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Personal information

Surname / First name	**López-Larraz, Eduardo**
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Personal Email	lopez.larraz@gmail.com
Nationality	Spanish
Date of birth	Jul 09 1985

Summary

As a computer scientist and biomedical engineer, my main interests lie in the translation of computational tools and neuroscientific knowledge to improve the quality of life of people with disability. I have great motivation to learn and work in multidisciplinary environments.

Education and training

Place and Date	University of Zaragoza and Polytechnic University of Catalonia (Spain), Sep 2011 – Oct 2015.
Title of qualification awarded	Ph.D. in Biomedical Engineering.
Thesis Title	*Brain-machine interfaces for motor rehabilitation and restoration after spinal cord injury.*
Place and Date	University of Zaragoza (Spain), Sep 2009 – Jun 2011.
Title of qualification awarded	M.Sc. in Biomedical Engineering.
Master Thesis	*Acquisition, characterization, and classification of Feedback Event-Related Potentials during a time-estimation task.*
Place and Date	University of Zaragoza (Spain), Sep 2003 – Sep 2009.
Title of qualification awarded	B.Sc. + M.Sc. in Computer Science Engineering.
Final project	*Syllable-Based Speech Recognition using EMG.*

Work experience

Date	Aug 2015 – Present.
Occupation or position held	*Postdoctoral fellow*, Institute of Medical Psychology and Behavioral Neurobiology, University of Tübingen (Germany).
Date	Jan 2011 – Jul 2015.
Occupation or position held	*Ph.D. student and research assistant*, University of Zaragoza and Instituto de Investigación en Ingeniería de Aragón (Aragón Institute for Engineering Research), Zaragoza (Spain).
Date	Oct 2010 – Dec 2010.
Occupation or position held	*Research assistant fellowship*, Instituto de Investigación en Ingeniería de Aragón (Aragón Institute for Engineering Research), Zaragoza (Spain).
Date	Nov 2008 – Jun 2009.

Occupation or position held	*Research initiation fellowship*, University of Zaragoza (Spain).
Date	Jan 2007 – Jun 2009.
Occupation or position held	Tutoring mathematics, physics, chemistry and English to secondary and high school students.

Research internships

Date	Sept 2015 – Oct 2015.
Institution	National Institute for Physiological Sciences (NIPS), Okazaki (Japan).
Supervisor	Prof. Yukio Nishimura.
Date	Jun 2014 – Jul 2014.
Institution	Biomechanics and Technical Aids Department, Hospital Nacional de Parapléjicos, Toledo (Spain).
Supervisor	Dr. Ángel Gil-Agudo.
Date	Mar 2014 – Jun 2014.
Institution	Institute for Medical Psychology and Behavioral Neurobiology, Eberhard Karls University of Tübingen (Germany).
Supervisor	Prof. Dr. Dr. h.c. mult. Niels Birbaumer.

Languages

Mother tongue	**Spanish**
Other language(s)	English: Full professional proficiency. German: Limited working proficiency.

Publications

Journal articles under review or in preparation (6)

- A. Insausti-Delgado, E. López-Larraz, J. Omedes, N. Birbaumer and A. Ramos-Murguialday, **Intensity and dose of neuromuscular electrical stimulation influence afferent cortical activation**, *Under review*.
- A.M. Ray, T.C. Figueiredo, E. López-Larraz, N. Birbaumer and A. Ramos-Murguialday, **Brain oscillatory activity as a biomarker of motor learning and recovery in chronic stroke**, *Under review*.
- A. Sarasola-Sanz, E. López-Larraz, N. Irastorza-Landa, G. Rossi, T.C. Figueiredo, J. McIntyre, N. Birbaumer and A. Ramos-Murguialday, **Motor learning with a multi-degree-of-freedom mirror myoelectric interface during functional task training**, *Under review*.
- E. López-Larraz, A. Sarasola-Sanz, N. Birbaumer and A. Ramos-Murguialday, **Detection of impossible movements in stroke patients with electroencephalography and electromyography**, *In preparation*.
- C. Bibián, N. Irastorza-Landa, M. Schönauer, N. Birbaumer, A. Ramos-Murguialday* and E. López-Larraz*, **Do we need a brain for brain machine-interfaces?: questioning the decoding of different arm movements from EEG**, *In preparation*.
- J. Omedes, E. López-Larraz, A. Insausti-Delgado, C. Bibián, N. Birbaumer, A. Ramos-Murguialday and L. Montesano, **Brain signatures of afferent mismatch during neuromuscular electrical stimulation**, *In preparation*.

