation in Session <i>Modeling and Analysis: Variability in Brain Activation</i> , Organization for Human Brain Mapping (OHBM) Annual (Virtual) Meeting 2020
2020a	“Individual Brain Charting dataset extension: second and third releases”, Open Science Room (session: <i>Open Data 2.0</i>), OHBM Annual (Virtual) Meeting 2020
2019d	“Individual Brain Charting, a high-resolution fMRI dataset for cognitive mapping of the human brain”, Open Science Room (session: <i>From statistical to biological validity</i>), OHBM Annual Meeting 2019, Rome, Italy
2019c	“Individual Brain Charting, a high-resolution fMRI dataset for cognitive mapping of the human brain.”, Science Pizza event, Institute for Brain and Spinal Cord (ICM), Paris, France
2019b	“Individual Brain Charting, a high-resolution fMRI dataset for cognitive mapping of the human brain.”, The 5 th CiNet Conference, Center for Information and Neural Networks (CiNet), Osaka, Japan
2019a	“Individual Brain Charting, a high-resolution fMRI dataset for cognitive mapping of the human brain”, 3 rd HBP Student Conference, Ghent, Belgium
2014	“Mecanismos Neurocognitivos associados à Criatividade Musical” (“Neurocognitive Mechanisms of Musical Creativity”), Scientific Congress organized by Núcleo de Estudantes de Farmácia da Associação Académica de Coimbra (NEF/AAC), Coimbra, Portugal
2013b	“Neural Basis of Expertise in Musical Creativity”, 3 rd European Professional Women’s Network (EPWN) Lisbon Annual Meeting - Creativity&Innovation - new economic models to overcome the crisis, Lisbon, Portugal
2013a	“Neural Basis of Expertise in Musical Creativity”, Neuroscience 2013 (Annual Meeting of SfN), San Diego, USA
2012	“Anatomical and Functional Brain Reorganizations Associated with Expertise in Musical Creativity” (PhD Half-Time Seminar), Annual Meeting of Centre for Neuroscience and Cell Biology (CNC), BIOCANT Park, Cantanhede, Portugal
PANEL DISCUSSIONS	
2021b	“Multilingual kids review – Portuguese session”, OHBM Annual (Virtual) Meeting 2021
2021a	“Deep neuroimaging data - a community perspective”, OHBM 2021 Brainhack

POSTER PRESENTATIONS

- 2020c “Individual functional atlas for cognitive mapping of the human brain”, FENS 2020 Virtual Forum
- 2020b “Segregation of functional territories in individual brains”, OHBM Annual (Virtual) Meeting 2020
- 2020a “WP2.1 Multimodal whole-brain mapping”, annual HBP Summit, Athens, Greece
- 2019b “Functional specialization in human cognition: a large-scale neuroimaging initiative”, OHBM Annual Meeting 2019, Rome, Italy
- 2019a “Individual Brain Charting, a high-resolution fMRI dataset for cognitive mapping of the human brain” ([Electronic Poster](#)), Neuroscience 2018 (Annual Meeting of SfN), San Diego, USA
- 2018b “Individual Brain Charting, a high-resolution fMRI dataset for cognitive mapping” ([Electronic Poster](#)), Open Day of the 6th annual HBP Summit, Maastricht, Netherlands
- 2018a “Mapping human cognition at high spatial resolution with a task-rich fMRI dataset”, OHBM Annual Meeting 2018, Singapore
- 2017c “Individual Brain Charting: a task-fMRI dataset for cognitive mapping”, 5th annual HBP Summit, Glasgow, Scotland
- 2017b “Mapping cognitive concepts to brain activity with a high-resolution individual data and a cognitive ontology”, OHBM Annual Meeting 2017, Vancouver, Canada
- 2017a “Individual Brain Charting: Mapping cognitive concepts to brain activity with a high-resolution individual data and a cognitive ontology”, New Concepts in Neural Pattern Encoding, Neuroscience Workshop Saclay (NeWS), Gif-sur-Yvette, France
- 2016e “Individual Brain Charting: a neuroimaging database featuring the first functional atlas of the human brain” ([Electronic Poster](#)), Neuroscience 2016 (Annual Meeting of SfN), San Diego, USA
- 2016d “Individual Brain Charting: a comprehensive neuroimaging database towards a macroscopic representation of the human brain”, 4th annual HBP Summit, Florence, Italy
- 2016c “Individual Brain Charting: a comprehensive neuroimaging database towards a macroscopic representation of the human brain”, FENS, Copenhagen, Denmark
- 2016b “Individual Brain Charting: high-resolution normative fMRI database”, OHBM Annual Meeting 2016, Geneva, Switzerland
- 2016a “High resolution encoding of cognitive information within the IBC project”, New Concepts in Neural Pattern Encoding, NeWS, Gif-sur-Yvette, France
- 2014 “Feeling and structure - neural correlates of musical improvisation under different constraints”, The Neurosciences and Music - V: Cognitive Stimulation and Rehabilitation, Dijon, France
- 2013 “Functional Brain Reorganizations Associated with Expertise in Musical Creativity”, Music, Poetry & The Brain - Celebrating Wagner’s Bicentennial, Lisboa, Portugal

