

CURRICULUM VITAE

Roberto Hornero

Biomedical Engineering Group
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EDUCATION

- 1998** **Ph. D. in Biomedical Engineering (1998)**
University of Valladolid (Spain)
- 1995** **M. S. in Telecommunication Engineering (1995)**
University of Valladolid (Spain)

PROFESSIONAL EXPERIENCE

- 2010-Present** **Professor**
Department of Signal Processing and Communications
University of Valladolid (Spain)
- 2000-2009** **Associate Professor**
Department of Signal Processing and Communications
University of Valladolid (Spain)
- 1996-1999** **Assistant Professor**
Department of Signal Processing and Communications
University of Valladolid (Spain)
- 2016** **Visiting Research Specialist**
MEG Labor, Brain Imaging Center, Goethe University Frankfurt
Frankfurt (Germany)
- 2005** **Visiting Research Specialist**
Oregon Institute of Technology and Portland State University
Portland (Oregon, USA)
- 1997** **Visiting Research Specialist**
Fachhochschule Mannheim, Hochschule für Technik und Gestand,
Mannheim (Germany)

MAJOR RESEARCH INTERESTS

Biomedical Signal Processing

- ✓ EEG and MEG analysis to help in the diagnosis of Alzheimer's disease.
- ✓ Classification of respiratory episodes in the diagnosis of obstructive sleep apnoea (OSA) syndrome.
- ✓ EEG analysis to the control of Brain Computer Interface (BCI) systems.

Signal Processing Algorithms

- ✓ Spectral analysis
- ✓ Nonlinear dynamics and chaos
- ✓ Wavelet transform
- ✓ Classification methods

ARTICLES PUBLISHED IN REFEREED JOURNALS

1. Javier Gomez-Pilar, Alba Lubeiro, Jesús Poza, **Roberto Hornero**, Marta Ayuso, César Valcárcel, Karim Haidar, José A. Blanco, Vicente Molina. "Functional EEG network analysis in schizophrenia: Evidence of larger segregation and deficit of modulation.", *Progress in Neuropsychopharmacology & Biological Psychiatry*, vol. 76, pp. 116-123, 2017.
2. Daniel Álvarez, María L. Alonso-Álvarez, Gonzalo C. Gutiérrez-Tobal, Andrea Crespo, Leila Keirandish-Gozal, **Roberto Hornero**, David Gozal, Joaquín Terán-Santos, Félix Del Campo. "Automated screening of children with obstructive sleep apnea using nocturnal oximetry: An alternative to respiratory polygraphy in unattended settings", *Journal of Clinical Sleep Medicine*, vol. 13, 5, pp. 693-702, 2017.
3. Alba Lubeiro, Javier Gomez-Pilar, Oscar Martín, Aitor Palomino, Myriam Fernández, Ana González Pinto, Jesús Poza, **Roberto Hornero**, Vicente Molina. "Variation at NRG1 genotype related to modulation of small-world properties of the functional cortical network", *European Archives of Psychiatry and Clinical Neuroscience*, vol. 267, 1, pp. 25-32, 2017
4. Jesús Poza, Carlos Gómez, María García, Miguel A. Tola-Arribas, Alicia Carreres, Mónica Cano, **Roberto Hornero**. "Spatio-temporal fluctuations of neural dynamics in mild cognitive impairment and Alzheimer's disease", *Current Alzheimer Research*. In press, 2017
5. Pablo Núñez, Jesús Poza, Alejandro Bachiller, Javier Gomez-Pilar, Alba Lubeiro, Vicente Molina, **Roberto Hornero**. "Exploring non-stationarity patterns in schizophrenia: neural reorganization abnormalities in the alpha band", *Journal of Neural Engineering*. In press, 2017.
6. Javier Gomez-Pilar, Jesús Poza, Alejandro Bachiller, Carlos Gómez, Pablo Núñez, Alba Lubeiro, Vicente Molina, **Roberto Hornero**. "Quantification of graph complexity based on the edge weight distribution balance: Application to brain networks", *International Journal of Neural Systems*. In press, 2017.
7. Gonzalo C. Gutiérrez-Tobal, Daniel Álvarez, Félix del Campo, **Roberto Hornero**, "Utility of AdaBoost to Detect Sleep Apnea-Hypopnea Syndrome from Single-Channel Airflow", *IEEE Transactions on Biomedical Engineering*, vol. 63, 3, pp. 636-646, 2016.
8. J. Víctor Marcos, **Roberto Hornero**, Ian T. Nabney, Daniel Álvarez, Gonzalo C. Gutiérrez-Tobal, Félix del Campo, "Regularity analysis of nocturnal oximetry

