Francisco Jesus Martinez-Murcia

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1. Highlights

High scientific productivity since graduate: 26 JCR papers (15 in the 1st quartile, 10 as first author), 31 international conferences (orally presenting 8), 3 book chapters.

Fruitful **international collaborations** with institutions in Spain (University of Malaga, Virgen de las Nieves and Virgen de la Victoria hospitals, PTEC and Everyware Technologies), UK (University of Cambridge, University College London), Germany (University of Regensburg), Belgium (University of Liège), USA (Florida State University, Brown University) and **fluent communication in two languages** (Spanish -native-, English -C1-), and ability in other two languages (German -A2-, French -A2-).

Multidisciplinary spirit, bringing medicine, machine learning and signal processing together, as evidenced by an Engineer's and Master's degree including physics, networks, communications and signal processing, and later collaboration during the PhD degree with Hospitals and a previous stay at the Department of Psychiatry, University of Cambridge.

Maturity and leadership, including experience in **management** (4 years student representative at the University of Granada, treasurer in one association) and **supervision** (>180h of teaching and supervisor of two final degree projects).

Committed to scientific communication, including participation in radio programs (e.g. the award-winning El Radioscopio) and in international communication contests, e.g. winner of the Coimbra group Three-minute thesis (local phase), and finalist at Famelab Spain 2018).

2. Education

2017 **PhD in Signal Processing** at the **Department of Signal Theory, Networking and Communications at the University of Granada (DSTNC-UGR)**. **Final grade:** *Summa cum laude*. **Thesis title**: *Statistical Neuroimage Processing, Modelling and Synthesis based on Texture and Component Analysis: Tackling the Small Sample Size Problem*. Main contributions were published in Q1 and Q2 journals.

2011 **Master's Degree in Computer and Networks Engineering** at the **University of Granada**. **Final grade:** 9.115 (of 10). **Topics:** Machine learning techniques, computer architecture, soft-computing, neuromorphic and bioinspired engineering, peripherals, communications, sensor networks, bioinformatics and computer science applications. **Final project:** *Functional Activity Maps based on Statistical Significance Maps and Component and Factor Analysis.* The main contributions of this project were **published** in a Q1 journal paper (see below).

2010 **Engineer's Degree in Telecommunications** at the **University of Granada**. **Final grade:** 7.23 (of 10). **Topics**: Signal Processing, Networking, Computer Science, Electromagnetism, Antennas, Advanced Electronics. **Final project:** *SPECT Image Analysis for its Use in Alzheimer's Disease Diagnostics.* Main contributions of this project were **published** in Q1 journal paper (see below). ***Best Final Project*** prize at the *Informatics and Telecommunications Technical School* of the University of Granada.

3. Supervising, teaching and mentoring activities

More than **240 hours of teaching** of three different subjects (Industrial Robotics, Digital Signals, and Lineal Systems) at the University of Granada during the period 2014-2019. **Supervisor of two final degree projects**: Ulises Vidal-Sanz's *Brain Image Simulator for Sample Size Increase in Functional Neuroimaging* Studies (submitted for presentation and accepted as poster at the IEEE NSS-MIC 2016 conference in Strasbourg, France) and Alfonso Gutiérrez's *Convolutional Neural Networks for the Diagnosis of Alzheimer's Disease using Spherical Brain Maps*.

4. Funding received

2019 **Juan de la Cierva - Formación Postdoctoral Fellow**, **Department of Communications Engineering, University of Malaga (Spain)**. 2 year contract.

2017 **Postdoctoral Research Position**, **Department of Signal Theory, Networking and Communications, University of Granada (Spain)**. Follow-up to the predoctoral fellowship awarded by the Junta de Andalucia (Spain) for best-performing projects. 10 month contract.

2014 **Research Staff Training Fellowship**, **Department of Signal Theory, Networking and Communications, University of Granada (Spain)**. 3-Year PhD Research Contract funded by Junta de Andalucia (Spain). Competitive call with 76 granted projects from 545 applications (**success rate: 13.94%**). **Project:** new signal processing and machine learning strategies applied to neurological diseases.

