Alejandro F. Bujan

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Born: February, 1982—Burgos, Spain
Nationality: Spanish

Current position

Postdoctoral Researcher, Redwood Center for Theoretical Neuroscience, UC Berkeley

Areas of specialization

Neurobiology • Biophysics • Computer Science • Computational Neuroscience • Machine Learning • Data Analysis

Education

2015 PhD in Computational Neuroscience, Albert-Ludwigs-Universität Freiburg, Germany
2009 MSc in Computer Science, University of Birmingham, United Kingdom
2008 Master's degree in Biophysics, Universidad Autonoma de Madrid, Spain
2007 Licenciatura degree in Biology, Universidad Complutense de Madrid, Spain

Research Positions

2015-present Postdoc, Redwood Center for theoretical Neuroscience, UC Berkeley, USA
Advisors: Fritz Sommer

2010-2015 PhD student, Bernstein Center Freiburg, Albert-Ludwigs-Universität Freiburg, Germany
Advisors: Ad Aertsen & Arvind Kumar

2013 Visiting scientist, Blue Brain Project, EPFL, Switzerland
Advisor: Marc Oliver Gewaltig

2008 Undergraduate researcher, Neural Circuits Laboratory, Cajal Institute-CSIC, Spain
Advisor: Liset Menendez de la Prida

Grants, honors & awards

2010 Marie Curie EU fellowship (FACETS-ITN)

Publications & Conference Presentations

Journal articles

2015 **Alejandro F. Bujan**, Ad Aertsen, & Arvind Kumar. Role of input correlations in shaping the variability and noise correlations of evoked the activity in the neocortex. The Journal of Neuroscience 35.22 (2015): 8611-8625.

2014 **Alejandro F. Bujan**, Gerald Hahn[1], Yves Frégnac, Ad Aertsen, & Arvind Kumar. Communication through resonance in spiking neuronal networks. PLoS Comput Biol 10(8): e1003811.

2010 Premysl Jiruska, Jozsef Csicsvari, Andrew Powell, John Fox, Wei-Chih Chang, Martin Vreugdenhil, Xiaoli Li, Milan Palus, **Alejandro F. Bujan**, Richard Dearden, & John Jefferys (2010), High-frequency network activity, global increase in neuronal activity and synchrony expansion precede epileptic seizures in vitro, *J Neurosci*, Vol. 30, No. 16., pp. 5690-5701

Conference abstracts

2016 Kristofer Bouchard, **Alejandro F. Bujan**, & Fritz Sommer (2016) Sparse components of sensorimotor ECoG signals are relevant for speech control, *COSYNE*, Salt Lake City, Utah

2013 **Alejandro F. Bujan**, Gerald Hahn, Yves Fregnac, Ad Aertsen, & Arvind Kumar (2013) Propagation of synchronous activity through network resonance, *Bernstein Conference 2013*

2013 Gerald Hahn, **Alejandro F. Bujan**, Yves Fregnac, Ad Aertsen, & Arvind Kumar (2013) Synfire chains and gamma oscillations: two complementary modes of information transmission in cortical networks, *BMC Neuroscience 2013*, 14(Suppl 1):P226

2012 Grace Lindsay, **Alejandro F. Bujan**, Ad Aertsen, & Arvind Kumar (2012) 'Within' versus 'between' correlations and their relation to the network structure, Neuroscience Meeting Planner, New Orleans, LA: Society for Neuroscience, 2012. Online.

2012 **Alejandro F. Bujan**, Arvind Kumar, & Ad Aertsen. (2012). Stimulus driven correlation gain modulation in neuronal networks. *Front Comput Neurosci.* Bernstein Conference 2012

2012

[1]Shared first authorship

Grace Lindsay, **Alejandro F. Bujan**, Ad Aertsen, & Arvind Kumar. (2012). Membrane potential statistics reveal detailed correlation structure. *Front Comput Neurosci.* Bernstein Conference 2012

2012 **Alejandro F. Bujan**, Arvind Kumar, & Ad Aertsen (2012) Structure of stimulus induced correlations in random networks with distance dependent connectivity, *COSYNE*, Salt Lake City, Utah

Invited talks

2014 Redwood Center for Computational Neuroscience. UC Berkeley. Host: Fritz Sommer
video

2014 Center for Integrative Neuroscience. UC San Francisco. Host: Loren Frank

2014 Center for Neural Circuits and Behaviuor. Oxford University. Host: Tim Vogels

Teaching

2013 Models of Neurons and Networks, responsible for teaching *Synfire Chains and Pulse Packets.*
Scientific Programming with Python, responsible for teaching *Introduction to Scientific Plotting with Matplotlib.*
Simulation of Biological Neuronal Networks, responsible for teaching *Network Topology and Dynamics.*

2012 Quantitative Methods, responsible for tutoring and preparing exercises for *Signal Processing, Digital Signals and Stochastic Processes.*
Simulation of Biological Neuronal Networks, responsible for teaching Network Topology and Dynamics.

2011 Scientific Programming with Python, responsible for teaching *Advanced Data Structures and Numpy Arrays.*
Analysis and Models in Neurophysiology, responsible for tutoring *Neuronal Data Analysis.*

Training & Workshops

2012 Advanced scientific programming in python summer school, Kiel, Germany
Sensory coding and natural environment, IST Austria
Neural Coding in Sensory Systems, FENS-IBRO-Hertie Winter School,Obergurgl, Austria
FACETS-ITN Course: Bio-Electronic Interface, Bordeaux, France

FACETS-ITN Course: High-Performance Computing, Juelich, Germany

2011 FACETS-ITN Course: Neuromorphic Electronic Circuits, Heidelberg, Germany
FACETS-ITN Course: Mean field models, Lausanne, Switzerland
FACETS-ITN Course: Theoretical Neuroscience, Lausanne, Switzerland
FACETS-ITN Course: Intellectual Property, Barcelona, Spain

Other activities

2011 Organizer of the 1st iCoNeT PhD Conference: from coding strategies to emergent functional properties in recurrent networks