- recordings to assist in the diagnosis of sleep apnoea syndrome", *Medical Engineering and Physics*, vol. 38, 3, pp. 216-224, 2016.
9. Vicente Molina, Alejandro Bachiller, Vanessa Suazo, Alba Lubeiro, Jesús Poza, **Roberto Hornero**, "Noise power associated to decreased task-induced variability of brain electrical activity in schizophrenia", *European Archives of Psychiatry and Clinical Neuroscience*, vol. 1, 266, pp. 55-61, 2016.
 10. Carlos Gómez, Jesús Poza, María T. Gutiérrez, Esther Prada, Nuria Mendoza, **Roberto Hornero**. "Characterization of EEG patterns in brain-injured subjects and controls after a Snoezelen® intervention", *Computer Methods and Programs in Biomedicine*, vol. 136, pp. 1-9, 2016.
 11. Javier Gomez-Pilar, Rebeca Corralejo, Luis F. Nicolas-Alonso, Daniel Álvarez, **Roberto Hornero**. "Neurofeedback training with a motor imagery-based BCI: neurocognitive improvements and EEG changes in the elderly", *Medical & Biological Engineering & Computing*, vol. 54, 11, pp. 1655-1666, 2016.
 12. Víctor Martínez-Cagigal, Javier Gomez-Pilar, Daniel Álvarez, **Roberto Hornero**. "An Asynchronous P300-Based Brain-Computer Interface Web Browser for Severely Disabled People", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*. In press, 2016.
 13. María García, Jesús Poza, Alejandro Bachiller, David Santamarta, **Roberto Hornero**, "Effect of infusion tests on the dynamical properties of intracranial pressure in hydrocephalus", *Computer Methods and Programs in Biomedicine*, vol. 134, pp. 225-235, 2016.
 14. Javier Gomez-Pilar, Oscar Martin-Santiago, Vanessa Suazo, Sonia Ruiz, Ricardo Gallardo, Jesús Poza, **Roberto Hornero**, Vicente Molina. "Association between EEG modulation, psychotic-like experiences and cognitive performance in the general population", *Psychiatry and Clinical Neurosciences*, vol. 70, 7, pp. 286-294, 2016.
 15. Oscar Martin-Santiago, Javier Gomez-Pilar, Alba Lubeiro, Marta Ayuso, Jesús Poza, **Roberto Hornero**, Myriam Fernandez, Sonia Ruiz de Azua, Cesar Valcarcel, Vicente Molina. "Modulation of brain network parameters associated with subclinical psychotic symptoms", *Progress in Neuro-Psychopharmacology & Biological Psychiatry*, vol. 3, 66, pp. 54-62, 2016.
 16. Carmen Valverde, María García, **Roberto Hornero**, María I. López-Gálvez. "Automated detection of diabetic retinopathy in retinal images", *Indian Journal of Ophthalmology*, vol. 1, 64, pp. 26-32, 2016.
 17. Amine Khadmaoui, Carlos Gómez, Jesús Poza, Alejandro Bachiller, Alberto Fernández, Javier Quintero, **Roberto Hornero**. "MEG Analysis of Neural Interactions in Attention-Deficit/Hyperactivity Disorder", *Computational Intelligence and Neuroscience*, vol. 2016, pp. 8450241, 2016.
 18. Alejandro Bachiller, Sergio Romero, Vicente Molina, Joan F. Alonso, Miguel A. Mañanas, Jesús Poza, **Roberto Hornero**, "Auditory P3a and P3b neural generators in schizophrenia: An adaptive sLORETA P300 localization approach", *Schizophrenia Research*, vol. 169, pp. 318-325, 2015.
 19. Alejandro Bachiller, Jesús Poza, Carlos Gómez, Vicente Molina, Vanessa Suazo, **Roberto Hornero**, "A comparative study of event-related coupling patterns during an auditory oddball task in schizophrenia", *Journal of Neural Engineering*, vol. 12, 1, pp. 016007, 2015.
 20. Luis F. Nicolás-Alonso, Rebeca Corralejo, Javier Gomez-Pilar, Daniel Alvarez, **Roberto Hornero**, "Adaptive Stacked Generalization for Multiclass Motor Imagery-based Brain Computer Interfaces", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 23, 4, pp. 702-712, 2015