2014 **International Mobility for PhD Students Fellowship**, **Department of Psychiatry, University of Cambridge**. Granted by the CEI BioTIC and University of Granada. Second awarded of 43 proposals in its category (from which 28 were granted, **success rate: 65%)**. **Project:** *Characterization of structural brain changes in the Autism Spectrum Disorder.* Leaded to long-lasting collaboration that resulted on a *Human Brain Mapping* **publication**.

2012 **Research contract**. Three-month contract associated to a project, selected among 4 candidates.

2009 **Initiation to Research Grant.** Grant aimed at outstanding students awarded by **University of Granada (Spain)**. (94 awarded out of 168 applications. **Success rate: 55.9%**). Development of final project: *SPECT Image Analysis for its Use in Alzheimer's Disease Diagnostics.*

5. Prizes and Awards

2018 **Finalist in Famelab Spain**, organized by the British Council and Fundacion Española para la Ciencia y la Tecnología - FECYT (Spain). 8 finalists of >70 participants.

2017 **1st prize at the Three-Minute Thesis competition**, local stage, University of Granada, Granada (Spain). International contest organized by the Coimbra Group of Universities. **Winner** of 28 participants.

2010 **Best Final Project award**, for Engineer's degree final project: *SPECT Image Analysis for its Use in Alzheimer's Disease Diagnostics.*

6. Publications in Indexed Journals (JCR)

2019 J. M .Gorriz, J. Ramirez, F. Segovia, **F. J. Martinez-Murcia**, M.C. Lai, M. V. Lombardo, S. Baron-Cohen, MRC AIMS Consortium, J. Suckling. ***A Machine Learning Approach to Reveal the***

Neuro-Phenotypes of Autisms. In: International Journal of Neural Systems 29 (0), 1850058, 2019. DOI: 10.1142/S0129065718500582. (Journal. IF (JCR): **4.58**, **Q1**, Cites: **1**)#.

2018 **F.J. Martinez-Murcia**, J. M. Gorriz, J. Ramirez, A. Ortiz. ***Convolutional Neural Networks for Neuroimaging in Parkinson's Disease: Is Preprocessing Needed?***. In: International Journal of Neural Systems 28 (10), 1850035, August 2018. DOI: 10.1142/S0129065718500351. (Journal. IF (JCR): **4.58**, **Q1**, Cites: **1**)#.

F.J. Martínez-Murcia, J.M. Górriz, J. Ramírez, F. Segovia, D. Salas-Gonzalez, D. Castillo-Barnes, A. Ortiz. ***Assessing Mild Cognitive Impairment Progression using a Spherical Brain Mapping of Magnetic Resonance Imaging.*** In: Journal of Alzheimer's Disease 65 (3), pp.713-729, 2018. DOI: 10.3233/JAD-170403. (Journal, IF (JCR): **3.476**, **Q2**, Cites: **1**)#

A. Ortiz, J. Munilla **F.J. Martinez-Murcia**, J. M. Gorriz, J. Ramirez. ***Empirical Functional PCA for 3D Image Feature Extraction Through Fractal Sampling***. In: International Journal of Neural Systems, Online ready, 2018. DOI: **10.1142/S0129065718500405**. (Journal. IF (JCR): **4.58**, **Q1**, Cites: **1**)#.

D. Castillo-Barnes, J. Ramírez, F. Segovia, **F.J. Martínez-Murcia**, D. Salas-Gonzalez, J.M. Gorriz. ***Robust ensemble classification methodology for I123-Ioflupane SPECT images and multiple heterogeneous biomarkers in the diagnosis of Parkinson's Disease***. In: Frontiers in Neuroinformatics 12, 53. DOI: 10.3389/fninf.2018.00053. (Journal, IF (JCR): **3.870**, **Q1**, Cites: **1**)#.

F. Segovia, J.M. Górriz, J. Ramírez, **F.J. Martinez-Murcia**, M. García-Pérez. ***Using deep neural networks along with dimensionality reduction techniques to assist the diagnosis of neurodegenerative disorders***. In: Logic Journal of the IGPL 26 (6), pp. 618-628, November 2018. DOI: 10.1093/jigpal/jzy026 (Journal. IF (JCR): **0.449**, **Q3**, Cites: **0**)#.

