Joao Barbosa

homepage, mail, google scholar, twitter

Postdoc @ Group for Neural Theory, ENS, Paris

Education

2013 - 2019: PhD in Computational Neuroscience, University of Barcelona, Spain.

Advisor: Albert Compte

2016: Neuroscience Internship, Princeton University

Advisor: Tim Buschman

2009 - 2011: MSc in Bioinformatics, University of Bologna and University of Pompeu Fabra.

2006 - 2009: BSc in Informatics Engineering, Universidade do Minho, Portugal

Exchange Studies: MSc. in Computer Science, Universiteit van Amsterdam, 2009.

Courses: Computer Vision, Artificial Intelligence, Distributed Computing

Intensive Courses (***E*** Experimental, ***ML*** Machine Learning, ***C*** Comp. Neuroscience)

E Neural Systems and Behavior, Marine Biological Laboratory, USA (June - August 2014)

ML, C Information Processing in Neural Systems, Osnabrück University, Germany. (2 May - 13 May 2015)

C, E The Barcelona Cognition, Brain and Technology summer school, University of Pompeu Fabra, Spain. (31 August - 11 September 2015)

C, ML The Computational and Cognitive Neuroscience Summer School, NYU-Shanghai, China. (9 July - 28 July 2016)

C, ML The Summer Workshop on the Dynamic Brain, Allen Institute for Brain Science (Aug 21, 2021 – Sun, Sep 5, 2021)

Awards

Postdoctoral grant, Fyssen Foundation, "Multi-area mechanisms underlying flexible, context-dependent behavior" (2020/2022)

Bial Foundation Grant Programme (Ref: 356/18), "Neural mechanisms underlying subliminal working memory."

PhD grant, Training Program for Research Staff, Dec 2013 - Dec 2017, BES-2013-062654

EMBO Travel Award for short stay at Princeton University, EMBO ASTF 340-2016

Cosyne 2017 high reviewer (95% percentile) ranking abstract (Travel Grant)

Best Project at The Barcelona Cognition, Brain and Technology summer school

Publications

** equal contribution*

Across-area synchronization supports feature integration in a biophysical network model of working memory.
Joao Barbosa, Vahan Babushkin, Ainsley Temudo Kartik Sreenivasan, Albert Compte.
Frontiers in Neural circuits (in press)

Disrupted serial dependence suggests deficits in synaptic potentiation in anti-NMDAR encephalitis and schizophrenia.
Heike Stein*, **Joao Barbosa***, Albert Compte et al.
Nature Communications (2020)

Interplay between persistent activity and activity-silent dynamics in prefrontal cortex underlies serial biases in working memory.
Joao Barbosa, Heike Stein, Albert Compte et al.
Nature Neuroscience (2020)

Build-up of serial dependence in color working memory.
Joao Barbosa, Albert Compte.
Scientific Reports (2020)

Working Memories Are Maintained in a Stable Code.
Joao Barbosa.
Journal of Neuroscience (2017) [commentary]

Neural circuit basis of visuo-spatial working memory precision.
Rita Almeida, **Joao Barbosa**, Albert Compte.
Journal of Neurophysiology (2015)

Under Review

Towards biologically constrained attractor models of schizophrenia.
Heike Stein*, **Joao Barbosa***, Albert Compte
Current Opinion in Neurobiology (under review)

Pinging the brain with visual impulses reveals electrically active, not activity-silent working memories
Joao Barbosa, Diego Lozano-Soldevilla, Albert Compte
Plos Biology (under review)

A practical guide for studying human behavior in the lab.)
Joao Barbosa, Heike Stein, Christopher Summerfield, Salvador Soto-Faraco, Alexandre Hyafil
Behavior Research Methods (under review)

Teaching

(TA) The 9th Computational and Cognitive Neuroscience (CCN) Summer School Suzhou, China (2019)

Introduction to MATLAB, Master in Brain and Cognition Universitat Pompeu Fabra, Spain (2016/2017)