21. Luis F. Nicolás-Alonso, Rebeca Corralejo, Javier Gomez-Pilar, Daniel Alvarez, **Roberto Hornero**, "Adaptive semi-supervised classification to reduce intersession non-stationarity in multiclass motor imagery-based brain computer interfaces", *Neurocomputing*, vol. 159, 2, pp. 186-196, Julio, 2015
22. Daniel Álvarez, Gonzalo C. Gutiérrez-Tobal, Félix del Campo, **Roberto Hornero**, "Positive airway pressure and electrical stimulation methods for obstructive sleep apnea treatment: a patent review (2005-2014)", *Expert Opinion On Therapeutic Patents*, vol. 9, 25, pp. 971-989, 2015.
23. Alejandro Bachiller, Alba Lubeiro, Álvaro Díez, Vanessa Suazo, Cristina Domínguez, José A. Blanco, Marta Ayuso, **Roberto Hornero**, Jesús Poza, Vicente Molina, "Decreased entropy modulation of EEG response to novelty and relevance in schizophrenia during a P300 task", *European Archives of Psychiatry and Clinical Neuroscience*, 265, pp. 525-535, 2015.
24. Javier Gomez-Pilar, Jesús Poza, Alejandro Bachiller, Carlos Gómez, Vicente Molina, **Roberto Hornero**, "Neural Network Reorganization Analysis during an Auditory Oddball Task in Schizophrenia using Wavelet Entropy", *Entropy*, 17, pp. 5241-5256, 2015
25. Gonzalo C. Gutiérrez-Tobal, Daniel Álvarez, Javier Gomez-Pilar, Félix del Campo, **Roberto Hornero**, "Assessment of Time and Frequency Domain Entropies to Detect Sleep Apnoea in Heart Rate Variability Recordings from Men and Women", *Entropy*, vol. 17, 1, pp. 123-141, 2015.
26. Jesús Monge, Carlos Gómez, Jesús Poza, Alberto Fernández, Javier Quintero, **Roberto Hornero**, "MEG analysis of neural dynamics in Attention-Deficit/Hyperactivity Disorder with Fuzzy Entropy", *Medical Engineering and Physics*, vol. 37, 4, pp. 416-423, 2015.
27. Gonzalo C. Gutiérrez-Tobal, M. Luz Alonso-Álvarez, Daniel Álvarez, Félix del Campo, Joaquín Terán-Santos, **Roberto Hornero**, "Diagnosis of pediatric obstructive sleep apnea: preliminary findings using automatic analysis of airflow and oximetry recordings obtained at patients' home", *Biomedical Signal Processing and Control*, vol. 18, pp. 401-407, 2015.
28. Alejandro Bachiller, Alba Lubeiro, Álvaro Díez, Vanessa Suazo, Cristina Domínguez, José A. Blanco, Marta Ayuso, Roberto Hornero, Jesús Poza, Vicente Molina, "Decreased entropy modulation of EEG response to novelty and relevance in schizophrenia during a P300 task", *European Archives of Psychiatry and Clinical Neuroscience*, 265, pp. 525-535, 2015.
29. Ming-Chien Chyu, Tony Austin, Fethi Calisir, Samuel Chanjaplammoitol, Mark J. Davis, BSIE, Jesus Favela, Heng Gan, Amit Gefen, Ram Haddas, Shoshana Hahn-Goldberg, **Roberto Hornero**, Yu-Li Huang, Øystein Jensen, Zhongwei Jiang, J.S. Katsanis, Jeong-A Lee, Gl, "Healthcare Engineering Defined: A White Paper", *Journal of Healthcare Engineering*, vol. 6, 4, pp. 635-648, 2015.
30. Jesús Poza, Carlos Gómez, María García, Rebeca Corralejo, Alberto Fernández, **Roberto Hornero**, "Analysis of neural dynamics in mild cognitive impairment and Alzheimer's disease using the wavelet turbulence", *Journal of Neural Engineering*, vol. 11, 2, pp. 026010, 2014.
31. Alejandro Bachiller, Alvaro Díez, Vanessa Suazo, Cristina Domínguez, Marta Ayuso, **Roberto Hornero**, Jesús Poza, Vicente Molina, "Decreased spectral entropy modulation in patients with schizophrenia during a P300 task", *European Archives of Psychiatry and Clinical Neuroscience*, 264, pp. 533-543, February, 2014
32. Rebeca Corralejo, Luis F. Nicolás-Alonso, Daniel Álvarez, **Roberto Hornero**, "A P300-based brain-computer interface aimed at operating electronic devices at home