J. Ramírez, J.M. Górriz, A. Ortiz, **F.J. Martinez-Murcia**, F. Segovia, D. Salas-Gonzalez, D. Castillo-Barnes, I.A. Illan, C. Garcia-Puntonet. ***Ensemble of Random Forests One vs. Rest Classifiers for MCI and AD prediction using ANOVA Cortical and Subcortical Feature Selection and Partial Least Squares***. In: Journal of Neuroscience Methods 302, May 2018. DOI: 10.1016/j.jneumeth.2017.12.005 (Journal. IF (JCR): **2.554**, **Q3**, Cites: **6**)#.

A. Ortiz, F. Lozano, J.M. Gorriz, J. Ramirez, **F.J. Martinez-Murcia**. ***Discriminative Sparse Features for Alzheimer's Disease Diagnosis Using Multimodal Image Data***. In: Current Alzheimer Research **15**(1), January 2018, p. 67-79. DOI: 10.2174/1567205014666170922101135. (Journal. IF (JCR): **3.289**, **Q2**. Cites: **4**)#.

2017 **F.J. Martínez-Murcia**, M.C. Lai, J.M. Górriz, J. Ramírez, A.M.H Young, S.C.L. Deoni, C. Ecker, M.V. Lombardo, MRC AIMS Consortium, S. Baron-Cohen, D.G.M. Murphy, E.T. Bullmore, and J. Suckling. ***On the Brain Structure Heterogeneity of Autism: Parsing out Acquisition Site Effects With Significance-Weighted Principal Component Analysis.*** In: Human Brain Mapping **38**(3), March 2017, p. 1208–1223. DOI: 10.1002/hbm.23449. (Journal. IF (JCR): **4.927, Q1.** Cites: **16**)

F.J. Martínez-Murcia, J.M. Górriz, J. Ramírez, I.A. Illán, F. Segovia, D. Castillo-Barnes, D. Salas-Gonzalez. ***Functional Brain Imaging Synthesis based on Image Decomposition and Kernel Modelling: Application to Neurodegenerative Diseases***. Frontiers in Neuroinformatics **11**, November 2017, p. 65. DOI: 10.3389/fninf.2017.00065 (Journal, IF (JCR): **3.074, Q1**, Cites: **3**)

J.M. Górriz, J. Ramírez, J. Suckling, **F.J. Martínez-Murcia**, I.A. Illán, F. Segovia, A. Ortiz, D. Salas-Gonzalez, D. Castillo-Barnes, C. García-Puntonet. ***A Semi-Supervised Learning Approach for Model Selection based on Class-Hypothesis Testing***. In: Expert Systems with Applications **90**, December 2017, p. 40-49. DOI: 10.1016/j.eswa.2017.08.006 (Journal, IF (JCR): **3.768**, **Q1**, Cites: **4**).

D. Castillo-Barnes, I. Peis, **F.J. Martinez-Murcia**, F. Segovia, I.A. Illán, J.M. Gorriz, J. Ramirez, D. Salas-Gonzalez. ***A Heavy Tailed Expectation Maximization Hidden Markov Random Field Model with Applications to Segmentation of MRI***. In: Frontiers in

Neuroinformatics **11**, November 2017, p. 66. DOI: 10.3389/fninf.2017.00066 (Journal, IF (JCR): **3.074, Q1**, Cites: **0**)

F. Segovia, J.M. Górriz, J. Ramírez, **F.J. Martinez-Murcia**, D. Salas-Gonzalez. ***Preprocessing of F-18-DMFP-PET data based on Hidden Markov Random Fields and the Gaussian Distribution***. In: Frontiers in Aging Neuroscience **9**, October 2017, p. 326. DOI: 10.3389/fnagi.2017.00326 (Journal, IF (JCR): **3.582**, **Q2**, Cites: **2**).

J.M. Gorriz, J. Ramirez, J. Suckling, I.A. Illan, A. Ortiz, **F.J. Martinez-Murcia**, F. Segovia, D. Salas-Gonzalez and S. Wang. ***Case-Based Statistical Learning: A Non Parametric Implementation with a Conditional -Error Rate SVM***. In: IEEE Access **5**, June 2017, p. 11468 - 11478. DOI: 10.1109/ACCESS.2017.2714579 (Journal, IF (JCR): **3.557, Q1** Cites: **11**)