2012	“Sex Differences in Training Effects - an fMRI study on Musical Improvisation”, Workshop on Music in Neuroscience, Monte Verità, Ascona, Switzerland
2011	“Selection and Generation in Musical Creativity - an fMRI study”, The Neurosciences and Music - IV: Learning and Memory, Edinburgh, UK
COLLABORATIVE-PROJECT PRESENTATIONS	
2017	Nilearn development - OHBM hackathon 2017, Vancouver, Canada
2016	Nistats development - Brainhack, Paris, France

Competences

COMPUTER SKILLS

- Good command in *Linux* and *Windows* environment
- **Programming:** Python (venv, pytest, Joblib), Bash, C, SQL, Lisp, Assembly (for Harvard Architecture)
- **Scientific Computing:** IPython, NumPy, SciPy, pingouin, MATLAB, GNU Octave, Jupyter Notebook, R, Wolfram Mathematica
- **Machine-Learning Frameworks:** scikit-learn, Google AI&MachineLearning Transformers
- **Data Manipulation&Visualization:** pandas, Matplotlib, Seaborn
- **Typesetting:** L^AT_EX(Document Classes: article, beamer, book and letter)
- **Software for Neuroimaging:** Nilearn, NiBabel, SPM - Statistical Parametric Mapping, FM-RIB Software Library (FSL), FreeSurfer, Papaya, Connectome Workbench, MRICron, MRIcroGL, BrainVoyager
- **Tools for designing and conducting multimodal-stimuli experiments in cognitive neuroscience:** Expyriment, pliers, Psychtoolbox, E-Prime&E-Basic, PsychoPy, Presentation
- **Software Engineering:** Git protocol (Platforms: GitHub and GitLab), Conda
- **Web/Databases:** HTML&CSS, Django
- **Miscellaneous:** GNU Emacs, Visual Studio Code, Office productivity softwares, GIMP - GNU Image Manipulation Program, Inkscape, Unison File Synchronizer, VeraCrypt, FFmpeg, Kdenlive, Statistica (by StatSoft and TIBCO Software)

LANGUAGE SKILLS

- **Portuguese** – native speaker
- **English** – bilingual proficiency
- **French** – professional-working proficiency

Other Information

MEMBERSHIPS

2017 – Present Member of the *Portuguese Society for Neuroscience*

VOLUNTEERING

2020 – Present Member of the *WHATNET: Workgroup for HARmonized Taxonomy of NETworks*

2018 – Present Affirmative action in gender equity:
board member of the *Women in Neuroscience Repository* (WiNRepo). <https://www.winrepo.org/>.

2006 – 2007 Promotion of Fair Trade: member of the Association *Cores do Globo*, Lisboa, Portugal

OUTREACH AND COMMUNICATION ACTIVITIES

2022 Promoting [OurBrainsCAN](#) to the London ON community at the [TD Sunfest](#)

Last update: March 30, 2023