- for severely disabled people", *Medical & Biological Engineering & Computing*, vol. 52, 10, pp. 861-872, October, 2014.
33. Carlos Gómez, Jose M. Pérez-Macías, Jesús Poza, Alberto Fernández, **Roberto Hornero**, "Spectral changes in spontaneous MEG activity across the life span", *Journal of Neural Engineering*, vol. 10, 6, pp. 066006, 2013.
 34. Alberto Fernández, Carlos Gómez, **Roberto Hornero**, Juan José López-Ibor, "Complexity and Schizophrenia", *Progress in Neuro-Psychopharmacology & Biological Psychiatry*, vol. 45, pp. 267-276, 2013.
 35. Javier Escudero, Emmanuel Ifeachor, Alberto Fernández, Juan J. López-Ibor, **Roberto Hornero**, "Changes in the MEG background activity in patients with positive symptoms of schizophrenia: spectral analysis and impact of age", *Physiological Measurement*, 34, pp. 265-279, 2013.
 36. Gonzalo C. Gutiérrez-Tobal, Daniel Álvarez, J. Víctor Marcos, Félix del Campo, **Roberto Hornero**, "Pattern recognition in airflow recordings to assist in the sleep apnoea-hypopnoea syndrome diagnosis", *Medical & Biological Engineering & Computing*, vol. 51, 12, pp. 1367-1380, 2013.
 37. Mario Martínez-Zarzuela, Carlos Gómez, Francisco Javier Díaz-Pernas, Alberto Fernández, **Roberto Hornero**, "Cross-approximate entropy parallel computation on GPUs for biomedical signal analysis. Application to MEG recordings", *Computer Methods and Programs in Biomedicine*, vol. 112, 1, pp. 189-199, 2013.
 38. María García, Jesús Poza, David Santamarta, Daniel Abásolo, Patricia Barrio, **Roberto Hornero**, "Spectral analysis of intracranial pressure signals recorded during infusion studies in patients with hydrocephalus", *Medical Engineering and Physics*, vol. 10, 35, pp. 1490-1498, 2013.
 39. Daniel Alvarez, **Roberto Hornero**, J. Víctor Marcos, Niels Wessel, Thomas Penzel, Martin Glos and Félix del Campo, "Assessment of feature selection and classification approaches to enhance information from overnight oximetry in the context of sleep apnea diagnosis", *International Journal of Neural Systems*, vol. 23, 5, pp. 1-18, 2013.
 40. Jesús Poza, Carlos Gómez, María T. Gutiérrez, Nuria Mendoza, **Roberto Hornero**, "Effects of a multi-sensory environment on brain-injured patients: assessment of spectral patterns", *Medical Engineering and Physics*, vol. 35, 3, pp. 368-375, 2013.
 41. Gonzalo C. Gutiérrez-Tobal, **Roberto Hornero**, Daniel Álvarez, J. Víctor Marcos, Félix del Campo, "Linear and nonlinear analysis of airflow recordings to help in sleep apnoea-hypopnoea syndrome diagnosis", *Physiological Measurement*, 33, pp. 1261-1275, 2012.
 42. Ricardo Bruña, Jesús Poza, Carlos Gómez, Alberto Fernández, María García and **Roberto Hornero**, "Analysis of spontaneous MEG activity in mild cognitive impairment and Alzheimer's disease using spectral entropies and statistical complexity measures", *Journal of Neural Engineering*, vol. 9, 3, pp. 036007, 2012.
 43. David Santamarta, Daniel Abásolo, Manuel Martínez-Madrigal, **Roberto Hornero**, "Characterisation of the intracranial pressure waveform during infusion studies by means of central tendency measure", *Acta Neurochirurgica*, 154, pp. 1595-1602, 2012.
 44. Daniel Álvarez, **Roberto Hornero**, J. Víctor Marcos, Félix del Campo, "Feature selection from nocturnal oximetry using genetic algorithms to assist in obstructive sleep apnoea diagnosis", *Medical Engineering and Physics*, vol. 34, pp. 1049-1057, 2012.
 45. J. Víctor Marcos, **Roberto Hornero**, Daniel Álvarez, Mateo Aboy, Félix Del Campo, "Automated Prediction of the Apnea-Hypopnea Index from Nocturnal Oximetry Recordings", *IEEE Transactions on Biomedical Engineering*, vol. 59, 1, pp. 141-149, 2012.

