Jesús Garrido, PhD

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RESEARCH SCIENTIST

Delivering Innovative Learning Systems for Robotics Motor Control and Information Processing

Proven success driving groundbreaking advancement within the research in biologically inspired systems for motor control. Track record of delivering:

- 23 articles published in the main peer-reviewed journals of cybernetics, artificial intelligence and neuroscience.
- Coordinator and main developer of a real-time spiking neural network simulator currently used for robotics control.
- Up to 330k€ of funding obtained in competitive public calls for projects.

Education

University of Granada -- Granada, Spain
PhD in Computer Architecture and Technology, 2011
MS in Computer Architecture and Technology, 2007
BS in Computer Science, 2006

Experience

University of Granada -- Granada, Spain
Postdoc Researcher, 2014 to Present

Research . *Research Project Highlights:*

- Principal Investigator in the project CEREBSENSING: Cerebellar Distributed Plasticity Towards Active Sensing and Motor Control. This project has been funded by the European Commission (H2020 Marie-Slowdowska Curie Actions - Individual Fellowship 2014) with 160k€ and the University of Granada (Program to Incorporate Young Researchers to New Research Lines) with 170k€.
- Active participation in the Human Brain Project (one of the two flagship projects of the European Commission). Development of a control architecture inspired in the cerebellum operation and inclusion in the Neurorobotics Portal.
- Implementation of control architectures in neuromorphic platforms (SpiNNaker).

University of Pavia -- Pavia, Italy
Postdoc Researcher, 2012 to 2014

Research . *Research Project Highlights:*

- Experienced researcher in the project CEREBNET: Timing and plasticity in the olivo-cerebellar system. funded by the European Commission (FP7 Marie-Curie Actions - Initial Training Network) supervised by Prof. Egidio D'Angelo.

- Theoretical study of the cerebellar particular topology and cellular properties. Contribution to the main international conferences in neuroscience and collaboration with top-ranked European labs in the framework of three European projects (CEREBNET, REALNET and Human Brain Project).

University of Granada -- Granada, Spain
PhD Student, 2006 to 2011
Research . *Research Project Highlights:*

- FPU National Fellowship ending with the achievement of his PhD degree at the end of 2011. Extraordinary doctorate award. PhD Thesis Dissertation: "Simulation of biological neuronal estructures. Design and function study of the cerebellum".
- Collaboration in two European projects (SENSOPAC and REALNET) supervised by Prof. Eduardo Ros.
- Coordination and development of the EDLUT spiking neural network simulator (http://edlut.googlecode.com). By using precompiled look-up tables EDLUT avoids the resolution of the differential equations that usually regulate the evolution of the biological system state during the simulation process, resulting in remarkably faster simulations.

Publications

The full list of publications can be found in my Google Scholar Profile. Some of the most relevant publications are listed below.

- **Garrido, J. A.**; Luque, N. R.; Tolu, S.; D'Angelo, E. (2016). Oscillation-driven Spike-timing Dependent Plasticity Allows Multiple Overlapping Pattern Recognition in Inhibitory Interneuron Networks. Under review with minor changes in *International Journal of Neural Systems*.
- Luque, N. R.*; **Garrido, J. A.***; Carrillo, R. R.; D'Angelo, E.; Ros, E. (2014). Fast convergence of learning requires plasticity between inferior olive and deep cerebellar nuclei in a manipulation task: a closed-loop robotic simulation. *Frontiers in Computational Neuroscience* 8, 97.
- **Garrido, J. A.**; Ros, E.; D'Angelo, E. (2013). Spike timing regulation on the millisecond scale by distributed synaptic plasticity at the cerebellum input stage: a simulation study. *Frontiers in Computational Neuroscience* 7, 64.
- **Garrido, J. A.***; Luque, N. R.*; D'Angelo, E.; Ros, E. (2013). Distributed cerebellar plasticity implements adaptable gain control in a manipulation task: a closed-loop robotic simulation. *Frontiers in Neural Circuits* 7, 159.
- Luque, N. R.; **Garrido, J. A.**; Carrillo, R. R.; Coenen, O. J. M. D.; Ros, E. (2011). Cerebellar-like corrective model inference engine for manipulation tasks. *IEEE Transactions on Systems, Man, and Cybernetics, Part B: Cybernetics* 41 (5), 1299-1312.
- Luque, N. R.; **Garrido, J. A.**; Carrillo, R. R.; Coenen, O. J. M. D.; Ros, E. (2011). Cerebellar input configuration towards object model abstraction in manipulation tasks. *IEEE Transactions on Neural Networks* 22 (8), 1321-1328.