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GOBIERNO DE ESPAÑA
MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

FECYT FUNDACIÓN ESPAÑOLA PARA LA CIENCIA Y LA TECNOLOGÍA

Summary of CV

This section describes briefly a summary of your career in science, academic and research; the main scientific and technological achievements and goals in your line of research in the medium -and long- term. It also includes other important aspects or peculiarities.

I am a "Talent Attraction" Postdoctoral Fellow (started on May 2018) at the Neural and Cognitive Engineering Group, CSIC, where I have returned after spending 3 years as Postdoc at Northwestern University (Chicago, USA).

Postdoctoral Research: I was awarded a **Marie Curie Fellowship** in the 2013 Call, only a few months after obtaining my PhD (June 2013); my proposal was ranked among the top 10 in engineering (of ~1200 in all 8 areas). During my 3 years at **Northwestern**, I primarily worked on a cutting-edge project to understand motor control and develop next generation brain-machine interfaces to restore hand use in monkeys. I also collaborated in a similar project in spinal cord injured rats. My monkey work led to four publications in top journals (two in Neuron, one in Nature Comms), and numerous conference presentations and invited talks. In parallel, I finished other four articles that continued my PhD work. I also established a collaboration to study the spatial structure of neural activity with the Pachitariu group at **Janelia** Research Centre, where I was a Visiting Scientist. Currently, I am setting up animal experiments with the group of Prof. Jose Obeso at CINAC.

PhD research: I did my PhD (start Sep. 2008), funded by a competitive **FPU fellowship**, at the Bioengineering Group, CSIC. I developed a neuroprosthetic to suppress tremor using muscle stimulation, and studied the activity of motoneuron populations in tremor patients. The former earned the “Highest potential impact award” at the IEEE Unconference in Rehab Robotics. I published three 1st author papers in Q1 journals, eight co-author journal papers, and presented at several conferences.

Funding: During my yet short career (<5 years as Postdoc) I have secured **>400.000 € in direct funding**: an FPU PhD fellowship (1 of 15 in Electrical Eng.), a Marie Curie Postdoctoral Fellowship, and a recently awarded “Talent Attraction” Postdoctoral Fellowship (C. of Madrid). I have been key contributor to two funded EU ICT projects (>3 M€), one Spanish project (240 K€), one NIH project (>2 M$), and one US foundation project (600 K$).

Mentoring: Since 2015, I have mentored **seven** master and undergraduate students (four in the US, three in Spain) working on neuroscience and neuroprosthetics. I have also **co-managed a 2.5 M$ NIH project**.

Selected invited talks: University College London (June 2017), Neuroscience Institute CSIC-UMH (Dec 2017), German Primate Centre (April 2018), Cajal Institute (Nov 2018).

Key publications

1. Gallego, Perich, Miller, Solla. **Neuron** 2017
2. Gallego, Perich, Naufel, et al. **Nature Comms** 2018
3. Perich, Gallego, Miller. **Neuron** 2018
4. Gallego, Dideriksen, Holobar, et al. **J Neurosci** 2015
5. Gallego*, Ethier*, Miller. **Curr Opinion Neurobiol** 2015 *Co-first authors; order reversed here

Key publication metrics: Total citations: 629; **H-index: 16**; Citations as Postdoc (2014-): 492

Reviewer: I review for 25 IF journals, including Nature Comms, J Neurosci, and J Physiol. I am a Review Editor for Front Neurosci.

References

Lee E. Miller, Professor in Physiology, and Biomedical Engineering, Northwestern University. Email: lm@northwestern.edu

Dario Farina, Professor in Neurorehabilitation Engineering, Imperial College London. Email: d.farina@imperial.ac.uk

Sara A. Solla, Professor in Physiology, and Physics & Astronomy, Northwestern University. Email: solla@northwestern.edu

Eduardo Rocon, Assistant Professor and Group Leader, CSIC. Email: e.rocon@csic.es

General quality indicators of scientific research

This section describes briefly the main quality indicators of scientific production (periods of research activity, experience in supervising doctoral theses, total citations, articles in journals of the first quartile, H index...). It also includes other important aspects or peculiarities.

My work has been published in **73 journal and conference articles and book chapters** since the beginning of my Ph.D. in the Fall 2008. Twenty one (21) of these publications are in journals with an Impact Factor according to the ISI Web of Knowledge (plus two articles under review). Thirteen (13) of them are ranked in the first quartile (Q1) of their respective fields. Due to the multidisciplinary nature of my work, my research has been published in journals in over 10 different ISI categories, including Neuroscience, Physiology, Applied Mathematics, Biomedical Engineering, Electronic Engineering, and Robotics. Several of my publications have appeared in very **high-profile journals**, including **two publications in Neuron** (Impact Factor: 14.3), **one in Nature Communications** (Impact Factor: 12.4), one in **Journal of Neuroscience** (Impact Factor: 5.9), and one in **Current Opinion in Neurobiology** (Impact Factor: 6.4).

My work has received **over 492 citations since 2014**, with the number of yearly citations exhibiting a clear growing trend (source: Google Scholar). Over the last two years, it has received over 235 citations. This increasing trend in the number of citations indicates the quality and timeliness of my research. My **current h-index is 16**, quite high at this early stage of my career (<5 years as Postdoc).

I have attracted **>400.000 € in direct funding** as PhD student and Postdoc. I serve as reviewer for twenty four journals with an Impact Factor, including Nature Communications, Journal of Neuroscience, Journal of Physiology, PLoS Computational Biology, and Journal of Neurophysiology. Next follow a series of quality indicators of scientific research:

1. **Journal Citation Reports** (Thomson Reuters)
Number of articles in journals with an Impact Factor: 21 (plus two under review)
Articles in Quartile 1: 13
Articles in Quartile 2: 4
Articles in Quartile 3: 3
Articles in Quartile 4: 1
Articles as first/corresponding author: 10
Articles in Q1 as first author/corresp. author: 7

2. **Google Scholar**
Profile: https://goo.gl/No6Zj0
Total Citations: 629
Citations as Postdoc (2014-): 492

H-index: 16
i10-index: 17

3. **Scopus**
Author ID: 36136833700
Total Citations: 398
H-index: 13

4. **ResearchGate**
Profile: https://www.researchgate.net/profile/Juan_Gallego9
RG Score: 27.68
Total Citations: 489
H-index: 14
Percentile: 85

ORCID: **0000-0003-2146-0703**
Personal web page: **https://goo.gl/QA66TL**

Current professional situation

Employing entity: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Department: Neural and Cognitive Engineering Group, CENTRO DE AUTOMATICA Y ROBOTICA
Professional category: Talent Attraction Postdoctoral Fellow
Start date: 01/05/2018
Type of contract: Temporary employment contract **Dedication regime:** Full time
Primary (UNESCO code): 249000 - Neurosciences; 249001 - Neurophysiology; 320404 - Rehabilitation; 330600 - Electrical technology and engineering; 331402 - Prosthetic devices
Secondary (UNESCO code): 120903 - Data analysis; 241100 - Human physiology; 331110 - Medical instruments; 331400 - Medical technology
Performed tasks: I am currently establishing my own research line to study movement neuroscience and motor control. I primarily pursue these questions in monkeys, and through collaborations, in mice and humans, as well. My animal work focuses on how neural populations in the sensory and motor cortices generate and adapt movement (i.e., motor learning). At the present, I am: 1) applying for funding and setting up monkey experiments in collaboration with CINAC (Móstoles, Spain); and 2) finalizing several studies that I started while at Northwestern University (Chicago, USA). As part of my ongoing work, I intend to also record form the basal ganglia in a monkey model of Parkinson's disease and in intact monkeys. My mouse work is focused on how local and global computations by populations of cortical neurons, a study in collaboration with the Pachitariu Group in Janelia Research Centre, where I was a visiting scientist.
Identify key words: Biosensors; Electrophysiology; Neurophysiology; Bioinstrumentation; Data analysis; Perception and movement; Rehabilitation; Implanted circuits on alive beings; Bioelectric signal treatment

Previous positions and activities

	Employing entity	Professional category	Start date
1	Consejo Superior de Investigaciones Científicas	Marie Curie Postdoctoral Fellow	01/05/2017
2	Howard Hughes Medical Institute	Visiting Scientist	20/10/2017
3	Northwestern University	Postdoctoral Research Fellow	01/05/2016
4	Consejo Superior de Investigaciones Científicas	Marie Curie Postdoctoral Fellow	01/05/2014
5	Consejo Superior de Investigaciones Científicas	Researcher	01/12/2012
6	Consejo Superior de Investigaciones Científicas	Ph.D. Student (FPU fellow)	15/09/2008

	Employing entity	Professional category	Start date
7	Consejo Superior de Investigaciones Científicas	Research Engineer	18/10/2007

1 **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Department: Neural and Cognitive Engineering Group, CENTRO DE AUTOMATICA Y ROBOTICA
Professional category: Marie Curie Postdoctoral Fellow
Start-End date: 01/05/2017 - 30/04/2018 **Duration:** 1 year
Type of contract: Grant-assisted student (pre or post-doctoral, others)

2 **Employing entity:** Howard Hughes Medical Institute
Department: Janelia Research Center
City employing entity: Arlington, United States of America
Professional category: Visiting Scientist
Start-End date: 20/10/2017 - 20/11/2017 **Duration:** 1 month
Performed tasks: Designed and performed an experiment to study how neural populations across the entire cortex coordinate their activity during behavior in collaboration with the Pachitariu Group. We recorded neural activity from head fixed mice expressing GCamp6s in excitatory neurons. Using a wide-field 2 photon microscope (a mesoscope), we simultaneously detected >10,000 neurons per experiment across motor sensory, retrosplenial, and visual cortex. With this data we are studying the coordination between near and far neurons, and how information is processed during behavior.

3 **Employing entity:** Northwestern University **Type of entity:** University
Department: Department of Physiology, Feinberg School of Medicine
City employing entity: Chicago, United States of America
Professional category: Postdoctoral Research Fellow
Start-End date: 01/05/2016 - 30/04/2017 **Duration:** 1 year
Performed tasks: I primarily work on an NIH project to develop a neuroprosthesis that restoreshand function after paralysis using a non-human primate model. I serve as its project manager together with my group's PI, Prof. Lee E. Miller. This project has two main goals: 1) to further our understanding of the neural control of grasp under normal conditions, and to understand how it is altered by paralysis; 2) to restore hand function with a novel cortically-controlled neuroprosthesis that activates the paralyzed muscles based on the subject's motor intent, decoded from neural recordings. For the first aim, my work focuses onthe use of dimensionality reduction techniques to understand how populations of neurons drive movement generation. For the second aim, I work on the integration of the components of the neuroprosthesis as well as on algorithms to "decode" motor intent and to control muscle stimulation. I also collaborate in a number of related studies led by other group members, including a project to restore walking after spinal cord injury in rats, using a cortically-controlled neuroprosthesis similar to the one I developed for primates. A second relevant collaboration is on a computational project that investigates the mechanisms mediating motor learning in the primate motor and premotor cortices. Over the last two years, I have also co-supervised three students working on projects related to neural control of movement and neuroprostheses for movement restoration, and helped write three research proposals (for private foundations and NIH) with Prof. Miller and other colleagues at Northwestern University.