Peer-reviewed journal publications (13)

[1] E. López-Larraz, C. Escolano, L. Montesano and J. Minguez, **Reactivating the dormant motor cortex after spinal cord injury with EEG-neurofeedback: a case study with a chronic, complete C4 patient**, *Clinical EEG & Neuroscience*, 50(2):100-110, 2019.

[2] E. López-Larraz, T.C. Figueiredo, A. Insausti-Delgado, U. Ziemann, N. Birbaumer and A. Ramos-Murguialday, **Event-related desynchronization during movement attempt and execution in severely paralyzed stroke patients: an artifact removal relevance analysis**, *NeuroImage: Clinical*, 20:972-986, 2018.

[3] E. López-Larraz*, J. Ibáñez*, F. Trincado-Alonso, E. Monge-Pereira, J.L. Pons and L. Montesano, **Comparing recalibration strategies for electroencephalography-based decoders of movement intention in neurological patients with motor disability**, *International Journal of Neural Systems*, 28(7):1750060, 2018.

[4] E. López-Larraz, A. Sarasola-Sanz, N. Irastorza-Landa, N. Birbaumer and A. Ramos-Murguialday, **Brain-machine interfaces for rehabilitation in stroke: a review**, *Neurorehabilitation*, 43(1):77-97, 2018.

[5] V. Rajasekaran, E. López-Larraz, F. Trincado-Alonso, J. Aranda, L. Montesano, A.J. del-Ama and J.L. Pons, **Volition-adaptive control for gait training using wearable exoskeleton: preliminary tests with incomplete spinal cord injury individuals**, *Journal of NeuroEngineering and Rehabilitation*, 15:4, 2018.

[6] A. Sarasola-Sanz, N. Irastorza-Landa, E. López-Larraz, F. Shiman, M. Spüler, N. Birbaumer and A. Ramos-Murguialday, **Design and effectiveness evaluation of mirror myoelectric interfaces: a novel method to restore movement in hemiplegic patients**, *Scientific Reports*, 8:16688, 2018.

[7] M. Spüler, E. López-Larraz and A. Ramos-Murguialday, **On the design of EEG-based movement decoders for completely paralyzed stroke patients**, *Journal of NeuroEngineering and Rehabilitation*, 11:115, 2018.

[8] F. Trincado-Alonso, E. López-Larraz, F. Resquín, A. Ardanza, S. Perez-Nombela, J.L. Pons, L. Montesano and Á. Gil-Agudo, **A pilot study of brain-triggered electrical stimulation with visual feedback in patients with incomplete spinal cord injury**, *Journal of Medical and Biological Engineering*, 38(5):790-803, 2018.

[9] F. Shiman, E. López-Larraz, A. Sarasola-Sanz, N. Irastorza-Landa, M. Spüler, N. Birbaumer and A. Ramos-Murguialday, **Classification of different reaching movements from the same limb using EEG**, *Journal of Neural Engineering*, 14(4): 046018, 2017.

[10] E. López-Larraz, F. Trincado-Alonso, V. Rajasekaran, S. Pérez-Nombela, A.J. del-Ama, J. Aranda, J. Minguez, Á. Gil-Agudo and L. Montesano, **Control of an Ambulatory Exoskeleton with a Brain–Machine Interface for Spinal Cord Injury Gait Rehabilitation**, *Frontiers in Neuroscience*, 10:359, 2016.

[11] E. Bravo-Esteban and E. López-Larraz, **Potenciación del reaprendizaje motor y la recuperación funcional en pacientes con ictus: estrategias no invasivas de modulación del sistema nervioso central [Enhancement of motor relearning and functional recovery in stroke patients: non-invasive strategies for modulating the central nervous system]**, *Revista de Neurología*, 62(6):273–281, 2016.