(TA) Data Analysis for Cognitive Neuroscience, Master in Brain and Cognition, Universitat Pompeu Fabra, Spain (2015/2016)

Tutoring

Co-supervision (with Albert Compte) of PhD student Melanie Tschiersch (2020-)

Supervision of undergraduate student Maria Alejandra Tangarife (2019-2020)

Supervision of undergraduate student Rebecca Martinez (2018), poster at BARCCSYN '18, paper in Nature Neuroscience 2020

Supervision of undergraduate student Adria Galan (2017), poster at SFN '17, BARCCSYN '17 and '18, FENS '18, paper in Nature Neuroscience

Supervision of undergraduate student David Bestue (2016), poster at ECVP '16 and BARCCSYN '16, FENS '18. Paper in preparation.

Contributed Talks

Interplay between persistent activity and activity-silent in working memory, `Neuromatch 2020` `(video)`

Serial dependence decreases with structural connectivity decline during healthy aging, `Virtual Working Memory Symposium 2020` `(video)`

Synaptically imprinted memories reignite bump-attractor dynamics prior to stimulus in a vsWM task, `COSYNE 2017`*

* *high reviewer ranking (95% percentile) abstract*

The neural circuit basis of feature-binding in working memory, `BARCCSYN 2018`

Synaptically imprinted memories reignite bump-attractor dynamics prior to stimulus in a vsWM task, `Symposia on Memory 2017`

The neural basis of serial behavioral biases in spatial working memory, `BARCCSYN 2016`

A biophysical neural network model for multiitem visual working memory that accounts for memory binding errors, `Donders Discussions 2015`

Invited Talks

Zachary Mainen Lab, *Champalimaud Centre for the Unknown*, 2020 (online)

UCL Max Planck Computational Psychiatry *UCL, 2020 (online)*

Claudia Clopath lab *Imperial College, 2020 (online)*

Group for Neural Theory, *Ecole Neormale Superieure, Paris 2020*

John-Dylan Haynes lab, *Bernstein Center for Computational Neuroscience, Germany 2018*

Stefano Fusi lab, *Columbia University, USA 2017*

Tatiana Engel lab, *Cold Spring Harbor Lab, USA 2017*

Christian Machens Lab, *Champalimaud Centre for the Unknown, Portugal 2017*

Cheng-Yu Li Lab, *Institute of Neuroscience, China 2016*

Mingsha Zhang Lab, *Beijing Normal, China 2016*

John Murray Lab, *Yale University, USA 2016*

Clayton Curtis Lab, *New York University, USA 2016*

Tim Buschman Lab, *Princeton University, USA 2016*

Scientific meetings organization

Bernstein 2021 Workshop, "The geometry of neural activity: low-dimensional dynamics and high-dimensional representations".

BARCCSYN Webinars (ongoing), main creator and organizer. Online webinars series for the BARCCSYN community.

Neurochats (stalled due to COVID), main creator and organizer. Meeting for students and early postdocs to present their recently or ready to be published results to the whole Barcelona neuroscience community.

Machine Learning Reading Club (finished), main creator and organizer. Reading club for advance PhD students and postdocs of whole Barcelona neuroscience community to read Pattern Recognition and Machine Learning, by Christopher Bishop.

Historical Journal Club (finished), main creator and organizer. Journal club for early PhD students to discuss seminal papers on a broad range of neuroscience sub-fields.

Outreach activities

From mathematical models of single neurons to behavior (talk given together with Genis Prat), `JIPI 2018, Barcelona` `(video)`

How do neurons do to perceive and remember the environment? (two-day workshop with short talks and demos given in Spanish for 6+) `Festival de la Ciencia, Barcelona 2018`

Ad hoc Reviewer

Plos Computational Biology

NeuroImage

eLife

Nature Communications (KW, AC)

Nature Neuroscience (AC)

Journal of Neuroscience (AC)

Journal of Cognitive Neuroscience (AC)

Scientific Reports (AC)

helping Albert Compte (AC) or Klaus Wimmer (KW)

Last updated: September 16, 2021