4 **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Professional category: Marie Curie Postdoctoral Fellow
Start-End date: 01/05/2014 - 30/04/2016

5 **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Professional category: Researcher

Start-End date: 01/12/2012 - 27/12/2013

6 **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Professional category: Ph.D. Student (FPU fellow)
Start-End date: 15/09/2008 - 15/09/2012

7 **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Professional category: Research Engineer
Start-End date: 18/10/2007 - 15/09/2008

Education

University education

1st and 2nd cycle studies and pre-Bologna degrees

University degree: Higher degree
Name of qualification: Industrial Engineer - Specialization in Automation and Robotics
Degree awarding entity: Universidade de Vigo **Type of entity:** University
Date of qualification: 27/09/2007

Doctorates

Doctorate programme: Ph.D. Programme in Electrical, Electronics and Automation Engineering
Degree awarding entity: Universidad Carlos III de Madrid **Type of entity:** University
Date of degree: 06/06/2013

Other postgraduate university studies

Postgraduate qualification: Máster en robótica y automatización
Degree awarding entity: Universidad Carlos III de Madrid **Type of entity:** University
Date of qualification: 17/12/2009

Language skills

Language	Listening skills	Reading skills	Spoken interaction	Speaking skills	Writing skills
French	C1	C1	C1	C1	B2
Portuguese	C2	C2	C1	C1	B2
Spanish	C2	C2	C2	C2	C2
English	C2	C2	C2	C2	C2

Teaching experience

General teaching experience

1 **Name of the course:** Brain Machine Interfaces (in Emerging Trends in Robotics)
University degree: Master in Robotics and Automation
End date: 2019
Entity: Universidad Politécnica de Madrid **Type of entity:** University

2 **Name of the course:** Summer Course on Bionics
University degree: Engineering and Life Sciences Students and Postgraduates
End date: 07/07/2018
Entity: FUNDACION UNIVERSITARIA SAN PABLO CEU
Faculty, institute or centre: Escuela Politécnica

3 **Name of the course:** Introduction to Brain-Machine Interfaces
University degree: M.Sc. Biomedical Engineering
End date: 24/04/2018
Entity: FUNDACION UNIVERSITARIA SAN PABLO CEU

4 **Name of the course:** Summer Course on Bionics
University degree: Engineering and Life Sciences Students and Postgraduates
End date: 13/07/2017
Entity: FUNDACION UNIVERSITARIA SAN PABLO CEU
Faculty, institute or centre: Escuela Politécnica

Experience supervising doctoral thesis and/or final year projects

1 **Project title:** Comparison of brain-machine interface decoders based on neural population activity and local field potentials
Type of project: End of course project
Entity: Universidad Carlos III de Madrid **Type of entity:** University
Student: Cecilia Gallego
Date of reading: 06/2019

2 **Project title:** Evaluación de una neuroprótesis para restaurar el uso de la mano en personas con lesión medular
Type of project: End of course project
Entity: Universidad Politécnica de Madrid **Type of entity:** University
Student: Evelio García
Date of reading: 06/2019

3 **Project title:** Development of a fully-wireless BMI to restore hand function with FES
Type of project: Master's Thesis
Co-director of thesis: Lee E. Miller
Entity: Northwestern University **Type of entity:** University
City of entity: Chicago, United States of America
Student: Kevin L. Bodkin
Date of reading: 11/2017

4 **Project title:** Desarrollo de una plataforma para la rehabilitación de agarre a personas con lesión medular
Type of project: Master's Thesis
Co-director of thesis: Antonio Barrientos; Eduardo Rocon
Entity: Universidad Politécnica de Madrid **Type of entity:** University
Student: E. Andrés Parra Ricaurte
Date of reading: 10/10/2017

5 **Project title:** Machine learning techniques for training BMIs in freely moving monkeys
Type of project: Visiting student project
Entity: Northwestern University **Type of entity:** University
City of entity: Chicago, United States of America
Student: Pablo M. Tostado
Date of reading: 08/2017

6 **Project title:** FES control for restoring complex functional hindlimb movements in the rat
Type of project: Study within a project
Co-director of thesis: Matthew C. Tresch; Lee E. Miller
Entity: Northwestern University **Type of entity:** University
City of entity: Chicago, United States of America
Student: Maria Jantz
Date of reading: 07/2017

7 **Project title:** Effects of transcranial direct current stimulation on monkey motor cortex
Type of project: Visiting student project
Entity: Northwestern University **Type of entity:** University
City of entity: Chicago, United States of America
Student: Qinpu He
Date of reading: 07/2015

Scientific and technological experience

Scientific or technological activities

R&D projects funded through competitive calls of public or private entities

1 **Name of the project:** A primate model of an intra-cortically controlled FES prosthesis (Grant renewal)
Entity where project took place: Northwestern University **Type of entity:** University
City of entity: Chicago, United States of America
Name principal investigator (PI, Co-PI....): Lee E. Miller; Ferdinando A. Mussa-Ivaldi; Eric J. Perreault; Sara A. Solla
Funding entity or bodies:
National Institutes of Health / National Institute of Neurological Diseases and Stroke **Type of entity:** Contract: NS053603
City funding entity: Bethesda, United States of America

Start-End date: 01/12/2017 - 30/11/2022
Total amount: 2.000.000 €

2 **Name of the project:** Development of an FES neuroprosthesis for rehabilitation following spinal cord injury
Entity where project took place: Northwestern University **Type of entity:** University
City of entity: Chicago, United States of America
Name principal investigator (PI, Co-PI....): Lee E. Miller; Matthew C. Tresch
Funding entity or bodies:
Craig H. Neilsen Foundation **Type of entity:** Foundation
City funding entity: Encino, United States of America

Start-End date: 01/08/2015 - 31/07/2018
Total amount: 600.000 €

3 **Name of the project:** NeuroPlast, Implementation of a novel brain machine interface to restore limb movement and promote recovery from partial spinal cord injury: Basic studies and clinical application
Entity where project took place: Northwestern University **Type of entity:** University
City of entity: Chicago, United States of America
Name principal investigator (PI, Co-PI....): Juan Álvaro Gallego; Eduardo Rocon; Lee E. Miller
Funding entity or bodies:
Comisión Europea **Type of entity:** 7th Framework Programme. Contract: PEOPLE-2013-IOF-627384
City funding entity: Madrid, Community of Madrid, Spain

Start-End date: 01/05/2014 - 30/04/2018
Total amount: 265.263 €

4 **Name of the project:** A primate model of an intra-cortically controlled FES prosthesis
Entity where project took place: Northwestern University **Type of entity:** University
City of entity: Chicago, United States of America
Name principal investigator (PI, Co-PI....): Lee E. Miller
Funding entity or bodies:
National Institutes of Health / National Institute of Neurological Diseases and Stroke **Type of entity:** Contract: NS053603
City funding entity: Bethesda, United States of America

Start-End date: 01/01/2011 - 31/05/2016
Total amount: 2.300.000 €

5 **Name of the project:** NeuroTREMOR, A novel concept for support to diagnosis and remote management of tremor
Entity where project took place: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
City of entity: Madrid, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): José L. Pons; Dario Farina; Ales Holobar; Julián Benito-León; Klaus-Peter Hoffmann; Freygardur Thorsteinsson; Elan D. Louis
Funding entity or bodies:
Comisión Europea **Type of entity:** 7th Framework Programme. Contract: ICT-2011-287739
City funding entity: Madrid, Community of Madrid, Spain

Start-End date: 01/02/2012 - 31/01/2015
Total amount: 2.443.000 €

6 **Name of the project:** HYPER, Hybrid NeuroProsthetic and NeuroRobotic Devices for Functional Compensation and Rehabilitation of Motor Disorders
Entity where project took place: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
City of entity: Madrid, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): José L. Pons; Alicia Casals; Luis Montano; Luis Moreno; Estibaliz Ochoteco; Thierry Keller; Julián Flórez; Ángel Gil; Juan C. Miangolarra
Funding entity or bodies:
Ministerio de Ciencia e Innovación **Type of entity:** Contract: CSD2009-00067
City funding entity: Madrid, Community of Madrid, Spain

Start-End date: 01/01/2010 - 31/12/2014
Total amount: 1.695.000 €

7 **Name of the project:** REHABOT, Sistemas avanzados EEF y UMI para el desarrollo de soft-robots en el ámbito de la robótica de rehabilitación
Entity where project took place: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
City of entity: Madrid, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): José L. Pons
Funding entity or bodies:
MINISTERIO DE EDUCACION Y CIENCIA
City funding entity: Spain

Code according to the funding entity: DPI2008-06772-C03-01
Start-End date: 01/11/2008 - 31/08/2011
Total amount: 240.000 €

8 **Name of the project:** TREMOR, An ambulatory BCI-driven tremor suppression system based on functional electrical stimulation
Entity where project took place: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
City of entity: Madrid, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): José L. Pons; Juan M. Belda-Lois; Tommaso D'Alessio; Mario Manto; Dejan B. Popovic; Rita Paradiso; Mirjana B. Popovic; Damjan Zazula
Funding entity or bodies:
Comisión Europea **Type of entity:** 7th Framework Programme. Contract: ICT-2007-224051
City funding entity: Madrid, Community of Madrid, Spain

Start-End date: 01/09/2008 - 31/08/2011
Total amount: 692.000 €

9 **Name of the project:** TREMOR, An active tremor compensation for the upper limbs via functional electrical stimulation
Entity where project took place: Laboratoire d'Informatique, de Robotique et de Microélectronique de Montpellier (LIRMM) **Type of entity:** R&D Centre
City of entity: Montpellier, Languedoc-Roussillon, France
Name principal investigator (PI, Co-PI....): Philippe Poignet
Funding entity or bodies:
Agence Nationale de la Recherche **Type of entity:** Contract: ANR-06-ROBO-0008
City funding entity: París, Île de France, France

Start-End date: 16/01/2007 - 01/01/2010
Total amount: 211.620 €

10 **Name of the project:** ESBiRRo, Biomimetic actuation, sensing and control technology for limit cycle bipedal walkers
Entity where project took place: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
City of entity: Madrid, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): José L. Pons; Martijn Wisse; Freygardur Thorsteinsson
Funding entity or bodies:
Comisión Europea **Type of entity:** 6th Framework Programme. Contract: IST-61-045301-STP
City funding entity: Madrid, Community of Madrid, Spain

Start-End date: 01/12/2006 - 30/11/2009
Total amount: 1.737.000 €

Scientific and technological activities

Scientific production

H index: 16
Date of application: 27/01/2019

Publications, scientific and technical documents

1 Matthew G. Perich; Juan Álvaro Gallego; Lee E. Miller. A neural population mechanism for rapid learning. Neuron. in press, Cell Press, 21/11/2018.
DOI: https://doi.org/10.1101/138743
Type of production: Scientific paper **Format:** Scientific and technical document or report
Position of signature: 2
Total no. authors: 3 **Corresponding author:** No
Impact source: ISI **Category:** Science Edition - NEUROSCIENCES
Impact index in year of publication: 14.318 **Journal in the top 25%:** Yes
Position of publication: 7 **No. of journals in the cat.:** 261
Source of citations: Google Scholar **Citations:** 6

Relevant results: This paper reports a novel mechanism for rapid (motor) learning, based on the modification of specific neural population activity patterns. Highlighted in a commentary: Kaufman, M.T., "Adapting fine with a little help from the null space" Neuron 2018.
Relevant publication: Yes

2 Juan Álvaro Gallego; Matthew G. Perich; Stephanie N. Naufel; Christian Ethier; Sara A. Solla; Lee E. Miller. Cortical population activity within a preserved neural manifold underlies multiple motor behaviors. Nature Communications. 9, pp. 4233. 12/10/2018. Available on-line at: <https://www.biorxiv.org/content/early/2017/08/21/176081>.
DOI: https://doi.org/10.1101/176081
Type of production: Scientific paper **Format:** Scientific and technical document or report

Position of signature: 1
Total no. authors: 6 **Corresponding author:** Yes
Impact source: ISI **Category:** Science Edition - MULTIDISCIPLINARY SCIENCES
Impact index in year of publication: 12.35 **Journal in the top 25%:** Yes
Position of publication: 3 **No. of journals in the cat.:** 64

Source of citations: Google Scholar **Citations:** 4

Relevant results: We report findings that suggest that the brain may generate movement across different behaviors combining population-wide activity patterns. This result has broad implications for neuroscience and the development of brain-controlled robots to restore movement. Highlighted by the journal Editors as recommended article in “From brain to behaviour –systems and computational neuroscience.”
Relevant publication: Yes

3 Juan Álvaro Gallego; Matthew G. Perich; Lee E. Miller; Sara A. Solla. Neural manifolds for the control of movement. Neuron. 94 - 5, pp. 978 - 984. Cell Press, 07/06/2017. Available on-line at: <http://www.cell.com/neuron/fulltext/S0896-6273(17)30463-4>.
DOI: http://dx.doi.org/10.1016/j.neuron.2017.05.025
Type of production: Scientific paper **Format:** Journal
Position of signature: 1
Total no. authors: 4 **Corresponding author:** No
Impact source: ISI **Category:** Science Edition - NEUROSCIENCES
Impact index in year of publication: 14.32 **Journal in the top 25%:** Yes
Position of publication: 7 **No. of journals in the cat.:** 261