[12] E. López-Larraz, L. Montesano, Á. Gil-Agudo, J. Minguez and A. Oliviero, **Evolution of EEG motor rhythms after spinal cord injury: a longitudinal study**, *PLoS ONE*, 10(7):e0131759, 2015.

[13] E. López-Larraz, L. Montesano, Á. Gil-Agudo and J. Minguez, **Continuous decoding of movement intention of upper limb self-initiated analytic movements from pre-movement EEG correlates**, *Journal of NeuroEngineering and Rehabilitation*, 11:153, 2014.

Book chapters (2)

[14] G. Asín.Prieto, R. Cano-de-la-Cuerda, E. López-Larraz, J. Metrot, M. Molinari and L.E.H. van Dokkum, **Emerging perspectives in stroke rehabilitation**, In *Emerging Therapies in Neurorehabilitation*, Springer Berlin Heidelberg, 2014.

[15] E. López-Larraz, C. Escolano and J. Minguez, **Using upper-alpha neurofeedback training to improve SMR desynchronization**, In *Converging Clinical and Engineering Research on Neurorehabilitation*, Springer Berlin Heidelberg, 2013.

Articles in peer-reviewed conferences (28)

[16] E. López-Larraz, A.M. Ray, N. Birbaumer and A. Ramos-Murguialday, **Sensorimotor rhythm modulation depends on resting-state oscillations and cortex integrity in severely paralyzed stroke patients**, *9th International IEEE EMBS Conference on Neural Engineering (NER)*, San Francisco (USA), 2019.

[17] C. Bibián, E. López-Larraz and A. Ramos-Murguialday, **Head and eye movements influence the decoding of different reaching directions from EEG**, *9th International IEEE EMBS Conference on Neural Engineering (NER)*, San Francisco (USA), 2019.

[18] F. Helmhold, A.M. Ray, E. López-Larraz and A. Ramos-Murguialday, **Tracking Event-Related Potentials during BMI driven Rehabilitation**, *9th International IEEE EMBS Conference on Neural Engineering (NER)*, San Francisco (USA), 2019.

[19] A. Insausti-Delgado, E. López-Larraz, Y. Nishimura, N. Birbaumer, U. Ziemann and A. Ramos-Murguialday, **Quantifying the effect of trans-spinal magnetic stimulation on spinal excitability**, *9th International IEEE EMBS Conference on Neural Engineering (NER)*, San Francisco (USA), 2019.

[20] A.M. Ray, A. Maillot, F. Helmhold, W.J. Mahmoud, E. López-Larraz and A. Ramos-Murguialday, **Electromyographic indices of muscle fatigue of a severely paralyzed chronic stroke patient undergoing upper limb motor rehabilitation**, *9th International IEEE EMBS Conference on Neural Engineering (NER)*, San Francisco (USA), 2019.

[21] E. López-Larraz, N. Birbaumer and A. Ramos-Murguialday, **A hybrid EEG-EMG BMI improves the detection of movement intention in cortical stroke patients with complete hand paralysis**, *40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Honolulu (USA), 2018.

[22] E. López-Larraz, N. Birbaumer and A. Ramos-Murguialday, **Designing hybrid brain-machine interfaces to detect movement attempts in stroke patients**, *4th International Conference on Neurorehabilitation (ICNR)*, Pisa (Italy), 2018.

[23] E. López-Larraz, A.M. Ray, T.C. Figueiredo, C. Bibián, N. Birbaumer and A. Ramos-Murguialday, **Stroke lesion location influences the decoding of movement intention from EEG**, *39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Jeju (South Korea), 2017.

[24] C. Bibián, E. López-Larraz, N. Irastorza-Landa, N. Birbaumer and A. Ramos-Murguialday, **Evaluation of filtering techniques to extract movement intention information from low-frequency EEG activity**, *39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Jeju (South Korea), 2017.

[25] A. Insausti-Delgado, E. López-Larraz, C. Bibián, Y. Nishimura, N. Birbaumer and A. Ramos-Murguialday, **Influence of trans-spinal magnetic stimulation in electrophysiological recordings for closed-loop rehabilitative systems**, *39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Jeju (South Korea), 2017.

