Joao Barbosa

mail, google scholar, twitter

Postdoc @ Brain Circuits and Behavior lab
Interested in the neural mechanisms of working memory and machine learning.

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.

Topics: Cognitive Neuroscience, Machine Learning, R, Biophysics, Applied Genomics

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

Topics: Computer Science, Physics, Mathematics
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)

Awards

Postdoctoral grant, Bial Foundation Grant Programme 2018/2019 (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 Travel Grant - high reviewer (95% percentile) ranking abstract

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

Publications

** equal contribution*

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 (in press)

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

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

Pre-prints

Disrupted serial dependence suggests deficits in synaptic potentiation in anti-NMDAR encephalitis and schizophrenia. bioRxiv (2019)
Heike Stein*, **Joao Barbosa***, Albert Compte et al

Build-up of serial dependence in color working memory. bioRxiv (2019)
Joao Barbosa, Albert Compte.

Feature-binding in working memory through neuronal synchronization. CCN (2019)
Joao Barbosa, Albert Compte.

In preparation

Broadening of neural memory fields at large visual eccentricities explains behavioral interference effects in visuo-spatial working memory.
Poster @ ECVP 2016, FENS 2018
David Sanchez-Bestué, **Joao Barbosa**, Christos Constantinidis, Albert Compte.

Persistent neurons drive stable population-level working memory representations.
Poster @ COSYNE 2018, FENS 2018
Klaus Wimmer, **Joao Barbosa**, Adria Galan, Christos Constantinidis, Gianluigi Mongillo, Albert Compte.

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

Supervision of undergraduate student Maria Alejandra Tangarife (2019-)

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

Conference Talks

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`

Invited Talks

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*

Outreach Talks

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`

Scientific meetings organization

Neurochats (ongoing), 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 (ongoing, second round), 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.

Ad hoc Reviewer

(helping Albert Compte or Klaus Wimmer)

Plos Computational Biology (KW)

Nature Communications (KW, AC)

Nature Neuroscience (AC)

Journal of Neuroscience (AC)

Journal of Cognitive Neuroscience (AC)

Scientific Reports (AC)

Last updated: March 2, 2020