Source of citations: Google Scholar **Citations:** 33

Relevant results: This manuscript is part of Neuron's special issue "How does the brain work?". We propose a new conceptual framework to understand brain function in which the basic building blocks of neural activity are not the activity from single neurons, but population wide-activity patterns that result from the connectivity within the networks of neurons.
Relevant publication: Yes

4 Juan Álvaro Gallego; Jakob L. Dideriksen; Ales Holobar; Juan Pablo Romero; Julián Benito-León; José Luis Pons; Eduardo Rocon; Dario Farina. The phase difference between neural drives to antagonist muscles in essential tremor is associated to the relative strength of supraspinal and afferent input. Journal of Neuroscience. 35 - 23, pp. 8925 - 8937. 10/06/2015. Available on-line at: <http://www.jneurosci.org/content/35/23/8925>.
DOI: 10.1523/JNEUROSCI.0106-15.2015
Type of production: Scientific paper **Format:** Journal
Position of signature: 1
Total no. authors: 8 **Corresponding author:** No
Impact source: ISI **Category:** Science Edition - NEUROSCIENCES
Impact index in year of publication: 5.92 **Journal in the top 25%:** Yes
Position of publication: 26 **No. of journals in the cat.:** 256

Source of citations: Google Scholar **Citations:** 22

Relevant results: In this study we asked what is the role of spinal afferent circuits in the generation of essential tremor, the most common movement disorder in humans. Using surface high-density EMG electrodes and a blind source separation algorithm, we were able to identify the activity from many concurrently active motor units during tremor. Based on the analysis of this motor unit population activity and on a computational model of the tremulous limb, we showed for the first time that although tremor is centrally generated, spinal afferent circuits play a great role in determining its properties. This observation not only furthers our understanding of tremor generation, but also opens up new treatment avenues, such as neuroprostheses that target spinal afferent circuits.
Relevant publication: Yes

5 Juan Álvaro Gallego; Christian Ethier; Lee E. Miller. Brain-controlled neuromuscular stimulation to drive neural plasticity and enhance recovery. Current Opinion in Neurobiology. 33, pp. 95 - 102. 28/03/2015. Available on-line at: <http://www.sciencedirect.com/science/article/pii/S0959438815000586>.

DOI: 10.1016/j.conb.2015.03.007

Type of production: Scientific paper
Format: Journal
Position of signature: 1
Total no. authors: 3
Corresponding author: No
Impact source: ISI
Category: Science Edition - NEUROSCIENCES
Impact index in year of publication: 6.37
Journal in the top 25%: Yes
Position of publication: 22
No. of journals in the cat.: 256
Source of citations: Google Scholar
Citations: 24

Relevant results: This opinion article discusses the central hypothesis of my work on the restoration of movement after disease/injury of the nervous system using neuroprosthetic systems. This hypothesis is that muscle or nerve stimulation, appropriately-timed with respect to the subject's motor intent, will drive and shape the nervous system's ability to repair itself, what is known as "neural plasticity." In the paper we discuss a broad set of studies, ranging from work at the cellular level to interventions in animals and humans, that relate to this notion, and discuss open questions in the field. This article appeared in the special issue "motor systems and action." I am co-first author together with Christian Ethier; first co-authors order was reversed in this CV.
Relevant publication: Yes

6 Juan Álvaro Gallego; Eduardo Rocon; Juan M. Belda Lois; José L. Pons. A neuroprosthesis for tremor management through the control of muscle co-contraction. Journal of Neuroengineering and Rehabilitation. 10, pp. 36. 15/04/2013. Available on-line at: <https://jneuroengrehab.biomedcentral.com/articles/10.1186/1743-0003-10-36>.

DOI: 10.1186/1743-0003-10-36

Type of production: Scientific paper
Format: Journal
Position of signature: 1
Total no. authors: 4
Corresponding author: Yes
Impact source: ISI
Category: Science Edition - REHABILITATION
Impact index in year of publication: 2.62
Journal in the top 25%: Yes
Position of publication: 7
No. of journals in the cat.: 63
Source of citations: Google Scholar
Citations: 44

Relevant results: This paper presents the design and validation of a novel neuroprosthesis to suppress upper limb tremor using surface stimulation of the affected muscles. By implementing an innovative strategy by which the neuroprosthesis modulated the degree of co-contraction of the tremulous muscles in real-time based on the ongoing characteristics of the tremor, we were able to reduce the amplitude of the tremor by more than a 50 %. The work presented in this paper, which was the central topic of my Ph.D. thesis, received the "Highest potential impact" award in the IEEE EMBS Unconference in Rehabilitation Robotics (San Diego, USA, 2012).
Relevant publication: Yes

7 Juan Álvaro Gallego; Jaime Ibáñez; Jakob L. Dideriksen; José I. Serrano; María D. del Castillo; Dario Farina; Eduardo Rocon. A multimodal Human-Robot Interface to drive a tremor management neuroprosthesis. IEEE Transactions on Systems, Man and Cybernetics – Part C. 42 - 6, pp. 1159 - 1168. 21/12/2012. Available on-line at: <http://ieeexplore.ieee.org/document/6392454/>.

DOI: 10.1109/TSMCC.2012.2200101

Type of production: Scientific paper
Format: Journal
Position of signature: 1
Total no. authors: 7
Corresponding author: Yes
Impact source: ISI
Category: Science Edition - COMPUTER SCIENCE, ARTIFICIAL INTELLIGENCE

Impact index in year of publication: 2.55
Journal in the top 25%: Yes
Position of publication: 17
No. of journals in the cat.: 115

Source of citations: Google Scholar
Citations: 37

Relevant results: This paper presents the design and validation of a novel multimodal interface to drive a system for tremor suppression. This multimodal interface combines electroencephalographic (EEG), electromyographic (EMG) and kinematic recordings (with inertial sensors) to detect and characterize the subject's ongoing arm tremor. We show that the combined information extracted from these modalities yields a better real-time characterization of the tremor in terms of response-time, sensitivity and accuracy than unimodal interfaces. This manuscript was part of a special issue on "Multimodal human-robot interfaces," and was recommended for publication by Associate Editor J.M. Azorín.
Relevant publication: Yes

8 Juan Álvaro Gallego; Eduardo Rocon; Javier O. Roa; Juan C. Moreno; José L. Pons. Real-time estimation of pathological tremor parameters from gyroscope data. Sensors. 10, pp. 2129 - 2149. 16/03/2010. Available on-line at: <http://www.mdpi.com/1424-8220/10/3/2129>.
DOI: 10.3390/s100302129
Type of production: Scientific paper
Format: Journal
Position of signature: 1
Total no. authors: 5
Corresponding author: Yes
Impact source: ISI
Category: Science Edition - INSTRUMENTS & INSTRUMENTATION
Impact index in year of publication: 1.77
Journal in the top 25%: Yes
Position of publication: 14
No. of journals in the cat.: 61

Source of citations: Google Scholar
Citations: 78

Relevant results: This paper presents a novel algorithm for estimating upper limb tremor parameters in real-time from inertial sensor recordings. We showed that a computationally simple two-stage algorithm yields very accurate estimates of instantaneous tremor amplitude and frequency. The algorithm was later implemented in our neuroprosthesis for tremor suppression (Gallego et al., J Neuroeng Rehabil 2013), and adapted for a variety of applications including robotic walkers (e.g., Frizera-Neto et al., Biomed Eng Online, 2010) or head-mounted cursor control (e.g., Raya et al., Sensors, 2012).
Relevant publication: Yes

9 Ales Holobar; Juan Álvaro Gallego; Jernej Kranjec; Eduardo Rocon; Juan P. Romero; Julián Benito-León; José L. Pons; Vojko Glaser. Motor unit-driven identification of pathological tremor in electroencephalograms. Frontiers in Neurology. 9, pp. 879. Frontiers, 29/10/2018.
DOI: https://doi.org/10.3389/fneur.2018.00879
Type of production: Scientific paper
Format: Journal
Position of signature: 2
Total no. authors: 8
Corresponding author: No
Impact source: ISI
Category: Science Edition - CLINICAL NEUROLOGY
Impact index in year of publication: 3.508
Position of publication: 54
No. of journals in the cat.: 197

Relevant publication: No

10 Petra Povalej-Bržan; Juan Álvaro Gallego; Juan P. Romero; Vojko Glaser; Eduardo Rocon; Julián Benito-León; Félix Bermejo-Pareja; José I. Posada; Ales Holobar. New Perspectives for Computer-Aided Discrimination of Parkinson's and Essential Tremor. Complexity. in press, Wiley and Hindawi, 13/09/2017. Available on-line at: <https://www.hindawi.com/journals/complexity/2017/4327175/>.
Type of production: Scientific paper
Format: Journal
Position of signature: 2

Total no. authors: 8
Corresponding author: No
Impact source: ISI
Category: Science Edition - MATHEMATICS, INTERDISCIPLINARY APPLICATIONS
Impact index in year of publication: 1.83
Journal in the top 25%: No
Position of publication: 33
No. of journals in the cat.: 103
Source of citations: Google Scholar
Citations: 6

11 Juan Álvaro Gallego; Robert M. Hardwick; Emily R. Oby. Highlights from the 2017 meeting of the Society for Neural Control of Movement (Dublin, Ireland). European Journal of Neuroscience. John Wiley & Sons Inc, 24/08/2017.
DOI: 10.1111/ejn.13670
Type of production: Scientific paper
Format: Journal
Position of signature: 1
Total no. authors: 3
Corresponding author: No
Impact source: ISI
Category: Science Edition - NEUROSCIENCES
Impact index in year of publication: 2.941
Journal in the top 25%: No
Position of publication: 143
No. of journals in the cat.: 261

12 Jakob L. Dideriksen; Juan Álvaro Gallego; Ales Holobar; Eduardo Rocon; José L. Pons; Dario Farina. One central oscillatory drive is compatible with experimental motor unit behavior in essential and parkinsonian tremor. Journal of Neural Engineering. 12 - 4, pp. 046019. 10/06/2015. Available on-line at: <http://iopscience.iop.org/article/10.1088/1741-2560/12/4/046019/meta>.
DOI: 10.1088/1741-2560/12/4/046019
Type of production: Scientific paper
Format: Journal
Position of signature: 2
Total no. authors: 6
Corresponding author: No
Impact source: ISI
Category: Science Edition - ENGINEERING, BIOMEDICAL
Impact index in year of publication: 3.49
Journal in the top 25%: Yes
Position of publication: 10
No. of journals in the cat.: 76
Source of citations: Google Scholar
Citations: 8

Relevant results: This paper addressed the question of whether tremor activity at the motor neuron population level is better explained as caused by a single oscillator or by multiple oscillators, as suggested by recent studies from other groups. Based on a detailed analytical derivation as well as on the analysis of data from patients with one of the two most prevalent types of tremor, we showed that motor unit activity patterns are better explained assuming the existence of a single oscillator. This paper was selected by the Journal of Neural Engineering editors as *one of the 12 "Highlights of 2015."*
Relevant publication: No

13 Juan Álvaro Gallego; Jakob L. Dideriksen; Ales Holobar; Jaime Ibáñez; Jose L. Pons; Elan D. Louis; Eduardo Rocon; Dario Farina. Influence of common synaptic inputs on the neural drive to muscle in essential tremor. Journal of Neurophysiology. 113 - 1, pp. 182 - 191. 01/01/2015. Available on-line at: <http://jn.physiology.org/content/113/1/182.long>.
DOI: 10.1152/jn.00531.2014
Type of production: Scientific paper
Format: Journal
Position of signature: 1
Total no. authors: 8
Corresponding author: No
Impact source: ISI
Category: Science Edition - PHYSIOLOGY
Impact index in year of publication: 2.65
Journal in the top 25%: No
Position of publication: 32
No. of journals in the cat.: 83

Source of citations: Google Scholar **Citations:** 18

Relevant publication: No

14 Stefan Lambrecht; Juan Álvaro Gallego; Eduardo Rocon; Jose L. Pons. Automatic real-time monitoring and assessment of tremor parameters in the upper limb from orientation data. Frontiers in Neuroscience. 8, pp. 221. 24/07/2014. Available on-line at: <http://journal.frontiersin.org/article/10.3389/fnins.2014.00221/full>.