F. Segovia, J.M. Gorriz, J. Ramírez, **F.J. Martínez-Murcia**, J. Levin, M. Schuberth, M. Brendel, A. Rominger, K. Boetzel, G. Garraux, and C. Phillips. ***Multivariate analysis of 18F-DMFP PET data to assist the diagnosis of parkinsonism.*** In: Frontiers in Neuroinformatics **11**, March 2017, p. 23. DOI: 10.3389/fninf.2017.00023 (Journal. IF (JCR): **3.074, Q1.** Cites: **7**)

2016 **F.J. Martinez-Murcia**, J.M. Górriz, J. Ramírez, and A. Ortiz. ***A Spherical Brain Mapping of MR Images for the Detection of Alzheimer's Disease.*** In: Current Alzheimer Research **13**(5), March 2016, p. 575-588. DOI: 10.2174/1567205013666160314145158. (Journal. IF (JCR): **2.952, Q2.** Cites: **21)**

F.J. Martinez-Murcia, J.M. Górriz, J. Ramírez, and A. Ortiz. ***A Structural Parametrization of the Brain Using Hidden Markov Models-Based Paths in Alzheimer's Disease.*** In: International Journal of Neural Systems **26**(7), November 2016, p. 1650024. DOI: 10.1142/S0129065716500246. (Journal. IF (JCR): **6.333, Q1.** Cites: **18**)

D. Salas-Gonzalez, F. Segovia, **F.J. Martínez-Murcia**, E.W. Lang, J.M. Górriz, and J. Ramírez. ***An optimal approach for selecting discriminant regions for the diagnosis of alzheimer's disease.*** In: Current Alzheimer Research **13**(7), May 2016, p. 838-844. DOI: 10.2174/1567205013666160415154852. (Journal. IF (JCR): **2.952, Q2.** Cites: **3**)

2015 D. Salas-Gonzalez, J.M. Górriz, J. Ramírez, I.A. Illán, P. Padilla, **F.J. Martínez-Murcia**, and E.W. Lang. ***Building a FP-CIT SPECT Brain Template Using a Posterization Approach.*** In: Neuroinformatics **13**(4), March 2015, p. 391-402. DOI: 10.1007/s12021-015-9262-9. (Journal. IF (JCR): **2.864, Q1.** Cites: **19**)

2014 **F.J. Martínez-Murcia**, J. M. Górriz, J. Ramírez, M. Moreno-Caballero, M. Gómez-Río. ***Parametrization of textural patterns in 123I-ioflupane imaging for the automatic detection of Parkinsonism***. Medical Physics **41**(1), March 2014, p. 012502. DOI: 10.1118/1.4845115 (Journal. IF (JCR): **2.635, Q2.** Cites: **37**)

F.J. Martínez-Murcia, J.M. Górriz, J. Ramírez, I. A. Illán and the Parkinson's Progression Markers Initiative. ***Automatic Detection of Parkinsonism Using Significance Measures and Component Analysis in DatSCAN imaging***. Neurocomputing **126**, May 2014. p. 58-70. DOI: 10.1016/j.neucom.2013.01.054 (Journal. IF (JCR): **2.083, Q2.** Cites: **32**)

A. Ortiz, J.M. Górriz, J. Ramírez, **F.J. Martinez-Murcia**, the Alzheimer's Disease Neuroimaging Initiative. ***Automatic ROI Selection in Structural Brain MRI Using SOM 3D Projection***. PloS one **9**(4), April 2014, p. e93851. DOI: 10.1371/journal.pone.0093851 (Journal. IF (JCR): **3.234. Q1.** Cites: **20)**

2013 **F.J. Martínez-Murcia**, J.M. Górriz, J. Ramírez, I. A. Illán, C. G. Puntonet and the Parkinson's Progression Markers Initiative. ***Functional Activity Maps Based on Significance Measures and Independent Component Analysis***. Computer Methods and Programs in Biomedicine **111**(1), July 2013, p. 255-268. DOI: 10.1016/j.cmpb.2013.03.015 (Journal. IF (JCR): **1.093, Q2** Cites: **23**)

A. Ortiz, J.M. Górriz, J. Ramírez, **F.J. Martínez-Murcia**. ***LVQ-SVM Based CAD tool applied to structural MRI for the diagnosis of the Alzheimer's disease***. Pattern Recognition Letters **34**(14), October 2013, p. 1725-1733. DOI: 10.1016/j.patrec.2013.04.014 (Journal. IF (JCR): **1.062. Q2.** Cites: **66**)