46. Alberto Fernández, Pilar Zuluaga, Daniel Abásolo, Carlos Gómez, Anahi Serra, María Andreína Méndez, **Roberto Hornero**, "Brain oscillatory complexity across the life-span", *Clinical Neurophysiology*, vol. 123, 11, pp. 2154-2162, 2012.
47. María Andreína Méndez, Pilar Zuluaga, Alfonso Rodríguez-Palancas, **Roberto Hornero**, Carlos Gómez, Javier Escudero, Tomás Ortiz, Alberto Fernández, "Complexity analysis of spontaneous brain activity: effects of depression and antidepressant treatment", *Journal of Psychopharmacology*, vol. 26, pp. 636-643, 2012.
48. Isabel de la Torre, F. Javier Díaz, Míriam Antón, Mario Martínez, J. Fernando Díez, Daniel Boto, Miguel López, **Roberto Hornero**, M. López, "Performance Evaluation of a Web-Based System to Exchange Electronic Health Records Using Queueing Model (M/M/1)", *Journal of Medical Systems*, 36, pp. 915-924, 2012.
49. Carlos Gómez, Kim T. E. Olde Dubbelink, Cornelis J. Stam, Daniel Abásolo, Henk W. Berendse, **Roberto Hornero**, "Complexity analysis of resting-state MEG activity in early-stage Parkinson's disease patients", *Annals of Biomedical Engineering*, vol. 12, 39, pp. 2935-2944, 2011.
50. Javier Escudero, **Roberto Hornero**, Daniel Abásolo, Alberto Fernández, "Quantitative Evaluation of Artifact Removal in Real Magnetoencephalogram Signals With Blind Source Separation," *Annals of Biomedical Engineering*, vol. 39, 8, pp. 2274–2286, 2011.
51. Javier Escudero, Saeid Sanei, Delaram Jarchi, Daniel Abásolo, **Roberto Hornero**, "Regional coherence evaluation in mild cognitive impairment and Alzheimer's disease based on adaptively extracted magnetoencephalogram rhythms," *Physiological Measurement*, 32, pp. 1163–1180, 2011.
52. Alberto Fernández, Marcos Ríos-Lago, Daniel Abásolo, Roberto Hornero, Juan Álvarez-Linera, Nuria Paul, Fernando Maestú, Tomás Ortiz, "The correlation between white-matter microstructure and the complexity of spontaneous brain activity: a diffusion tensor imaging-MEG study", *NeuroImage*, vol. 57, 4, pp. 1300-1307, 2011.
53. Alberto Fernández, María-Inés López-Ibor, Agustín Turrero, Juan-Matías Santos, María-Dolores Morón, **Roberto Hornero**, Carlos Gómez, María Andreína Méndez, Tomás Ortiz, Juan José López-Ibor, "Lempel-Ziv complexity in schizophrenia: a MEG study," *Clinical Neurophysiology*, vol. 122, 7, pp. 2227-2235, Julio, 2011.
54. Isabel de la Torre, Francisco Javier Díaz, Míriam Antón, José Fernando Díez, Beatriz Sainz, Miguel López, **Roberto Hornero**, María Isabel López, "Choosing the most efficient database for a Web-based system to store and exchange Ophthalmologic Health Records", *Journal of Medical Systems*, 35, pp. 1455-1464, 2011.
55. Daniel Álvarez, **Roberto Hornero**, J. Víctor Marcos, Félix del Campo, "Feature selection from nocturnal oximetry using genetic algorithms to assist in obstructive sleep apnoea diagnosis", *Medical Engineering and Physics*. Accepted, 2011.
56. Daniel Álvarez, **Roberto Hornero**, J. Víctor Marcos, Félix del Campo, "Multivariate Analysis of Blood Oxygen Saturation Recordings in Obstructive Sleep Apnea Diagnosis," *IEEE Transactions on Biomedical Engineering*, vol. 57, 12, pp. 2816-2824, 2010.
57. María García, María I. López, Daniel Álvarez, **Roberto Hornero**, "Assessment of four neural network based classifiers to automatically detect red lesions in retinal images," *Medical Engineering and Physics*, vol. 32, pp. 1085-1093, 2010.
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59. Javier Escudero, **Roberto Hornero**, Daniel Abásolo, "Consistency of the Blind Source Separation Computed With Five Common Algorithms for