DOI: 10.3389/fnins.2014.00221

Type of production: Scientific paper **Format:** Journal

Position of signature: 2

Total no. authors: 4 **Corresponding author:** No

Impact source: ISI **Category:** Science Edition - NEUROSCIENCES

Impact index in year of publication: 3.66 **Journal in the top 25%:** No

Position of publication: 88 **No. of journals in the cat.:** 256

Source of citations: Google Scholar **Citations:** 9

Relevant publication: No

15 Jaime Ibáñez; Jesús González de la Aleja; Juan Álvaro Gallego; Juan P. Romero; Rosana A. Saiz Diaz; Julián Benito León; Eduardo Rocon. Effects of alprazolam on cortical activity and tremors in patients with essential tremor. PLoS One. 9 - 3, pp. e93159. 25/03/2014. Available on-line at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0093159>.

DOI: 10.1371/journal.pone.0093159

Type of production: Scientific paper

Position of signature: 3

Total no. authors: 7 **Corresponding author:** No

Impact source: ISI **Category:** Science Edition - MULTIDISCIPLINARY SCIENCES

Impact index in year of publication: 3.23 **Journal in the top 25%:** Yes

Position of publication: 11 **No. of journals in the cat.:** 63

Source of citations: Google Scholar **Citations:** 6

Relevant publication: No

16 Jaime Ibáñez; José I. Serrano; María D. del Castillo; Juan Álvaro Gallego; Eduardo Rocon. Online detector of movement intention based on EEG—Application in tremor patients. Biomedical Signal Processing and Control. 8 - 6, pp. 822 - 829. 30/11/2013. Available on-line at: <http://www.sciencedirect.com/science/article/pii/S1746809413001067>.

DOI: 10.1016/j.bspc.2013.07.006

Type of production: Scientific paper **Format:** Journal

Position of signature: 4

Total no. authors: 5 **Corresponding author:** No

Impact source: ISI **Category:** Science Edition - ENGINEERING, BIOMEDICAL

Impact index in year of publication: 1.53 **Journal in the top 25%:** No

Position of publication: 40 **No. of journals in the cat.:** 76

Source of citations: Google Scholar **Citations:** 23

Relevant publication: No

17 Ales Holobar; Vojko Glaser; Juan Álvaro Gallego; Jakob L. Dideriksen; Dario Farina. Non-invasive characterization of motor unit behavior in pathological tremor. Journal of Neural Engineering. 9 - 5, pp. 056011. 10/09/2012. Available on-line at: <http://iopscience.iop.org/article/10.1088/1741-2560/9/5/056011>.

DOI: 10.1088/1741-2560/9/5/056011

Type of production: Scientific paper
Format: Journal
Position of signature: 3
Total no. authors: 5
Corresponding author: No
Impact source: ISI
Category: Science Edition - ENGINEERING, BIOMEDICAL
Impact index in year of publication: 3.28
Journal in the top 25%: Yes
Position of publication: 11
No. of journals in the cat.: 79

Impact source: ISI
Category: Science Edition - ENGINEERING, BIOMEDICAL
Impact index in year of publication: 3.28
Journal in the top 25%: Yes
Position of publication: 11
No. of journals in the cat.: 79

Source of citations: Google Scholar
Citations: 56

Relevant publication: No

18 Rafael Raya; Eduardo Rocon; Juan Álvaro Gallego; Ramón Ceres; José L. Pons. A robust Kalman algorithm to facilitate human-computer interaction for people with cerebral palsy, using a new interface based on inertial sensors. Sensors. 12, pp. 3049 - 3067. 06/03/2012. Available on-line at: <http://www.mdpi.com/1424-8220/12/3/3049>.

DOI: 10.3390/s120303049

Type of production: Scientific paper
Format: Journal
Position of signature: 3
Total no. authors: 5
Corresponding author: No
Impact source: ISI
Category: Science Edition - INSTRUMENTS & INSTRUMENTATION
Impact index in year of publication: 1.95
Journal in the top 25%: Yes
Position of publication: 8
No. of journals in the cat.: 57

Source of citations: Google Scholar
Citations: 30

Relevant publication: No

19 Juan Álvaro Gallego; Arturo Forner Cordero; Juan C. Moreno; Edyta A. Turowska; José L. Pons. Detection of gait perturbations based on proprioceptive information. Application to limit cycle Walkers. Applied Bionics and Biomechanics. 9, pp. 205 - 220. 2012.

DOI: 10.3233/ABB-2011-0021

Type of production: Scientific paper
Format: Journal
Position of signature: 1
Total no. authors: 5
Corresponding author: Yes
Impact source: ISI
Category: Science Edition - ROBOTICS
Impact index in year of publication: 0.48
Journal in the top 25%: No
Position of publication: 69
No. of journals in the cat.: 79

Source of citations: Google Scholar
Citations: 2

Relevant publication: No

20 Anselmo Frizera Neto; Juan Álvaro Gallego; Eduardo Rocon; José L. Pons; Ramón Ceres. Extraction of user's navigation commands from upper body force interaction in walker assisted gait. Biomedical Engineering Online. 9, pp. 37. 05/08/2010. Available on-line at: <https://biomedical-engineering-online.biomedcentral.com/articles/10.1186/1475-925X-9-37>.

DOI: 10.1186/1475-925X-9-37

Type of production: Scientific paper
Format: Journal
Position of signature: 2
Total no. authors: 5
Corresponding author: No
Impact source: ISI
Category: Science Edition - ENGINEERING, BIOMEDICAL
Impact index in year of publication: 1.12
Position of publication: 48
No. of journals in the cat.: 70
Source of citations: Google Scholar
Citations: 39
Relevant publication: No

21 Andrés Abellanas; Anselmo Frizera Neto; Ramón Ceres; Juan Álvaro Gallego. Estimation of gait parameters by measuring upper limb-walker interaction forces. Sensor and Actuators A: Physical. 162, pp. 276 - 283. 27/05/2010. Available on-line at: <http://www.sciencedirect.com/science/article/pii/S0924424710002335>.

DOI: 10.1016/j.sna.2010.05.020

Type of production: Scientific paper
Format: Journal
Position of signature: 4
Total no. authors: 4
Corresponding author: No
Impact source: ISI
Category: Science Edition - ENGINEERING, ELECTRICAL & ELECTRONIC
Impact index in year of publication: 1.94
Journal in the top 25%: Yes
Position of publication: 47
No. of journals in the cat.: 247
Source of citations: Google Scholar
Citations: 16
Relevant publication: No

22 Filipe Barroso; Diana Ruiz Bueno; Juan Álvaro Gallego; Paloma Jaramillo; Atila Kilicarsian. Surface EMG in neurorehabilitation and ergonomics: State of the art and future perspectives. Emerging therapies in neurorehabilitation. pp. 267 - 284. (Germany): Springer, 13/09/2013. ISBN 978-3-642-38555-1

Type of production: Book chapter
Format: Book
Position of signature: 3
Total no. authors: 5
Corresponding author: No
Source of citations: Google Scholar
Citations: 1
Relevant publication: No

23 Eduardo Rocon; Juan C. Moreno; Juan Álvaro Gallego; José L. Pons. Wearable robots in rehabilitation engineering. Tremor suppression. Rehabilitation Engineering. In Tech Education and Publishing, 01/12/2009. Available on-line at: <http://www.intechopen.com/books/rehabilitation-engineering/wearable-robots-in-rehabilitation-engineering-tremor-suppression>. ISBN 978-953-307-023-0

Type of production: Book chapter
Format: Book
Position of signature: 3
Total no. authors: 4
Corresponding author: No
Source of citations: Google Scholar
Citations: 4
Relevant publication: No

24 Eduardo Rocon; Juan Álvaro Gallego; Juan M. Belda Lois; Julián Benito León; José L. Pons. Biomechanical loading as an alternative treatment for tremor: a review of two approaches. Tremor and other Hyperkinetic Movements. 2, 10/10/2012. Available on-line at: <http://www.tremorjournal.org/index.php/tremor/article/view/77>.
DOI: 10.7916/D82Z147G
Type of production: Review **Format:** Journal
Position of signature: 2
Total no. authors: 5 **Corresponding author:** No
Source of citations: Google Scholar **Citations:** 23
Relevant publication: No

25 Juan Álvaro Gallego; Matthew Perich; Raeed Chowdhury; Sara A. Solla; Lee E. Miller. A stable, long-term cortical signature underlying consistent behavior. bioRxiv. Cold Spring Harbor Laboratory, 18/11/2018.
DOI: https://doi.org/10.1101/447441
Type of production: Preprint **Format:** Scientific and technical document or report
Position of signature: 1
Total no. authors: 5 **Corresponding author:** Yes

26 Ali Farshchian; Juan Álvaro Gallego; Joseph P. Coen; Yoshua Bengio; Lee E. Miller; Sara A. Solla. Adversarial Domain Adaptation for Stable Brain-Machine Interfaces. arXiv. pp. 1810.00045. Cornell University, 28/09/2018. Available on-line at: <https://arxiv.org/abs/1810.00045>.
Type of production: Preprint **Format:** Scientific and technical document or report
Corresponding author: No

27 Julio Salvador Lora-Millán; Roberto López-Blanco; Juan Álvaro Gallego; Julián Benito-León; Jesús González-de la Aleja; Eduardo Rocon. Mechanical vibration does not systematically reduce the tremor in Essential Tremor patients. bioRxiv. Cold Spring Harbor Laboratory, 24/08/2018.
DOI: https://doi.org/10.1101/398875
Type of production: Preprint **Format:** Scientific and technical document or report

Works submitted to national or international conferences

1 **Title of the work:** Adversarial Domain Adaptation for Stable Brain-Machine Interfaces
Name of the conference: International Conference on Learning Representations
Corresponding author: No
City of event: New Orleans, United States of America
Date of event: 06/05/2019
End date: 09/05/2019
Ali Farshchian; Juan Álvaro Gallego; Joseph P. Cohen; Yoshua Bengio; Lee E. Miller; Sara A. Solla.

2 **Title of the work:** Neural population dynamics in different cortical areas are stable over several weeks
Name of the conference: Mechanisms of dexterous behavior
Corresponding author: Yes
City of event: Arlingtom, United States of America
Date of event: 13/05/2018
End date: 16/05/2018
Organising entity: HHMI Janelia Research Center **Type of entity:** R&D Centre
Juan Álvaro Gallego; Matthew G. Perich; Raeed H. Chowdhury; Ali Farshchian; Sara A. Solla; Lee E. Miller.

3 **Title of the work:** Local and long range patterns of neural coordination in cortex
Name of the conference: Computational and Systems Neuroscience (COSYNE)
Corresponding author: Yes
City of event: Denver, United States of America
Date of event: 01/03/2018
End date: 04/03/2018
Juan Álvaro Gallego; Carsen Stringer; Michalis Michaelos; Marius Pachitariu.

4 **Title of the work:** Training a decoder on low-dimensional population dynamics in primary motor cortex produces stable control signals
Name of the conference: Annual Meting of the Society for Neuroscience
Corresponding author: Yes
City of event: Washington DC, United States of America
Date of event: 11/11/2017
End date: 15/11/2017
Organising entity: Society for Neuroscience **Type of entity:** Associations and Groups
Juan Álvaro Gallego; Matthew G. Perich; Ali Farschiansadegh; Pablo M. Tostado; Kevin L. Bodkin; Stephanie N. Naufel; Eric J. Perreault; Sara A. Solla; Ferdinando A. Mussa-Ivaldi; Lee E. Miller. "Abstracts of the 27th Annual Meeting of the Society for Neuroscience". Available on-line at: <https://www.sfn.org/-/media/SfN/Documents/Annual-Meeting/FinalProgram/NS2017/Full-Abstract-PDFs-2017/SFN17_Abstract-PDFs---Posters_2_Sun_PM.ashx?la=en&hash=C0302B6A6E0F6CDD196911AD7CF9723A59D184B8>.