[26] A.M. Ray, E. López-Larraz, T.C. Figueiredo, N. Birbaumer and A. Ramos-Murguialday, **Movement-related brain oscillations vary with lesion location in severely paralyzed chronic stroke patients**, *39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Jeju (South Korea), 2017.

[27] E. López-Larraz, C. Bibián, N. Birbaumer and A. Ramos-Murguialday, **Influence of artifacts on movement intention decoding from EEG activity in severely paralyzed stroke patients**, *15th IEEE International Conference on Rehabilitation Robotics (ICORR)*, London (UK), 2017.

[28] N. Irastorza-Landa, A. Sarasola-Sanz, E. López-Larraz, C. Bibián, F. Shiman, N. Birbaumer and A. Ramos-Murguialday, **Design of Continuous EMG Classification approaches towards the Control of a Robotic Exoskeleton for Reaching Movements**, *15th IEEE International Conference on Rehabilitation Robotics (ICORR)*, London (UK), 2017.

[29] A. Sarasola-Sanz, N. Irastorza-Landa, E. López-Larraz, C. Bibián, F. Helmhold, D. Broetz, N. Birbaumer and A. Ramos-Murguialday, **A Hybrid Brain-Machine Interface based on EEG and EMG activity for the Motor Rehabilitation of Stroke Patients**, *15th IEEE International Conference on Rehabilitation Robotics (ICORR)*, London (UK), 2017.

[30] M. Bayon-Calatayud, F. Trincado-Alonso, E. López-Larraz, J.L. Pons, L. Montesano and A. Gil-Agudo, **Usability of the combination of Brain-Computer Interface, functional electrical stimulation and virtual reality for improving hand function in spinal cord injured patients**, *3rd International Conference on Neurorehabilitation (ICNR)*, Segovia (Spain), 2016.

[31] J. Ibáñez, E. López-Larraz, E. Monge, F. Molina, L. Montesano and J.L. Pons, **On recalibration strategies for Brain-Computer Interfaces based on the detection of motor intentions**, *3rd International Conference on Neurorehabilitation (ICNR)*, Segovia (Spain), 2016.

[32] N. Irastorza-Landa, A. Sarasola-Sanz, F. Shiman, E. López-Larraz, J. Klein, D. Valencia, A. Belloso, F. Morin, N. Birbaumer and A. Ramos-Murguialday, **EMG discrete classification towards a myoelectric control of a robotic exoskeleton in motor rehabilitation**, *3rd International Conference on Neurorehabilitation (ICNR)*, Segovia (Spain), 2016.

[33] A. Sarasola-Sanz, E. López-Larraz, N. Irastorza-Landa, J. Klein, D. Valencia, A. Belloso, F. Morin, M. Spüler, N. Birbaumer and A. Ramos-Murguialday, **An EEG-based brain-machine interface to control a 7-degrees of freedom exoskeleton for stroke rehabilitation**, *3rd International Conference on Neurorehabilitation (ICNR)*, Segovia (Spain), 2016.

[34] E. López-Larraz, F. Trincado-Alonso and L. Montesano, **Brain-machine interfaces for motor rehabilitation: Is recalibration important?**, *14th IEEE International Conference on Rehabilitation Robotics (ICORR)*, Singapore, 2015.

[35] A. Sarasola-Sanz, N. Irastorza-Landa, F. Shiman, E. López-Larraz, M. Spüler, N. Birbaumer and A. Ramos-Murguialday, **EMG-based multi-joint kinematics decoding for robot-aided rehabilitation therapies**, *14th IEEE International Conference on Rehabilitation Robotics (ICORR)*, Singapore, 2015.

[36] F. Trincado-Alonso, E. López-Larraz and A. Gil-Agudo, **Métricas de neuroplasticidad basadas en interfaces cerebro-máquina** (In Spanish), *Actas del 7º Simposio CEA de Bioingeniería*, Málaga (Spain), 2015.

[37] E. López-Larraz, J.M. Antelis, A. Gil-Agudo, L. Montesano and J. Minguez, **Continuous decoding of motor attempt and motor imagery from EEG activity in spinal cord injury patients**, *34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, San Diego (USA), 2012.