- Magnetoencephalogram Background Activity," *Medical Engineering & Physics*, vol. 32, pp. 1137-1144, 2010.
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 61. Alberto Fernández, **Roberto Hornero**, Carlos Gómez, Agustín Turrero, Pedro Gil-Gregorio, Juan Matías-Santos, Tomás Ortiz, "Complexity analysis of spontaneous brain activity in Alzheimer's Disease and Mild Cognitive Impairment: a MEG Study," *Alzheimer Disease & Associated Disorders*, vol. 4, 2, pp. 182-189, June, 2010.
 62. J. Víctor Marcos, **Roberto Hornero**, Daniel Álvarez, Félix Del Campo, Mateo Aboy, "Automated detection of obstructive sleep apnoea syndrome from oxygen saturation recordings using linear discriminant analysis," *Medical & Biological Engineering & Computing*, vol. 48, 9, pp. 895-902, September, 2010.
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- magnetoencephalogram recordings. Application to Alzheimer's disease," *Medical Engineering and Physics*, vol. 31, 7, pp. 872-879, September, 2009.
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PEER-REVIEWED CONFERENCE PAPERS

- ✓ 42 Invited talks.
- ✓ 154 peer-reviewed papers in International Conferences.
- ✓ 140 peer-reviewed papers in Spanish Conferences.

HONORS AND AWARDS

- ✓ **PhD Extraordinary Award** from the University of Valladolid (1998).
 - Dissertation: “Análisis de señales biomédicas con fines diagnósticos mediante wavelets y métodos derivados de la teoría del caos.
- ✓ **The 2008 Perkins Prize for the best Paper in Medical Engineering and Physics in 2007.**
 - Paper: Jesús Poza, Roberto Hornero, Daniel Abásolo, Alberto Fernández, María García, “Extraction of spectral based measures from MEG background oscillations in Alzheimer's disease”, Medical Engineering and Physics, vol. 29, 10, pp. 1073-1083, 2007.
- ✓ **TOP 10 Cited Paper 2006-2008 in Medical Engineering and Physics (2009).** Position: 1/10.
 - Paper: Daniel Abásolo, Roberto Hornero, Carlos Gómez, María García, Miguel López, “Analysis of EEG background activity in Alzheimer's disease patients with Lempel-Ziv complexity”, Medical Engineering and Physics, vol. 28, 4, pp. 315-322, 2006.
- ✓ **TOP 10 Cited Paper 2006-2008 in Medical Engineering and Physics (2009).** Position: 3/10
 - Paper: Carlos Gómez, Roberto Hornero, Daniel Abásolo, Alberto Fernández, Miguel López, “Complexity analysis of the

magnetoencephalogram background activity in Alzheimer's disease patients", *Medical Engineering and Physics*, vol. 28, 9, pp. 851-859, 2006.

- ✓ **3M Foundation Award for Innovation in 2008 and 2010.**
- ✓ **Business Project First Prize in the contest "Campus Emprende 2009".**
- ✓ **OVAS Award (Ophthalmology Vision Awards Spain) in the field of Ophthalmology for the project "Development of an automated digital image processing for diabetic retinopathy screening", awarded by Novartis in collaboration with Spanish Society of Retina and Vitreous (SERV), 2011.**
- ✓ **IV Recognition Technology and Health Foundation to the Biomedical Engineering Group of University of Valladolid for the design and development of technological solutions applied to medicine, 2012.**
- ✓ **Second Prize of Fundación Caser Awards in the category of R+D on Dependence, 2013.**
- ✓ **ADE2020 2014 award for the project "Somnus", developed to simplify the sleep apnea-hypopnea syndrome diagnosis, awarded by the Agencia de Desarrollo de la Junta de Castilla y León (Spain), 2014.**
- ✓ **One of the ten nominated projects in the International Annual BCI Award. This Award was created to recognize outstanding and innovative research in the field of Brain-Computer Interfaces, 2014.**
- ✓ **Second Prize in Public Interest Associations of the University-Company Challenge Contest (2015-2016 edition), organized by "Fundación Universidades y Enseñanzas Superiores de Castilla y León (FUESCYL)", 2016**
- ✓ **University of Valladolid Social Council Research Award in the category of "Departments, Chairs, Education Centers, University Institutes, and Research Groups", 2016.**

ASSOCIATION MEMBERSHIPS

- ✓ Senior Member of the IEEE – Engineering in Medicine and Biology Society (IEEE-EMBS).
- ✓ Member of the American Telemedicine Association (ATA).
- ✓ Member of the International Federation for Medical and Biological Engineering.
- ✓ Member of the European Alliance for Medical and Biological Engineering and Science.
- ✓ Member of the Spanish Society of Biomedical Engineering (SEIB).