5 **Title of the work:** Dorsal premotor cortex recruits primary motor cortex to compensate for altered dynamics
Name of the conference: 26th Annual Meeting of the Society for the Neural Control of Movement
Corresponding author: No
City of event: Dublin, Ireland
Date of event: 02/05/2017
End date: 05/05/2017
Organising entity: Society for the Neural Control of Movement **Type of entity:** Associations and Groups
Matthew G. Perich; Juan Álvaro Gallego; Lee E. Miller. "Abstracts of the 26th Annual Meeting of the Society for the Neural Control of Movement". Available on-line at: <https://ncm-society.org/wp-content/uploads/2017/04/NCM-Program-2017.WEB_.pdf>.

6 **Title of the work:** How does the brain control movement? A view from the neural manifold
Name of the conference: 26th Annual Meeting of the Society for the Neural Control of Movement
Corresponding author: No
City of event: Dublin, Ireland
Date of event: 02/05/2017
End date: 05/05/2017
Organising entity: Society for the Neural Control of Movement **Type of entity:** Associations and Groups
Juan Álvaro Gallego; Matthew G. Perich; Christian Ethier; Stephanie N. Naufel; Sara A. Solla; Lee E. Miller. Available on-line at: <https://ncm-society.org/wp-content/uploads/2017/04/NCM-Program-2017.WEB_.pdf>.

7 **Title of the work:** Development of cortically-controlled muscle stimulation to restore treadmill locomotion and overground navigation in spinal cord injured rats
Name of the conference: Abstracts of the 26th Annual Meeting of the Society for Neuroscience
Type of event: Conference
Corresponding author: No
City of event: San Diego, United States of America
Date of event: 12/11/2016

End date: 16/11/2016
Organising entity: Society for Neuroscience **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Amina Kinkhabwala; María Jantz; Juan Álvaro Gallego; Matthew C. Tresch; Lee E. Miller. Available on-line at: <https://www.sfn.org/Annual-Meeting/Neuroscience-2016/Sessions-and-Events/Program/~/media/SfN/Documents/Annual%20Meeting/FinalProgram/NS2016/Full%20Abstract%20PDFs%202016/SfN16_Abstract%20PDFs%20%20Posters_1_Sat_PM.ashx>.

8 **Title of the work:** Neural control of muscles in tremor patients (Invited presentation in the Special Session "Investigating neural control strategies of movement with EMG signals")
Name of the conference: International Conference on Neurorehabilitation 2016
Type of event: Conference
Reasons for participation: Upon invitation
Corresponding author: Yes
City of event: Toledo, Spain
Date of event: 18/10/2016
End date: 21/10/2016
Organising entity: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Type of contribution: Scientific paper
Juan Álvaro Gallego; Jakob L. Dideriksen; Ales Holobar; Eduardo Rocon; José L. Pons; Dario Farina. En: Converging Clinical and Engineering Research on Neurorehabilitation II. pp. 129 - 134. Available on-line at: <http://link.springer.com/chapter/10.1007/978-3-319-46669-9_24>. ISBN 978-3-319-46668-2
DOI: 10.1007/978-3-319-46669-9_24

9 **Title of the work:** FES control for restoring complex functional hindlimb movements in the rat
Name of the conference: XXI Congress of the International Society of Electrophysiology and Kinesiology
Type of event: Conference
Corresponding author: No
City of event: Chicago, United States of America
Date of event: 05/07/2016
End date: 07/07/2016
Organising entity: International Society of Electrophysiology and Kinesiology **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
María Jantz; Amina Kinkhabwala; Juan Álvaro Gallego; Lee E. Miller; Matthew C. Tresch. En: Abstracts of the XXI International Society of Electrophysiology and Kinesiology. Available on-line at: <http://www.isek.org/wp-content/uploads/2016/09/Full-ISEK2016Chicago.pdf>.

10 **Title of the work:** Towards the restoration of hand function using fully wireless cortically-controlled functional electrical stimulation
Name of the conference: XXI Congress of the International Society of Electrophysiology and Kinesiology
Corresponding author: No
City of event: Chicago, United States of America
Date of event: 05/07/2016
End date: 08/07/2016
Organising entity: International Society of Electrophysiology and Kinesiology **Type of entity:** Associations and Groups
Juan Álvaro Gallego; Stephanie N. Naufel; Steven T. Lanier; Lee E. Miller. En: Abstracts of the XXI International Society of Electrophysiology and Kinesiology. Available on-line at: <http://www.isek.org/wp-content/uploads/2016/09/Full-ISEK2016Chicago.pdf>.

11 **Title of the work:** A fully wireless system for long-term cortically-controlled functional electrical stimulation
Name of the conference: Neural Interfaces Conference
Type of event: Conference
Corresponding author: No
City of event: Baltimore, United States of America
Date of event: 25/06/2016
End date: 29/06/2016
Organising entity: Neural Interfaces Conference Steering Committee **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Stephanie N. Naufel; Juan Álvaro Gallego; Kevin L. Bodkin; Steven T. Lanier; Lee E. Miller. En: Abstracts of the Neural Interfaces Conference. Available on-line at: <https://www.neuromodulation.org/Portals/0/NANS16_NIC_Syllabus_final.pdf>.

12 **Title of the work:** Neural synergies in motor cortex are preserved across tasks
Name of the conference: 25th Annual Meeting of the Society for the Neural Control of Movement
Type of event: Conference
Corresponding author: No
City of event: Montego Bay, Jamaica
Date of event: 24/04/2016
End date: 29/04/2016
Organising entity: Society for the Neural Control of Movement **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Juan Álvaro Gallego; Stephanie N. Naufel; Matthew G. Perich; Sara A. Solla; Lee E. Miller. En: Abstracts of the 25th Annual Meeting of the Society for the Neural Control of Movement.

13 **Title of the work:** Interfacing human motor units in vivo (Invited presentation in the Session "Control of the motoneuron: insights from the discharge of motor unit populations")
Name of the conference: 25th Annual Meeting of the Society for the Neural Control of Movement
Reasons for participation: Upon invitation
City of event: Montego Bay, Jamaica
Date of event: 24/04/2016
End date: 29/04/2016
Organising entity: Society for the Neural Control of Movement **Type of entity:** Associations and Groups
Juan Álvaro Gallego; Dario Farina.

14 **Title of the work:** Shared synaptic input to motoneuron pools from different limbs in essential tremor
Name of the conference: 45th Annual Meeting of the Society for Neuroscience
Type of event: Conference
Corresponding author: Yes
City of event: Chicago, United States of America
Date of event: 17/10/2015
End date: 21/10/2015
Organising entity: Society for Neuroscience **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Juan Álvaro Gallego; Jakob L. Dideriksen; Ales Holobar; José L. Pons; Eduardo Rocon; Dario Farina. En: Abstracts of the 45th Annual Meeting of the Society for Neuroscience. Available on-line at: <https://www.sfn.org/annual-meeting/neuroscience-2015/sessions-and-events/program/~/media/SfN/Documents/Annual%20Meeting/FinalProgram/NS2015/Full%20Abstract%20PDFs%202015/SfN15_Abstracts_PDF_Posters_4_Tues_PM.ashx>.

15 **Title of the work:** Linear transmission of tremor synaptic inputs to motoneurons in Parkinson's disease
Name of the conference: 25th Annual Meeting of the Society for the Neural Control of Movement
Type of event: Conference
Corresponding author: Yes
City of event: Charleston, United States of America
Date of event: 20/04/2015
End date: 24/04/2015
Organising entity: Society for the Neural Control of Movement
Type of contribution: Scientific paper
Juan Álvaro Gallego; Jakob L. Dideriksen; Ales Holobar; José L. Pons; Eduardo Rocon; Dario Farina. En: Abstracts of the 25th Annual Meeting of the Society for the Neural Control of Movement.

16 **Title of the work:** Detection of common synaptic inputs shared by populations of motor neurons innervating different muscles: Methodology and considerations for neuroprosthetic treatment of tremor
Name of the conference: International Conference on Neurorehabilitation 2014
Type of event: Conference
Corresponding author: Yes
City of event: Aalborg, Denmark
Date of event: 24/06/2014
End date: 26/06/2014
Organising entity: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Type of contribution: Scientific paper
Juan Álvaro Gallego; Jakob L. Dideriksen; Ales Holobar; Juan P. Romero; Eduardo Rocon; José L. Pons; Dario Farina. En: Replace, Repair, Restore, Relieve – Bridging Clinical and Engineering Solutions in Neurorehabilitation. 7, pp. 373 - 382. Springer International Publishing, Available on-line at: <http://link.springer.com/chapter/10.1007%2F978-3-319-08072-7_58#page-1>. ISBN 978-3-319-08071-0
DOI: 10.1007/978-3-319-08072-7_58

17 **Title of the work:** Assistive Robotics as Alternative Treatment for Tremor
Name of the conference: ROBOT2013: First Iberian Robotics Conference
Type of event: Conference
Corresponding author: No
City of event: Madrid, Spain
Date of event: 28/11/2013
End date: 29/11/2013
Type of contribution: Scientific paper
En: Advances on Intelligent Systems and Computing. 1, pp. 173 - 179. Springer International Publishing, Available on-line at: <http://link.springer.com/chapter/10.1007/978-3-319-03413-3_12>. ISBN 978-3-319-03412-6
DOI: 10.1007/978-3-319-03413-3_12

18 **Title of the work:** Closed-loop modulation of a notch-filter stimulation strategy for tremor management with a neuroprosthesis
Name of the conference: XIII Mediterranean Conference on Medical and Biological Engineering and Computing
Type of event: Conference
Corresponding author: Yes
City of event: Sevilla, Spain
Date of event: 03/07/2013
End date: 07/07/2013

Organising entity: International Federation for Medical and Biological Engineering **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Juan Álvaro Gallego; Eduardo Rocon; Juan M. Belda Lois; José L. Pons. En: IFBME Proceedings - XIII Mediterranean Conference on Medical and Biological Engineering and Computing 2013. 41, pp. 1747 - 1750. Springer International Publishing, Available on-line at: <http://link.springer.com/chapter/10.1007/978-3-319-00846-2_431>. ISBN 978-3-319-00845-5
DOI: 10.1007/978-3-319-00846-2_431

19 **Title of the work:** Design and validation of a neuroprosthesis for the treatment of upper limb tremor
Name of the conference: 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society
Type of event: Conference
Corresponding author: Yes
City of event: Osaka, Japan
Date of event: 03/07/2013
End date: 07/07/2013
Organising entity: IEEE Engineering in Medicine and Biology Society **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Juan Álvaro Gallego; Eduardo Rocon; Juan M. Belda Lois; Aikaterini D. Koutsou; Silvia Mena; Ascensión Castillo; José L. Pons. En: Proceedings of 2013 Annual International Conference of the IEEE Engineering in Medicine and Biology Society. Available on-line at: <http://ieeexplore.ieee.org/document/6610323/>. ISBN 978-1-4577-0216-7
DOI: 10.1109/EMBC.2013.6610323

20 **Title of the work:** A novel treatment for essential tremor through transcutaneous neurostimulation
Name of the conference: 17th International Congress of Parkinson's Disease and Movement Disorders
Type of event: Conference
Corresponding author: Yes
City of event: Sydney, Australia
Date of event: 16/06/2013
End date: 20/06/2013
Organising entity: Movement Disorder Society **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Juan Álvaro Gallego; Juan M. Belda Lois; Ascensión Castillo; Juan P. Romero; Julián Benito León; José L. Pons; Eduardo Rocon. En: Movement Disorders. 28 - 1, pp. S341. Available on-line at: <http://onlinelibrary.wiley.com/doi/10.1002/mds.25605/full>.
DOI: 10.1002/mds.25605

21 **Title of the work:** Advances in the assessment and suppression of pathological tremor in the framework of TREMOR project
Name of the conference: International Conference on Neurorehabilitation 2012
Type of event: Conference
Corresponding author: Yes
City of event: Toledo, Spain
Date of event: 14/10/2012
End date: 16/10/2012
Organising entity: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Type of contribution: Scientific paper

Juan Álvaro Gallego; Eduardo Rocon; José L. Pons. En: Converging Clinical and Engineering Research on Neurorehabilitation. pp. 59 - 64. Springer Berlin Heidelberg, Available on-line at: <http://link.springer.com/chapter/10.1007/978-3-642-34546-3_10>. ISBN 978-3-642-34545-6
DOI: 10.1007/978-3-642-34546-3_10

22 **Title of the work:** On repeteability of motor unit characterization in pathological tremor
Name of the conference: International Conference on Neurorehabilitation 2012
Type of event: Conference
Corresponding author: No
City of event: Toledo, Spain
Date of event: 14/10/2012
End date: 16/10/2012
Organising entity: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Type of contribution: Scientific paper
Petra P. Brzan; Juan Álvaro Gallego; Dario Farina; Ales Holobar. En: Converging Clinical and Engineering Research on Neurorehabilitation. pp. 553 - 556. Springer Berlin Heidelberg, Available on-line at: <http://link.springer.com/chapter/10.1007%2F978-3-642-34546-3_89>. ISBN 978-3-642-34545-6
DOI: 10.1007/978-3-642-34546-3_89

23 **Title of the work:** A Wearable Neuroprosthesis for the Suppression of Pathological Tremor
Name of the conference: 34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society - Unconference on Rehabilitation Robotics
Type of event: Conference
Corresponding author: No
City of event: Boston, United States of America
Date of event: 28/08/2012
End date: 01/09/2012
Organising entity: IEEE Engineering in Medicine and Biology Society **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
José L. Pons; Eduardo Rocon; Juan Álvaro Gallego. En: IEEE LifeSciences Newsletter. Available on-line at: <http://lifesciences.ieee.org/lifesciences-newsletter/2012/november-2012/a-wearable-neuroprosthesis-for-the-suppression-of-pathological-tremor/>.