A. Rojas, J. M. Górriz, J. Ramírez, I. A. Illán, **F. J. Martinez-Murcia**, A. Ortiz, M. Gómez-Río, ***Application of Empirical Mode Decomposition (EMD) on DaTSCAN SPECT images to explore Parkinson Disease***. Expert Systems with Applications **40**(7), June 2013, p. 2756–2766. DOI: 10.1016/j.eswa.2012.11.017 (Journal. IF (JCR): **1.965, Q1.** Cites: **29**)

2012 **F.J. Martínez-Murcia**, J.M. Górriz, J. Ramírez, C.G. Puntonet, D. Salas-González, The Alzheimer's Disease Neuroimaging Initiative. ***Computer Aided Diagnosis tool for Alzheimer's Disease based on Mann–Whitney–Wilcoxon U-Test***. Expert Systems with Applications **39**(10), August 2012, p. 9676-9685. DOI: 10.1016/j.eswa.2012.02.153 (Journal. IF (JCR): **1.965, Q1.** Cites: **69**)

7. International Conferences

2018 **F.J. Martinez-Murcia**, A. Ortiz, J.M. Gorriz, J. Ramirez, D. Castillo-Barnes, D. Salas-Gonzalez, F. Segovia. ***Deep Convolutional Autoencoders vs PCA in a Highly-Unbalanced Parkinson's Disease Dataset: A DaTSCAN Study***. Oral presentation at the 13th International Conference on Soft Computing Models in Industrial and Environmental Applications (SOCO-2018). San Sebastian (Spain). *Published in*: Advances in Intelligent Systems and Computing, vol 771. Springer, Cham. DOI: 10.1007/978-3-319-94120-2_5

F.J. Martínez-Murcia, J.M. Górriz, J. Ramírez, D. Castillo-Barnes, F. Segovia, D. Salas-González, A. Ortiz. ***A Deep Decomposition of MRI to Explore Neurodegeneration in Alzheimer's Disease***. Poster accepted at the 2018 IEEE Nuclear Science Symposium and Medical Imaging Conference (IEEE NSS/MIC). Sydney, Australia.

F. Segovia-Roman, J.M. Górriz, J. Ramírez, D. Castillo-Barnes, **F.J. Martínez-Murcia**, D. Salas-Gonzalez, R. Sánchez-Vañó, P. Sopena-Novales, M. Gomez-Rio. ***Improved separation of Alzheimer's disease and related disorders using dual-point amyloid-PET***. Poster accepted at the 2018 IEEE Nuclear Science Symposium and Medical Imaging Conference (IEEE NSS/MIC). Sydney, Australia.

D. Castillo-Barnes, J. Ramírez, **F.J. Martínez-Murcia**, F. Segovia, D. Salas-Gonzalez, J.M. Górriz. ***Ensemble classification of heterogeneous biomarkers in the diagnosis of Parkinsonism***. Poster accepted at the 2018 IEEE Nuclear Science Symposium and Medical Imaging Conference (IEEE NSS/MIC). Sydney, Australia.

D. Castillo-Barnes, D. Salas-Gonzalez, J. Ramírez, **F.J. Martínez-Murcia**, F. Segovia, J.M. Górriz. ***Analysis of I[123]-Ioflupane SPECT intensity iso-surfaces to assist the diagnosis of Parkinsonism***. Poster accepted at the 2018 IEEE Nuclear Science Symposium and Medical Imaging Conference (IEEE NSS/MIC). Sydney, Australia.

J.A. Gómez, J.M. Górriz, J. Ramírez, **F.J. Martinez-Murcia**, D. Castillo-Barnes, D. Salas-Gonzalez, F. Segovia. ***Segmentation of PET and SPECT Data Using Hidden Markov Random Fields in Order to Improve the Assisted Diagnosis of Neurodegenerative Diseases***. Poster accepted at the 2018 IEEE Nuclear Science Symposium and Medical Imaging Conference (IEEE NSS/MIC). Sydney, Australia.