[38] E. López-Larraz, C. Escolano and J. Minguez, **Upper alpha neurofeedback training over the motor cortex increases SMR desynchronization in motor tasks**, *34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, San Diego (USA), 2012.

[39] E. López-Larraz, I. Iturrate, C. Escolano, I. García, L. Montesano and J. Minguez, **Single-trial classification of feedback potentials within neurofeedback training with an EEG brain-computer interface**, *33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Boston (USA), 2011.

[40] E. López-Larraz, M. Creatura, I. Iturrate, L. Montesano and J. Minguez, **EEG single-trial classification of visual, auditive and vibratory feedback potentials in brain-computer interfaces**, *33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Boston (USA), 2011.

[41] E. López-Larraz, I. Iturrate, L. Montesano and J. Minguez, **Real-time recognition of feedback error-related potentials during a time-estimation task**, *32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Buenos Aires (Argentina), 2010.

[42] E. López-Larraz, O. M. Mozos, J.M. Antelis and J. Minguez, **Syllable-Based Speech Recognition Using EMG**, *32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Buenos Aires (Argentina), 2010.

[43] E. López-Larraz, O. M. Mozos, J.M. Antelis, J. Damborenea Tajada and J. Minguez, **Diseño de un sistema de reconocimiento del habla mediante electromiografía** (In Spanish), *XXVII Congreso Anual de la Sociedad Española de Ingeniería Biomédica (CASEIB)*, Cádiz (Spain), 2009.

Abstracts in conferences (14)

[44] A. Ramos-Murguialday, P. Khanna, A. Sarasola-Sanz, N. Irastorza-Landa, J. Klein, J.H. Jung, A. Garzo, L. Santisteban, C. Chueca, E. López-Larraz, I. Ortego-Isasa, S.R. Gowda, S. Dangi, A. Carrasco, G. Carbayo, N. Diaz, I. Pomposo, A. Lopez de Munain, N. Birbaumer, J. McIntyre, A. Bengoetxea, E. Ramos and J.M. Carmena, **A novel implantable hybrid brain-machine-interface (BMI) for motor rehabilitation in stroke patients**, *9th International IEEE EMBS Conference on Neural Engineering (NER)*, San Francisco (USA), 2019.

[45] E. López-Larraz, N. Birbaumer and A. Ramos-Murguialday, **Synergistic combination of EEG and EMG activity for detecting movement intentions of stroke patients with complete hand paralysis**, *Society for Neuroscience Meeting (SFN)*, San Diego (USA), 2018.

[46] C. Bibián, E. López-Larraz, N. Birbaumer and A. Ramos-Murguialday, **Influence of head and eye movements in the EEG-based decoding of different reaching movements**, *Society for Neuroscience Meeting (SFN)*, San Diego (USA), 2018.

[47] E. López-Larraz, N. Birbaumer, A. Ramos-Murguialday, **Minimizing the influence of EEG artifacts on brain-machine interfaces for stroke rehabilitation**, *11th FENS Forum of Neuroscience*, Berlin (Germany), 2018.

[48] C. Bibián, E. López-Larraz, A. Insausti-Delgado, N. Birbaumer, A. Ramos-Murguialday, **Changes in synaptic plasticity after learning to control a Brain-machine interface for reaching**, *11th FENS Forum of Neuroscience*, Berlin (Germany), 2018.

[49] A. Insausti-Delgado, E. López-Larraz, N. Birbaumer, A. Ramos-Murguialday, **An exhaustive assessment to quantify changes in spinal excitability after spinal-cord stimulation**, *11th FENS Forum of Neuroscience*, Berlin (Germany), 2018.

[50] W. Mahmoud, E. López-Larraz, A. M. Ray, N. Birbaumer, D. Brötz, A. Ramos-Murguialday, **Neurological Correlates of Spasticity reduction in BMI rehabilitation: methods**, *11th FENS Forum of Neuroscience*, Berlin (Germany), 2018.

[51] A. M. Ray, E. López-Larraz, N. Birbaumer, A. Ramos-Murguialday, **Stability of the individual alpha oscillations in severely paralyzed stroke patients undergoing Brain-Machine interface training**, *11th FENS Forum of Neuroscience*, Berlin (Germany), 2018.