24 **Title of the work:** Alleviation of pathological tremor through neuroprosthetic approaches relying on biomechanical loading
Name of the conference: World Congress on Medical Physics and Biomedical Engineering 2012
Type of event: Conference
Corresponding author: Yes
City of event: Beijing, China
Date of event: 26/05/2012
End date: 31/05/2012
Organising entity: International Federation for Medical and Biological Engineering **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Juan Álvaro Gallego; Eduardo Rocon; José L. Pons. En: IFBME Proceedings of the World Congress on Medical Physics and Biomedical Engineering 2012. ISBN 978-3642293047

25 **Title of the work:** Novel approaches to electrophysiological quantification of pathological tremor
Name of the conference: World Congress on Medical Physics and Biomedical Engineering 2012
Type of event: Conference

Corresponding author: No
City of event: Beijing, China
Date of event: 26/05/2012
End date: 31/05/2012
Organising entity: International Federation for Medical and Biological Engineering **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Ales Holobar; Rok Istenic; Vojko Glaser; Juan Álvaro Gallego; Dario Farina. En: IFBME Proceedings of the World Congress on Medical Physics and Biomedical Engineering 2012. ISBN 978-3642293047

26 **Title of the work:** Simultaneous recordings of the central and peripheral nervous system together with joint biomechanics improve the characterization of tremo
Name of the conference: World Congress on Medical Physics and Biomedical Engineering 2012
Type of event: Conference
Corresponding author: No
Date of event: 26/05/2012
End date: 31/05/2012
Organising entity: International Federation for Medical and Biological Engineering
Type of contribution: Scientific paper
Juan Álvaro Gallego; Jaime Ibáñez; Jakob L. Dideriksen; José I. Serrano; María D. del Castillo; Dario Farina; Eduardo Rocon; José L. Pons. En: IFBME Proceedings of the World Congress on Medical Physics and Biomedical Engineering 2012. ISBN 978-3642293047

27 **Title of the work:** Atenuación del temblor patológico mediante estimulación eléctrica funcional
Name of the conference: XXXII Jornadas de Automática
Type of event: Conference
Corresponding author: Yes
City of event: Sevilla, Spain
Date of event: 07/09/2011
End date: 09/09/2011
Organising entity: COMITE ESPAÑOL DE AUTOMATICA DE LA IFAC
Type of contribution: Scientific paper
Juan Álvaro Gallego; Eduardo Rocon; Aikaterini D. Koutsou; Juan M. Belda Lois; Silvia Mena; Ismael Busquets; Ascensión Castillo; José L. Pons. En: Actas de las XXXII Jornadas de Automática. ISBN 978-84-694-6454-0

28 **Title of the work:** A modelling study on transmission of the central oscillator in tremor by a motor neuron pool
Name of the conference: 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society
Type of event: Conference
Corresponding author: Yes
City of event: Boston, United States of America
Date of event: 30/08/2011
End date: 03/09/2011
Organising entity: IEEE Engineering in Medicine and Biology Society
Type of contribution: Scientific paper
Juan Álvaro Gallego; Jakob L. Dideriksen; Dario Farina; Eduardo Rocon; Ales Holobar; José L. Pons. En: Proceedings of 2011 Annual International Conference of the IEEE Engineering in Medicine and Biology Society. pp. 7512 - 7515. Available on-line at: <http://ieeexplore.ieee.org/document/6090375/>. ISBN 978-1-4244-4121-1
DOI: 10.1109/IEMBS.2011.6090375

29 **Title of the work:** Noninvasive analysis of motor unit behaviour in pathological tremor
Name of the conference: 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society
Type of event: Conference
Corresponding author: No
City of event: Boston, United States of America
Date of event: 30/08/2011
End date: 03/09/2011
Organising entity: IEEE Engineering in Medicine and Biology Society **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Ales Holobar; Vojko Glaser; Juan Álvaro Gallego; Jakob L. Dideriksen; Dario Farina. En: Proceedings of 2011 Annual International Conference of the IEEE Engineering in Medicine and Biology Society. pp. 2037 - 2040. Available on-line at: <http://ieeexplore.ieee.org/document/6091852/>. ISBN 978-1-4244-4121-1
DOI: 10.1109/IEMBS.2011.6091852

30 **Title of the work:** Characterization of pathological tremor from motor unit spike trains
Name of the conference: 15th Nordic-Baltic Conference on Biomedical Engineering and Medical Physics
Type of event: Conference
Corresponding author: No
City of event: Aalborg, Denmark
Date of event: 14/06/2011
End date: 17/06/2011
Organising entity: International Federation for Medical and Biological Engineering **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Jakob L. Dideriksen; Juan Álvaro Gallego; Dario Farina. En: IFBME Proceedings of the 15th Nordic-Baltic Conference on Biomedical Engineering and Medical Physics. 34, pp. 41 - 44. Springer Berlin Heidelberg, Available on-line at: <http://link.springer.com/chapter/10.1007/978-3-642-21683-1_10>. ISBN 978-3-642-21683-1
DOI: 10.1007/978-3-642-21683-1_10

31 **Title of the work:** An EEG-based design for the online detection of movement intention
Name of the conference: International Work Conference on Artificial Neural Networks 2011
Type of event: Conference
Corresponding author: No
City of event: Málaga, Spain
Date of event: 08/06/2011
End date: 10/06/2011
Organising entity: Universidad de Málaga **Type of entity:** University
Type of contribution: Scientific paper
Jaime Ibáñez; José I. Serrano; María D. del Castillo; Luis Barrios; Juan Álvaro Gallego; Eduardo Rocon. En: Advances in Computational Intelligence. 11th International Work-Conference on Artificial Neural Networks, IWANN 2011. pp. 370 - 377. Springer Berlin Heidelberg, Available on-line at: <http://link.springer.com/chapter/10.1007/978-3-642-21501-8_46>. ISBN 978-3-642-21500-1
DOI: 10.1007/978-3-642-21501-8_46

32 **Title of the work:** A soft wearable robot for tremor assessment and suppression
Name of the conference: 2011 IEEE International Conference on Robotics and Automation
Type of event: Conference
Corresponding author: Yes

City of event: Shaghai, China
Date of event: 09/05/2011
End date: 13/05/2011
Organising entity: IEEE Robotics and Automation Society **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Juan Álvaro Gallego; Eduardo Rocon; Jaime Ibáñez; Jakob L. Dideriksen; Aikaterini D. Koutsou; Rita Paradiso; Mirjana B. Popovic; Juan M. Belda Lois; Francesco Gianfelici; Dario Farina; Mario Manto; Tomasso D'Alessio; José L. Pons. En: Proceedings of the 2011 IEEE International Conference on Robotics and Automation. pp. 2249 - 2254. Available on-line at: <http://ieeexplore.ieee.org/document/5979639/>. ISBN 978-1-61284-386-5
DOI: 10.1109/ICRA.2011.5979639

33 **Title of the work:** Analysis of kinematic data in pathological tremor with the Hilbert-Huang Transform
Name of the conference: 5th International IEEE/EMBS Conference on Neural Engineering
Type of event: Conference
Corresponding author: Yes
City of event: Cancún, Mexico
Date of event: 27/04/2011
End date: 01/05/2011
Organising entity: IEEE Engineering in Medicine and Biology Society **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Juan Álvaro Gallego; Eduardo Rocon; Aikaterini D. Koutsou; José L. Pons. En: Proceedings of 5th International IEEE/EMBS Conference on Neural Engineering. pp. 80 - 83. Available on-line at: <http://ieeexplore.ieee.org/document/5910493/>. ISBN 978-1-4244-4140-2
DOI: 10.1109/NER.2011.5910493

34 **Title of the work:** An alternative treatment for tremor assessment and suppression
Name of the conference: 4th World Congress on Controversies in Neurology
Type of event: Conference
Corresponding author: No
City of event: Barcelona, Spain
Date of event: 28/10/2010
End date: 31/10/2010
Organising entity: World Federation of Neurology Research Group on Clinical Neuropharmacology **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Eduardo Rocon; Juan Álvaro Gallego; Aikaterini D. Koutsou; José L. Pons. En: Proceedings of the 4th World Congress on Controversies in Neurology. Available on-line at: <http://comtecmed.com/cony/2010/Uploads/assets/rocon%20de%20lima.pdf>.

35 **Title of the work:** Continuous assessment of gait stability in Limit Cycle Walkers
Name of the conference: 2011 IEEE/RAS-EMBS International Conference on Biomedical Robotics and Biomechatronics – BioRob 2010
Type of event: Conference
Corresponding author: Yes
City of event: Tokyo, Japan
Date of event: 26/09/2010
End date: 29/09/2010
Organising entity: IEEE Robotics and Automation Society / Engineering in Medicine and Biology Society **Type of entity:** Associations and Groups

Type of contribution: Scientific paper
Juan Álvaro Gallego; Arturo Forner Cordero; Juan C. Moreno; Alfonso Montellano; Edyta A. Turowska; José L. Pons. En: Proceeding of the 2010 3rd IEEE RAS and EMBS International Conference on Biomedical Robotics and Biomechatronics. pp. 734 - 739. Available on-line at: <http://ieeexplore.ieee.org/document/5626098/>. ISBN 978-1-4244-7709-8
DOI: 10.1109/BIOROB.2010.5626098

36 **Title of the work:** Estimación continua de cadencia a través de la interacción de fuerzas en marcha asistida por andador
Name of the conference: XXXI Jornadas de Automática
Type of event: Conference
City of event: Jaén, Spain
Date of event: 08/09/2010
End date: 10/09/2010
Organising entity: COMITE ESPAÑOL DE AUTOMATICA DE LA IFAC
Type of contribution: Scientific paper
Anselmo Frizera; Ramón Ceres; José L. Pons; Eduardo Rocon; Juan Álvaro Gallego. En: Actas de las XXXI Jornadas de Automática.

37 **Title of the work:** Monitorización y supresión del temblor mediante un neurorrobot blando
Name of the conference: XXXI Jornadas de Automática
Type of event: Conference
Corresponding author: Yes
City of event: Jaén, Spain
Date of event: 08/09/2010
End date: 10/09/2010
Organising entity: COMITE ESPAÑOL DE AUTOMATICA DE LA IFAC
Type of contribution: Scientific paper
Juan Álvaro Gallego; Eduardo Rocon; Aikaterini D. Koutsou; Jaime Ibáñez; Luis Barrio; Ana R. Victoria; José I. Serrano; María D. del Castillo; Juan M. Belda Lois; Silvia Mena; José L. Pons. En: Actas de las XXXI Jornadas de Automática.