F. Segovia, J.M. Górriz, J. Ramírez, **F.J. Martinez-Murcia**, D. Castillo-Barnes, R. Sánchez-Vañó, P. Sopena-Novales, M. Gómez-Río. ***Using Early Acquisitions of Amyloid-PET as a Surrogate of FDG-PET: A Machine Learning Based Approach***. Poster at the International Workshop on Pattern Recognition in Neuroimaging (PRNI), 1-4. Singapore. *Published in*: Proceedings of the PRNI-2018 conference. DOI: 10.1109/PRNI.2018.8423959

A. Ortiz, J. Ramírez, R. Cruz-Arándiga, M.J. García-Tarifa, **F.J. Martinez-Murcia**, J.M. Gorriz. ***Retinal Blood Vessel Segmentation by Multi-channel Deep Convolutional Autoencoder.*** Oral presentation at The 13th International Conference on Soft Computing Models in Industrial and Environmental Applications (SOCO-2018). San Sebastian (Spain).

Published in: Advances in Intelligent Systems and Computing, vol 771. Springer, Cham. DOI: 10.1007/978-3-319-94120-2_4

D. Castillo-Barnes, F. Segovia, **F.J. Martinez-Murcia**, D. Salas-Gonzalez, J. Ramirez, J.M. Gorriz. ***Classification Improvement for Parkinson's Disease Diagnosis Using the Gradient Magnitude in DaTSCAN SPECT Images***. Oral presentation at the 13th International Conference on Soft Computing Models in Industrial and Environmental Applications (SOCO-2018). San Sebastian (Spain). *Published in*: Advances in Intelligent Systems and Computing, vol 771. Springer, Cham. DOI: 10.1007/978-3-319-94120-2_10

2017 **F.J. Martinez-Murcia**, J.M. Gorriz, J. Ramirez, F. Segovia, D. Salas-Gonzalez, D. Castillo-Barnes, I.A. Illan, A. Ortiz. ***Evaluating Alzheimer's Disease Diagnosis Using Texture Analysis***. Oral presentation at Medical Image Understanding and Analysis 2017 (MIUA 2017). Edimburgh, UK. *Published in:* Proceedings of the MIUA 2017, vol 723, Springer. DOI: 10.1007/978-3-319-60964-5_41

F.J. Martínez-Murcia, A. Ortiz, J.M. Gorriz, J. Ramirez, F. Segovia, D. Salas-Gonzalez, D. Castillo-Barnes, I.A. Illan. ***A 3D Convolutional Neural Network Approach for the Diagnosis of Parkinson's Disease***. Oral presentation at 7th International Work-conference on the Interplay between Natural and Artificial Computation (IWINAC 2017). La Coruña, Spain. *Published in*: Natural and Artificial Computation for Biomedicine and Neuroscience. IWINAC 2017. Lecture Notes in Computer Science, vol 10337. Springer. DOI: 10.1007/978-3-319-59740-9_32

A. Ortiz, J. Munilla, **F.J. Martinez-Murcia**, J.M. Gorriz, J. Ramirez. ***Learning Longitudinal MRI Patterns by SICE and Deep Learning: Assessing the Alzheimer's Disease Progression***. Oral presentation at Medical Image Understanding and Analysis 2017 (MIUA 2017). Edimburgh, UK. *Published in:* Proceedings of the MIUA 2017, vol 723, p. 413-424. Springer. DOI: 10.1007/978-3-319-60964-5_36

D. Castillo-Barnes, C. Arenas, F. Segovia, **F.J. Martínez-Murcia**, I.A. Illán, J.M. Górriz, J. Ramírez, D. Salas-Gonzalez. ***On a Heavy-Tailed Intensity Normalization of the Parkinson's Progression Markers Initiative Brain Database***. Oral presentation at 7th International Work-conference on the Interplay between Natural and Artificial Computation (IWINAC 2017). La Coruña, Spain. *Published in:* Natural and Artificial Computation for Biomedicine and Neuroscience. IWINAC 2017. Lecture Notes in Computer Science, vol 10337. Springer. DOI: 10.1007/978-3-319-59740-9_29

F. Segovia, J.M. Górriz, J. Ramírez **F.J. Martínez-Murcia**, D. Castillo-Barnes, I.A. Illán, A. Ortiz, D. Salas-Gonzalez. ***Automatic Separation of Parkinsonian Patients and Control Subjects Based on the Striatal Morphology***. Oral presentation at 7th International Work-conference on the Interplay between Natural and Artificial Computation (IWINAC 2017). La Coruña, Spain. *Published in:* Natural and Artificial Computation for Biomedicine and Neuroscience. IWINAC 2017. Lecture Notes in Computer Science, vol 10337. Springer. DOI: 10.1007/978-3-319-59740-9_34