[52] E. López-Larraz, T.C. Figueiredo, C. Bibián, A.M. Ray, N. Birbaumer, A. Ramos-Murguialday, **Decoding movement intentions from EEG activity in subcortical and cortical stroke patients minimizing the influence of artifacts**, *European Congress of NeuroRehabilitation*, Lausanne (Switzerland), 2017.

[53] C. Bibián, E. López-Larraz, N. Birbaumer, A. Ramos-Murguialday, **Continuous decoding of different reaching directions from EEG**, *European Congress of NeuroRehabilitation*, Lausanne (Switzerland), 2017.

[54] T.C. Figueiredo, A.M. Ray, E. López-Larraz, M. Spüler, N. Birbaumer, A. Ramos-Murguialday, **Changes in brain oscillatory activity during one month of BMI training in chronic stroke patients**, *European Congress of NeuroRehabilitation*, Lausanne (Switzerland), 2017.

[55] A. Sarasola-Sanz, N. Irastorza-Landa, E. López-Larraz, G. Rossi, N. Birbaumer and A. Ramos-Murguialday, **Decoding of multi-joint movements using high-density EMG signals and a 7-DoF exoskeleton**, *Society for Neuroscience Meeting (SFN)*, San Diego (USA), 2016.

[56] N. Irastorza-Landa, A. Sarasola-Sanz, F. Shiman, E. López-Larraz, M. Spüler, N. Birbaumer and A. Ramos-Murguialday, **Continuous multi-joint myoelectric control of an upper-limb robotic exoskeleton in stroke patients**, *Society for Neuroscience Meeting (SFN)*, San Diego (USA), 2016.

[57] F. Shiman, N. Irastorza-Landa, A. Sarasola-Sanz, E. López-Larraz, M. Spüler, N. Birbaumer and A. Ramos-Murguialday, **EEG-BCI and control of extraskeletons**, *Society for Neuroscience Meeting (SFN)*, San Diego (USA), 2016.

Reviewer activities

Journals

Occasional reviewer for: Brain Topography, Clinical EEG and Neuroscience, Clinical Neurophysiology, Frontiers in Computational Neuroscience, Human Brain Mapping, IEEE Journal of Biomedical and Health Informatics, IEEE Signal Processing Letters, IEEE Transactions on Biomedical Engineering, IEEE Transactions on Neural System and Rehabilitation Engineering, IEEE Transactions on Systems Man and Cybernetics, Journal of Neuroengineering and Rehabilitation, Journal of Neuroscience Methods, Neural Computation, NeuroImage, Neurorehabilitation & Neural Repair, PLoS One, Revista de Neurología, Scientific Reports, The Journal of Physiology.

Conferences

Occasional reviewer for: Graz BCI Conference, International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), IEEE International Conference on Rehabilitation Robotics (ICORR), International Conference on Neurorehabilitation (ICNR), International IEEE EMBS Conference on Neural Engineering (NER), IEEE International Conference on Systems, Man, and Cybernetics (SMC).

Participation in conferences/workshops

As organizer and speaker

Oct 2018

Co-organizer and speaker of the Special Session **Multimodal neural interfaces for rehabilitation and assistance of people with disability**, held during the *4th International Conference on Neurorehabilitation (ICNR)*, 2018, Pisa (Italy).

Sept 2017

Co-organizer and speaker of the Workshop **Machine Learning and Multivariate Pattern Analysis**, held during the *Annual Retreat of the Institute of Medical Psychology and Behavioral Neurobiology of the University of Tübingen*, 2017, Bad Teinach (Germany).
Title of the talk: "Starting to apply Machine Learning: good practices, dos and dont's".

Nov 2016

Invited speaker at the *IV Annual Symposium CERFA (Society of Spanish Researchers in Germany)*, 2016, Düsseldorf-Köln (Germany).
Title of the talk: "Cerebral regeneration through electrical stimulation".

Nov 2012

Co-organizer and speaker of the workshop **Clinical Neurorehabilitation based on Neuromodulation Interventions**, held during the *1st International Conference on Neurorehabilitation (ICNR)*, 2012, Toledo (Spain).
Title of the talk: "Improving motor behavior using neuromodulation interventions".