38 **Title of the work:** Multimodal BCI-mediated FES suppression of pathological tremor
Name of the conference: 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society
Corresponding author: No
City of event: Buenos Aires, Argentina
Date of event: 31/08/2010
End date: 04/09/2010
Organising entity: IEEE Engineering in Medicine and Biology Society **Type of entity:** Associations and Groups
Eduardo Rocon; Juan Álvaro Gallego. En: Proceedings of 2010 Annual International Conference of the IEEE Engineering in Medicine and Biology Society. pp. 3337 - 3340. Available on-line at: <http://ieeexplore.ieee.org/document/5627914/>. ISBN 978-1-4244-4123-5
DOI: 10.1109/IEMBS.2010.5627914

39 **Title of the work:** Brain Neural Computer Interface for tremor identification, characterization and tracking
Name of the conference: XVIII Congress of the International Society of Electrophysiology and Kinesiology
Type of event: Conference
Corresponding author: Yes
City of event: Aalborg, Denmark
Date of event: 16/06/2010

End date: 19/06/2010
Organising entity: International Society of Electrophysiology and Kinesiology **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Juan Álvaro Gallego; Eduardo Rocon; Ana R. Victoria; Jaime Ibáñez; Luis Barrios; Dario Farina; Francisco Negro; Silvia Conforto; Tomasso D'Alessio; Giacomo Severini; Giuliana Grimaldi; Mario Manto; José L. Pons. En: Abstracts of the XVIII Congress of the International Society of Electrophysiology and Kinesiology. ISBN 978-87-7094-047-4

40 **Title of the work:** Estimation of instantaneous tremor parameters for FES-based tremor suppression
Name of the conference: 2010 IEEE International Conference on Robotics and Automation
Type of event: Conference
Corresponding author: Yes
City of event: Anchorage, United States of America
Date of event: 03/05/2010
End date: 08/05/2010
Organising entity: IEEE Robotics and Automation Society **Type of entity:** Associations and Groups
Type of contribution: Scientific paper
Juan Álvaro Gallego; Eduardo Rocon; José L. Pons. En: Proceedings of the 2010 IEEE International Conference on Robotics and Automation. Available on-line at: <http://ieeexplore.ieee.org/document/5509663/>. ISBN 978-1-4244-5038-1
DOI: 10.1109/ROBOT.2010.5509663

41 **Title of the work:** On the use of inertial measurement units for real-time quantification of pathological tremor amplitude and frequency
Name of the conference: XXIII Eurosensors Conference
Type of event: Conference
Corresponding author: Yes
City of event: Lausanne, Switzerland
Date of event: 06/09/2009
End date: 09/09/2009
Organising entity: Ecole Polytechnique Fédérale de Lausanne **Type of entity:** University
Type of contribution: Scientific paper
Juan Álvaro Gallego; Eduardo Rocon; Juan C. Moreno; Aikaterini D. Koutsou; José L. Pons. En: Procedia Chemistry - Proceedings of the Eurosensors XXIII Conference. 1 - 1, pp. 1219 - 1222. Available on-line at: <http://www.sciencedirect.com/science/article/pii/S1876619609003052>. ISSN 1876-6196
DOI: 10.1016/j.proche.2009.07.304

42 **Title of the work:** Caracterización y compensación del temblor patológico mediante Brain Neural Computer Interface (BNCI)
Name of the conference: XXX Jornadas de Automática
Type of event: Conference
Corresponding author: Yes
City of event: Valladolid, Spain
Date of event: 02/09/2009
End date: 04/09/2009
Organising entity: COMITE ESPAÑOL DE AUTOMATICA DE LA IFAC
Type of contribution: Scientific paper
Juan Álvaro Gallego; Eduardo Rocon; Aikaterini D. Koutsou; Ana R. Victoria; Javier O. Roa; Luis Barrios; José L. Pons. En: Actas de las XXX Jornadas de Automática. ISBN 978-84-692-2387-1

43 **Title of the work:** Estimulación Eléctrica Funcional en rehabilitación: introducción, aplicaciones, futuro
Name of the conference: XXX Jornadas de Automática
Type of event: Conference
Corresponding author: No
City of event: Valladolid, Spain
Date of event: 02/09/2009
End date: 04/09/2009
Organising entity: COMITE ESPAÑOL DE AUTOMATICA DE LA IFAC
Type of contribution: Scientific paper
Aikaterini D. Koutsou; Juan C. Moreno; Juan Álvaro Gallego; Eduardo Rocon; José L. Pons. En: Actas de las XXX Jornadas de Automática. ISBN 978-84-692-2387-1

44 **Title of the work:** ¿Cómo encontrar la estrategia de recuperación más simple para robots bípedos de ciclo límite?
Name of the conference: XXX Jornadas de Automática
Type of event: Conference
Corresponding author: No
City of event: Valladolid, Spain
Date of event: 02/09/2009
End date: 04/09/2009
Organising entity: COMITE ESPAÑOL DE AUTOMATICA DE LA IFAC
Type of contribution: Scientific paper
Alfonso Montellano; Juan Álvaro Gallego; Arturo Forner Cordero; Edyta A. Turowska; Juan C. Moreno; José L. Pons. En: Actas de las XXX Jornadas de Automática. Available on-line at: <http://www.ceautomatica.es/sites/default/files/upload/10/files/Premio%20comunicacion%202008.pdf>. ISBN 978-84-692-2387-1

45 **Title of the work:** Assessment of stability and variability in humans and bipedal robots
Name of the conference: 19th International Conference of the International Society for Posture & Gait Research
Type of event: Conference
Corresponding author: No
City of event: Bologna, Italy
Date of event: 21/06/2009
End date: 26/06/2009
Organising entity: International Society for Posture & Gait Research
Type of contribution: Scientific paper
Arturo Forner Cordero; Juan Álvaro Gallego; Juan C. Moreno; Edyta A. Turowska; Alfonso Montellano; José L. Pons. En: Proceedings of the 19th International Conference of the International Society for Posture & Gait Research. ISBN 88-900847-1-5

46 **Title of the work:** A multimodal approach to BCI in TREMOR project
Name of the conference: Simposio CEA de Bioingeniería 2009
Type of event: Conference
Corresponding author: No
City of event: Elche, Spain
Date of event: 01/06/2009
End date: 02/06/2009
Organising entity: COMITE ESPAÑOL DE AUTOMATICA DE LA IFAC
Type of contribution: Scientific paper

José L. Pons; Juan Álvaro Gallego; Eduardo Rocon; Luis Barrios. En: Actas del Simposio CEA de Bioingeniería 2009. ISBN 978-84-613-2208-4

47 **Title of the work:** Inertial sensing-based method for characterization of activities with walking assitive devices
Name of the conference: XXII Eurosensors Conference
Type of event: Conference
Corresponding author: No
City of event: Dresden, Germany
Date of event: 07/09/2008
End date: 09/09/2008
Type of contribution: Scientific paper
Juan C. Moreno; Fernando J. Brunetti; Juan Álvaro Gallego; José L. Pons. En: Proceedings of the XXII Eurosensors Conference. ISBN 978-3-00-025217-4

48 **Title of the work:** Síntesis de la marcha robótica mediante la aproximación del Ciclo Límite. El robot bípedo ESBiRRo
Name of the conference: XXIX Jornadas de Automática
Type of event: Conference
City of event: Tarragona, Spain
Date of event: 03/09/2008
End date: 05/09/2008
Organising entity: COMITE ESPAÑOL DE AUTOMATICA DE LA IFAC
Type of contribution: Scientific paper
Juan Álvaro Gallego; Arturo Forner Cordero; Juan C. Moreno; Edyta A. Turowska; José L. Pons. En: Actas de las XXIX Jornadas de Automática. Available on-line at: <http://intranet.ceautomatica.es/old/actividades/jornadas/XXIX/pdf/240.pdf>. ISBN 978-84-691-6883-7

Works submitted to national or international seminars, workshops and/or courses

1 **Title of the work:** A neural population view on how the brain controls behaviour
Name of the event: Invited Plenary Talk
City of event: Madrid, Spain
Date of event: 30/11/2018
Organising entity: Instituto Cajal, CSIC

2 **Title of the work:** A multi-dimensional view on how the brain controls movement
Name of the event: Invited Plenary Talk
Corresponding author: Yes **Reasons for participation:** Upon invitation
City of event: Göttingen, Germany
Date of event: 12/04/2018
Organising entity: German Primate Center, Leibniz Institute for Primate Research
Juan Álvaro Gallego.

3 **Title of the work:** Neural manifolds: mere correlations or a window into cortical processing? (Invited Workshop Presentation)
Name of the event: Invited talk at Computational and Systems Neuroscience (COSYNE) Workshop "Manifold-splaining"
Type of event: Invited Workshop Presentation
Corresponding author: Yes **Reasons for participation:** Upon invitation
City of event: Breckenridge, United States of America

Date of event: 05/03/2018
End date: 06/03/2018
Juan Álvaro Gallego.

4 **Title of the work:** How does the brain control movement? A view from the neural manifold
Name of the event: Invited Plenary Talk
Corresponding author: Yes **Reasons for participation:** Upon invitation
City of event: Alicante, Valencian Community, Spain
Date of event: 01/12/2017
Organising entity: Instituto de Neurociencias de Alicante CSIC-UMH **Type of entity:** State agency
City organizing entity: Alicante, Spain
Juan Álvaro Gallego.

5 **Title of the work:** How does the brain control movement? A view from the neural manifold
Name of the event: Invited Seminar
Corresponding author: Yes **Reasons for participation:** Upon invitation
City of event: Madrid, Community of Madrid, Spain
Date of event: 10/10/2017
Organising entity: Instituto de Ciencias Matemáticas **Type of entity:** State agency
City organizing entity: Madrid, Community of Madrid, Spain
Juan Álvaro Gallego.

6 **Title of the work:** Neural manifolds for the control of movement
Name of the event: Invited Seminar
Corresponding author: Yes **Reasons for participation:** Upon invitation
City of event: London, United Kingdom
Date of event: 20/07/2017
Organising entity: University College London **Type of entity:** University
City organizing entity: London, United Kingdom
Juan Álvaro Gallego.

7 **Title of the work:** Understanding tremor physiology with motor unit population analysis
Name of the event: International Conference on Neurorehabilitation, Special Session "Investigating neural control strategies of movement with EMG signals"
Corresponding author: Yes
City of event: Segovia, Spain
Date of event: 18/10/2016
End date: 21/10/2016
Juan Álvaro Gallego.
DOI: https://doi.org/10.1007/978-3-319-46669-9_24

8 **Title of the work:** Interfacing human motor units in vivo
Name of the event: Anual Meeting of the Society for the Neural Control of Movement, Special Session "Control of the motoneuron: insights from the discharge of motor unit populations"
Corresponding author: Yes
City of event: Montego Bay, Jamaica
Date of event: 24/04/2016
End date: 29/04/2016
Organising entity: Society for the Neural Control of Movement
Juan Álvaro Gallego.

9 **Title of the work:** Multichannel surface EMG for the investigation of the most common movement disorder: Tremor
Name of the event: Summer School on Neurorehabilitation, Workshop "Multi-channel surface EMG: techniques and applications"
Corresponding author: Yes
City of event: Elche, Spain
Date of event: 15/09/2013
End date: 20/09/2013
Organising entity: Consejo Superior de Investigaciones Científicas
Type of entity: State agency
Juan Álvaro Gallego.