J.M. Górriz, J. Ramírez, I.A. Illán, **F.J. Martínez-Murcia**, F. Segovia, D. Salas-Gonzalez, and A. Ortiz. ***Case-Based Statistical Learning applied to SPECT Image Classification***. Poster at SPIE Medical Imaging 2017. Orlando, Florida, USA. *Published in:* Proceedings Volume 10134, Medical Imaging 2017: Computer-Aided Diagnosis; pp. 101342D–101342D. DOI: 10.1117/12.2253853

F. Segovia, D. Salas-Gonzalez, J.M. Górriz, J. Ramírez, and **F.J. Martínez-Murcia**. ***Analysis of 18F-DMFP-PET data using Hidden Markov Random Field and the Gaussian distribution to assist the diagnosis of Parkinsonism***. Poster at SPIE Medical Imaging 2017. Orlando, Florida, USA. *Published in:* Proceedings Volume 10134, Medical Imaging 2017: Computer-Aided Diagnosis; pp 101342B–101342B. DOI: 10.1117/12.2250281

2016 U. Vidal-Sanz, **F.J. Martinez-Murcia**, J. M. Górriz, J. Ramírez, I. A. Illán, F. Segovia, D. Salas-González, for the Alzheimer's Disease Neuroimaging Initiative. ***Simulating Functional***

Brain Images in Alzheimer's Disease. Poster at 2016 IEEE Nuclear Science Symposium and Medical Imaging Conference (IEEE NSS/MIC). Strasbourg, France.

F. Segovia, I.A. Illan, D. Salas-Gonzalez, **F.J. Martinez-Murcia**, A. Ortiz, J.M Gorriz, J. Ramirez. ***PETRA: A Web-based System Supporting Computer Aided Diagnosis of Alzheimer's Disease***. Poster at 2016 IEEE Nuclear Science Symposium and Medical Imaging Conference (IEEE NSS/MIC). Strasbourg, France.

A. Ortiz, **F.J. Martínez-Murcia**, M.J. García-Tarifa, F. Lozano, J.M. Górriz, and J. Ramírez. ***Automated diagnosis of parkinsonian syndromes by deep sparse filtering-based features***. Oral presentation at Innovation in Medicine and Healthcare 2016. *Published in:* Innovation in Medicine and Healthcare 2016. Vol. 60. Springer Nature, 2016, pp. 249–258. DOI: 10.1007/978-3-319-39687-3_24.

J. Ramírez, J.M. Górriz, **F.J. Martínez-Murcia**, F. Segovia, and D. Salas-Gonzalez. ***Magnetic resonance image classification using nonnegative matrix factorization and ensemble tree learning techniques***. Poster at 2016 IEEE 18th International Workshop on Multimedia Signal Processing (MMSP). *Published in:* Proceedings of the 2016 IEEE 18th MMSP. IEEE. 2016, pp. 1-5. DOI: 10.1109/MMSP.2016.7813393

V. Fuente-Aceituno, J.M Górriz, J. Ramírez, **F.J. Martínez-Murcia**, D. Salas-Gonzalez, F. Segovia. ***On the use of Matched Filtering for the P300 Detection***. Poster at The 2016 International Conference on Computational Science and Computational Intelligence (CSCI'16). Las Vegas, Nevada, USA. *Published in:* Proceedings of the 2016 International Conference on Computational Science and Computational Intelligence (CSCI), Las Vegas, NV, 2016, pp. 1261-1265. DOI: 10.1109/CSCI.2016.0237

F. Segovia, M. García-Pérez, J.M. Górriz, J. Ramírez, and **F.J. Martínez-Murcia**. ***Assisting the Diagnosis of Neurodegenerative Disorders Using Principal Component Analysis and TensorFlow***. Oral presentation at the 2016 International Workshop on Soft Computing Models in Industrial and Environmental Applications (SOCO'16). San Sebastián, Spain. *Published in:* International Joint Conference SOCO'16-CISIS'16-ICEUTE'16. ICEUTE 2016, SOCO 2016, CISIS 2016. Advances in Intelligent Systems and Computing, vol 527. Springer, pp. 43–52. DOI: 10.1007/978-3-319-47364-2_5

2015 **F.J. Martinez-Murcia**, A. Ortiz, J. Manuel Górriz, J. Ramírez, and I.A. Illán. ***A volumetric radial LBP projection of MRI brain images for the diagnosis of alzheimer's disease***. Oral presentation at 6th International Work-conference on the Interplay between Natural and Artificial Computation (IWINAC 2015). *Published in:* Artificial Computation in Biology and Medicine. Vol. 9107. Springer Science + Business Media, 2015, pp. 19–28. DOI: 10.1007/978-3-319-18914-7_3.