Feb 2010

Invited speaker at the *1as Jornadas en Brain-Computer Interaction*, 2010, Palma de Mallorca (Spain).
Title of the talk: "Brain-Computer Interface Technology at the University of Zaragoza".

As participant

Mar 2019

9th International IEEE EMBS Conference on Neural Engineering (NER), San Francisco (USA).

Nov 2018

Society for Neuroscience Meeting (SFN), San Diego (USA).

Jul 2018

11th FENS Forum of Neuroscience, Berlin (Germany).

Oct 2017

4th European Congress of NeuroRehabilitation (ECNR), Lausanne (Switzerland).

Jul 2017	RehabWeek and 15th International Conference on Rehabilitation Robotics (ICORR), London (UK).
Jul 2017	39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Jeju Island (South Korea).
Aug 2015	14th International Conference on Rehabilitation Robotics (ICORR), Singapore.
Aug 2012	34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), San Diego (USA).
Aug 2011	33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Boston (USA).
Aug 2010	32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Buenos Aires (Argentina).
Nov 2009	XXVII Congreso Anual de la Sociedad Española de Ingeniería Biomédica (CASEIB), Cádiz (Spain).
	As volunteer
Jun 2010	Robotics: Science and Systems Conference, Zaragoza (Spain).
	Attendance to summer schools
Sep 2012	Summer School in Neurorehabilitation: Emerging Therapies, Nuévalos, Zaragoza (Spain).
Sep 2012	Summer School in Neurorehabilitation: Emerging Technologies, La Alberca, Salamanca (Spain).

Participation in research projects

Project Name	Disentangling the mechanisms of spasticity and motor recovery in stroke patients after brain-machine interface rehabilitation (2556-0-0).
Duration	Jun 2019 – Nov 2019.
Funding Agency	Faculty of Medicine, University of Tübingen.
Involved Institutions	University of Tübingen.
Role	Principal investigator.
Project Name	Exploiting different brain signatures of movement to improve neuro-rehabilitation (SIMON, 2422-0-0 & 2422-0-1).
Duration	Jun 2017 – May 2019.
Funding Agency	Faculty of Medicine, University of Tübingen.
Involved Institutions	University of Tübingen.
Role	Principal investigator.
Project Name	Adaptive und hochMotivierende Rehabilitationsplattform für Schlaganfallpatienten mit Armlähmungen (AMoRSA, FKZ 16SV7754).
Duration	Mar 2017 – Feb 2020.
Funding Agency	Bundes Ministerium für Bildung und Forschung (BMBF) Interaktive Körpernahe Medizintechnik.
Involved Institutions	University of Tübingen, Brain Products GmbH, Promotion Software GmbH.

Role	Postdoctoral researcher.
Project Name	CorTec Brain-Interchange: ein Closed-Loop-Implantat fuer die Wiederstellung von motorischen Funktionen (MOTOR-BIC, FKZ 13GW0053).
Duration	Nov 2014 – Nov 2017.
Funding Agency	Bundes Ministerium für Bildung und Forschung (BMBF) KMU-Innovativ: Medizintechnik.
Involved Institutions	University of Tübingen, CorTec GmbH, University of Freiburg, University of Ulm, Max Planck Gesellschaft.
Role	Postdoctoral researcher.
Project Name	Gehirn Muskeln Rehabilitation Roboter Schnittstelle (GRUENS).
Duration	Nov 2013 – Nov 2016.
Funding Agency	Baden Wuerttemberg Stiftung.
Involved Institutions	University of Tübingen.
Role	Postdoctoral researcher.
Project Name	Hybrid Neuroprosthetic and Neurorobotic Devices for Functional Compensation and Rehabilitation of Motor Disorders (HYPER, CSD2009-00067).
Duration	Jan 2011 – Dec 2015.
Funding Agency	Ministerio de Ciencia e Innovación (MICINN): CONSOLIDER-INGENIO.
Involved Institutions	University of Zaragoza, CSIC, Instituto de Bioenginyeria de Catalunya, Universidad Carlos III, CIDETEC, Tecnalia, Vicomtech, Hospital Nacional de Parapléjicos de Toledo, Universidad Rey Juan Carlos.
Role	PhD student.
Project Name	Learning affordances for intentional control of robots (LAICO, DPI2011-25892).
Duration	Jan 2012 – Dec 2014.
Funding Agency	Ministerio de Ciencia e Innovación (MICINN): CYCIT.
Involved Institutions	University of Zaragoza.
Role	PhD student.
Project Name	Cognitive neuro control of robotic prostheses and human limbs through functional electrical stimulation for rehabilitation purposes (COGNETICS, DPI2009-14732-C02-01).
Duration	Jan 2010 – Dec 2012.
Funding Agency	Ministerio de Ciencia e Innovación (MICINN): CYCIT.
Involved Institutions	University of Zaragoza, Fatronik-Tecnalia.
Role	PhD student.
Project Name	Evaluación biomédica de robots de asistencia a la movilidad humana (EVO, DPI2006-15630-C02-02).
Duration	Sep 2008 – Sep 2009.
Funding Agency	Ministerio de Ciencia e Innovación (MICINN): CYCIT.
Involved Institutions	University of Zaragoza.
Role	Master student.