Other dissemination activities

1 **Title of the work:** Descifrando la sinfonía del cerebro
Type of event: Scientific outreach
City of event: León, Spain
Date of event: 05/2019
Organising entity: Museo Liceo Egipcio

2 **Title of the work:** Haciendo Matrix Realidad
Name of the event: Pint of Science Spain
Type of event: Outreach, Dissemination to the general public
City of event: Madrid, 17/05/2017, Spain
Date of event: 17/05/2017
Organising entity: Pint of Science Spain

R&D management and participation in scientific committees

Organization of R&D activities

1 **Title of the activity:** From single neurons to neural manifolds: A new framework for understanding neural control of movement
Type of activity: Special session in the Annual Meeting of the Society for the Neural Control of Movement
Convening entity: Society for the Neural Control of Movement
Type of entity: Scientific Society
Start-End date: 01/05/2017 - 05/05/2017

2 **Title of the activity:** Decoding the neural drive to muscle through the analysis of motor unit spike trains
Type of activity: Special Session in the International Congress on Neurotechnology, Electronics and Informatics
Geographical area: European Union
Convening entity: Institute for Systems and Technologies of Information, Control and Communication
Type of entity: Scientific, non-profit, association
City convening entity: Vilamoura, Algarve, Portugal
Start-End date: 18/09/2013 - 20/09/2013

Evaluation and revision of R&D projects and articles

1 **Name of the activity:** Review Editor for Neuroprosthetics
Performed tasks: Review Editor
Entity where activity was carried out: Frontiers in Neuroscience
Type of activity: Participation in editorial committees
Start date: 09/05/2018

2 **Performed tasks:** Reviewer
Entity where activity was carried out: Applied Bionics and Biomechanics
Type of activity: Review of articles in scientific or technological journals

3 **Performed tasks:** Reviewer
Entity where activity was carried out: Experimental Brain Research
Type of activity: Review of articles in scientific or technological journals

4 **Performed tasks:** Reviewer
Entity where activity was carried out: Frontiers in Computational Neuroscience
Type of activity: Review of articles in scientific or technological journals

5 **Performed tasks:** Reviewer
Entity where activity was carried out: IEEE Journal of Biomedical and Health Informatics
Type of activity: Review of articles in scientific or technological journals

6 **Performed tasks:** Reviewer
Entity where activity was carried out: IEEE Sensors Journal
Type of activity: Review of articles in scientific or technological journals

7 **Performed tasks:** Reviewer
Entity where activity was carried out: IEEE Transactions on Biomedical Engineering
Type of activity: Review of articles in scientific or technological journals

8 **Performed tasks:** Reviewer
Entity where activity was carried out: IEEE Transactions on Neural Systems and Rehabilitation Engineering
Type of activity: Review of articles in scientific or technological journals

9 **Performed tasks:** Reviewer
Entity where activity was carried out: IEEE Transactions on Systems, Man and Cybernetics– Part C
Type of activity: Review of articles in scientific or technological journals

10 **Performed tasks:** Reviewer
Entity where activity was carried out: IEEE/ASME Transactions on Mechatronics
Type of activity: Review of articles in scientific or technological journals

11 **Performed tasks:** Reviewer
Entity where activity was carried out: Journal of Electromyography and Kinesiology
Type of activity: Review of articles in scientific or technological journals

12 **Performed tasks:** Reviewer
Entity where activity was carried out: Journal of Neural Engineering
Type of activity: Review of articles in scientific or technological journals

13 **Performed tasks:** Reviewer
Entity where activity was carried out: Journal of Neuroengineering and Rehabilitation
Type of activity: Review of articles in scientific or technological journals

14 **Performed tasks:** Reviewer
Entity where activity was carried out: Journal of Neurophysiology
Type of activity: Review of articles in scientific or technological journals

15 **Performed tasks:** Reviewer
Entity where activity was carried out: Journal of Neuroscience Methods
Type of activity: Review of articles in scientific or technological journals

16 **Performed tasks:** Reviewer
Entity where activity was carried out: Journal of Neuroscience
Type of activity: Review of articles in scientific or technological journals

17 **Performed tasks:** Reviewer
Entity where activity was carried out: Medical and Biological Engineering and Computing
Type of activity: Review of articles in scientific or technological journals

18 **Performed tasks:** Reviewer
Entity where activity was carried out: Movement Disorders
Type of activity: Review of articles in scientific or technological journals

19 **Performed tasks:** Reviewer
Entity where activity was carried out: Nature Communications
Type of activity: Review of articles in scientific or technological journals

20 **Performed tasks:** Reviewer
Entity where activity was carried out: PLOS Computational Biology
Type of activity: Review of articles in scientific or technological journals

21 **Performed tasks:** Reviewer
Entity where activity was carried out: PLOS One
Type of activity: Review of articles in scientific or technological journals

22 **Performed tasks:** Reviewer
Entity where activity was carried out: Robotica
Type of activity: Review of articles in scientific or technological journals

23 **Performed tasks:** Reviewer
Entity where activity was carried out: Scientific Reports
Type of activity: Review of articles in scientific or technological journals

24 **Performed tasks:** Reviewer
Entity where activity was carried out: Sensors
Type of activity: Review of articles in scientific or technological journals

25 **Performed tasks:** Reviewer
Entity where activity was carried out: The Journal of Physiology
Type of activity: Review of articles in scientific or technological journals

Other achievements

Stays in public or private R&D centres

1 **Entity:** Janelia Research Campus **Type of entity:** R&D Centre
City of entity: Ashburn, United States of America
Start-End date: 20/10/2017 - 21/11/2017 **Duration:** 1 month
Goals of the stay: Guest
Provable tasks: Performed experiments on head-fixed mice using a two-photon mesoscope to image from different sensory and motor cortical areas. Host: Dr. Marius Pachitariu

2 **Entity:** Drexel University **Type of entity:** University
Faculty, institute or centre: Neurorobotics Lab
City of entity: Philadelphia, United States of America
Start-End date: 17/09/2014 - 22/09/2014
Goals of the stay: Post-doctoral
Provable tasks: Learn techniques for implanting multichannel electrode arrays in rat cortex. Host: Karen Moxon

3 **Entity:** Aalborg University **Type of entity:** University
Faculty, institute or centre: Center for Sensory-Motor Interaction
City of entity: Aalborg, Denmark
Start-End date: 01/09/2010 - 30/11/2010
Goals of the stay: Doctorate
Provable tasks: Investigate the neurophysiological mechanisms of tremor generation at the motoneuron population level, and the influence of the cortical drive. This work combined analysis of experimental and simulated data. Host: Dario Farina
Relevant results: This research visit set the foundation for the work later published in Gallego et al., J Neurophysiol 2015. It also provided preliminary data for EU Project NeuroTREMOR

4 **Entity:** Delft University of Technology **Type of entity:** University
Faculty, institute or centre: Faculty of Mechanical, Maritime and Materials Engineering
City of entity: Delft, Holland
Start-End date: 01/11/2007 - 12/11/2007 **Duration:** 15 days
Goals of the stay: Guest
Provable tasks: Implementation of a control architecture on a bipedal walking robot. Host: Dr. Martjin Wisse

5 **Entity:** University of Maribor
City of entity: Maribor, Slovenia
Start date: 18/06/2012 **Duration:** 7 days
Goals of the stay: Doctorate

Provable tasks: Study of blind source separation algorithms to estimate motoneuron activity from non-invasive recordings in humans. Host: Ales Holobar

6 **Entity:** Laboratoire d'Informatique, Robotique et Microélectronique de Montpellier **Type of entity:** R&D Centre
City of entity: Montpellier, Languedoc-Roussillon, France
Start date: 02/10/2006 **Duration:** 240 days
Name of programme: Erasmus Mundus Programme
Goals of the stay: Carrying out Engineering Thesis
Provable tasks: Theoretical and simulation work on methods for tremor suppression using functional electrical stimulation. Host: Philippe Poignet

Obtained grants and scholarships

1 **Name of the grant:** Talent Attraction ("Atracción de Talento Investigador")
City awarding entity: Madrid, Community of Madrid, Spain
Aims: Post-doctoral
Awarding entity: Comunidad de Madrid, Consejería de Educación y Ciencia **Type of entity:** Public Research Body
Amount of the grant: 80.000 €
Conferral date: 08/01/2018 **Duration:** 4 years
End date: 30/04/2022
Entity where activity was carried out: Agencia Estatal Consejo Superior de Investigaciones Científicas
Faculty, institute or centre: Centre for Automation and Robotics

2 **Name of the grant:** Marie Curie International Outgoing Fellowship
City awarding entity:
Aims: Post-doctoral
Awarding entity: Comisión Europea **Type of entity:** 7th Framework Programme. Contract: FP7-PEOPLE-2013-IOF-627384
Amount of the grant: 265.263 €
Conferral date: 29/11/2013 **Duration:** 3 years
End date: 30/04/2018
Entity where activity was carried out: Northwestern University and CSIC
Faculty, institute or centre: Feinberg School of Medicine (NU) and Center for Automation and Robotics (CSIC)

3 **Name of the grant:** Formación de Profesorado Universitario (FPU)
City awarding entity:
Aims: Pre-doctoral
Awarding entity: Ministerio de Ciencia e Innovación **Type of entity:** Spanish Govt.
Amount of the grant: 72.221 €
Conferral date: 30/07/2008 **Duration:** 4 years
End date: 15/09/2012
Entity where activity was carried out: Consejo Superior de Investigaciones Científicas
Faculty, institute or centre: Centre for Automation and Robotics

4 **Name of the grant:** Travel Award
Aims: Guest scientist
Awarding entity: Janelia Conferences **Type of entity:** R&D Centre

Conferral date: 01/02/2018

5 **Name of the grant:** Society Scholarship
City awarding entity:
Aims: Support attendance to the NCM2017 meeting
Awarding entity: Society for the Neural Control of Movement **Type of entity:** Professional association
Amount of the grant: 420 €
Conferral date: 16/02/2017

6 **Name of the grant:** Travel Award
City awarding entity:
Aims: Support attendance to the NCM 2016 Meeting
Awarding entity: Northwestern University, Office of Postdoctoral Affairs
Amount of the grant: 420 €
Conferral date: 29/01/2016

Other types of collaboration with researchers or technologists

Type of relationship: Networks without joint project
Name principal investigator (PI, Co-PI....): Marius Pachitariu; Juan Álvaro Gallego
Description of the collaboration: Local and global patterns of neural coordination
Participating entity/entities:
Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
City participating entity: Madrid, Spain

Janelia Research Centre **Type of entity:** R&D Centre
City participating entity: Arlington, United States of America

Start date: 01/10/2017
Relevant results: First recordings of neural populations across multiple cortical areas in freely behaving mice using a large field of view two-photon microscope. I will present our first results in the leading Conference in Computational Systems Neuroscience (COSYNE) in March. This collaboration is ongoing.

Scientific societies and professional associations

1 **Name of the society:** Society for the Neural Control of Movement
Start date: 01/01/2015

2 **Name of the society:** Society for Neuroscience
Start date: 01/01/2014

Prizes, mentions and distinctions

1 **Description:** Invitation to write an editorial summarizing the Highlights of the 2017 Neural Control of Movement Meeting in the European Journal of Neuroscience
Awarding entity: Society for the Neural Control of Movement, European Journal of Neuroscience **Type of entity:** Associations and Groups
Conferral date: 27/02/2017
Recognition linked: As part of my Society for the Neural Control of Movement Scholarship, I was offered to write a highlights article for the IF journal European Journal of Neuroscience

2 **Description:** Publication included as one of 12 Journal of Neural Engineering Highlights of 2015
Awarding entity: Journal of Neural Engineering **Type of entity:** Scientific Journal (ranked Q1 in the JCR)
Conferral date: 01/01/2016
Recognition linked: Our paper "One central oscillatory drive is compatible with experimental ..." was chosen has one of the 12 most influential publications in J Neural Eng, one of the top biomedical engineering journals

3 **Description:** Summa Cum Laude, Doctorate in Electrical, Electronic and Automation Engineering
Awarding entity: Universidad Carlos III de Madrid **Type of entity:** University
City awarding entity: Madrid, Spain
Conferral date: 06/06/2013

4 **Description:** Highest potential impact award for "A wearable neuroprosthesis for the suppression of pathological tremor"
Awarding entity: IEEE Engineering in Medicine and Biology Society **Type of entity:** Professional Association
Conferral date: 28/08/2012

5 **Description:** Summa Cum Laude, Master in Robotics and Automation
Awarding entity: Universidad Carlos III de Madrid **Type of entity:** University
City awarding entity: Madrid, Spain
Conferral date: 17/12/2009

6 **Description:** Best Robotics paper for "¿Cómo encontrar la mejor estrategia de recuperación en un robot bípedo de ciclo límite?"
Awarding entity: COMITE ESPAÑOL DE AUTOMATICA DE LA IFAC
Conferral date: 04/09/2009