Courses and Certificates

May 2019 — **Neural Networks and Deep Learning** by deeplearning.ai on Coursera.

May 2019 — **Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization** by deeplearning.ai on Coursera.

May 2019 — **Structuring Machine Learning Projects** by deeplearning.ai on Coursera.

Jan 2014 — **Machine learning** by Stanford University on Coursera.

Mar 2013 — **Data Analysis** by Johns Hopkins Bloomberg School of Public Health on Coursera.

Professional skills and competences

Technical skills

Operative Systems: Windows, Linux.

Software: Matlab (FieldTrip, EEGlab, BCIlab, Machine learning, Statistics, Optimization and Signal processing toolboxes), Microsoft Office, Graphic design tools (Adobe Photoshop and Illustrator, Inkscape, Gimp), SPSS, R, BCI2000.

Programming Languages: C, C++, Java, Ada, Python, HTML.

Database Management: MySQL, Oracle.

Signal processing: Signal processing algorithms for real-time applications, time-frequency analyses, different filters and transforms (e.g., Fourier, Wavelets, etc.).

Statistics and data science: Multivariate statistical analyses, parametric and non-parametric methods, bootstrapping, multiple and logistic regression, analysis of variance, factor analysis.

Data representation and visualization: Different graphic environments for representation of multi-source data.

Biomedical skills

Experiment design and hypothesis testing: Extensive experience designing protocols for Brain-Machine Interfaces and electrophysiology studies.

Electrophysiology: Electroencephalography (EEG) and electromyography (EMG).

Neurostimulation: Transcranial magnetic stimulation (TMS), Functional electric stimulation (FES), neurofeedback.

Neurophysiology assessments: Motor-evoked potentials (MEP), Event-related potentials (ERP), Hoffman-reflex (H-reflex).

Experience designing and performing clinical studies with stroke and spinal cord injury patients.

Advising and management

One Bachelor thesis supervised: Carlos Bibián Nogueras (B.Sc. in Electronic Engineering and Automation, University of Zaragoza, 2015).

Six Master thesis co-supervised: Pedro Vas Vea-Murguia (M.Sc. in Electronic Engineering, University of Zaragoza, 2011); Diego Ignacio Mallea Lobera (M.Sc. in Biomedical Engineering, University of Zaragoza, 2012); Ainhoa Insausti Delgado (M.Sc. in Biomedical Engineering, TECNUN-University of Navarra, 2016); Carlos Bibián Nogueras (M.Sc. in Biomedical Engineering, University of Zaragoza, 2017); Judith Maria Zaiser (M.Sc. in Neuroscience, University of Strasbourg, 2018); Delphine Muller (M.Sc. in Cognitive Sciences, Grenoble Institute of Technology, 2018).

One Ph.D thesis co-supervised: Farid Shiman (Ph.D. in Neuroscience, International Max Planck Research School of Neural and Behavioral Science, 2017).

Currently co-supervising three Ph.D. theses and advising three more.

Experience with research project management and scientific proposal writing.

Additional information

Personal interests: Science, traveling, literature, photography, music (playing different percussion instruments for more than 10 years), gastronomy, cooking.

Driving license.

References

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