J. Ramírez, J.M. Górriz, A. Ortiz, P. Padilla, and **F.J. Martínez-Murcia. *Ensemble tree learning techniques for magnetic resonance image analysis***. Oral presentation at KES Innovation in Medicine and Healthcare 2015 (INMED-15). *Published in:* Proceedings INMED-15. Vol. 45. Springer Science + Business Media, Aug. 2015, pp. 395–404. DOI: 10.1007/978-3-319-23024-5_36.

2014 **F.J. Martínez-Murcia**, J.M. Górriz, J. Ramírez, I.A. Illán, D. Salas-González, F. Segovia. ***Projecting MRI brain images for the detection of Alzheimer's Disease***. Oral presentation at KES Innovation in Medicine and Healthcare 2014 (INMED-14). San Sebastian, Spain. *Published in:* Proceedings INMED-14. Studies in Health Technology and Informatics. Vol. 207, Springer. pp. 225–233. DOI: 10.3233/978-1-61499-474-9-225.

F. Segovia, I.A. Illán, D. Salas-Gonzalez, **FJ Martinez-Murcia**, C. Phillips, C.G. Puntonet, J. Rámirez, J.M. Górriz. ***PETRA: Multivariate analyses for neuroimaging data***. Poster at 2nd International Work-Conference on Bioinformatics and Biomedical Engineering Proceedings (IWBBIO 2014).

D. Salas-Gonzalez, J.M. Górriz, J. Ramírez, I. A. Illán, P. Padilla, **F.J. Martínez-Murcia**, and E.W. Lang. ***Affine registration of [123I]FP-CIT SPECT brain images***. Oral presentation at KES

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A. Ortiz, J.M. Górriz, J. Ramírez, **F.J. Martínez-Murcia**. ***Multimodal image data fusion for Alzheimer's Disease diagnosis by sparse representation***. Oral presentation at KES Innovation in Medicine and Healthcare 2014 (INMED-14). San Sebastian, Spain. *Published in:* Proceedings INMED-14. Studies in Health Technology and Informatics. Vol. 207. 2014, pp. 11–18. DOI: 10.3233/978-1-61499-474-9-11.

2013 **F.J. Martínez-Murcia**, J.M.Górriz, J. Ramírez, I.A. Illán, C.G. Puntonet. ***Texture features based detection of Parkinson's disease on DaTSCAN images***. Oral presentation at 5th International Work-conference Interplay between Natural and Artificial Computation (IWINAC 2013). Palma de Mallorca, Spain. *Published in:* Natural and Artificial Computation in Engineering and Medical Applications, Lecture Notes in Computer Science, vol 7931. pp. 266-277. DOI: 10.1007/978-3-642-38622-0_28

I.A. Illán, J.M. Górriz, J. Ramirez, D. Salas-González, **F.J. Martínez-Murcia**, F. Segovia, C. G. Puntonet. ***Automatic Orientation of Functional Brain Images for Multiplataform Software***. Poster at 5th International Work-conference Interplay between Natural and Artificial Computation (IWINAC 2013). Palma de Mallorca, Spain. *Published in:* Natural and Artificial Models in Computation and Biology, Lecture Notes in Computer Science, vol 7930, pp. 406-411. DOI: 10.1007/978-3-642-38637-4_42

2011 **F. J. Martínez**, D. Salas-Gonzalez, J.M. Górriz, J. Ramírez, C. G. Puntonet, M. Gómez-Río. ***Analysis of SPECT Brain Images Using Wilcoxon and Relative Entropy Criteria and Quadratic Multivariate Classifiers for the Diagnostic of Alzheimer's Disease***. Oral presentation at 4th International Work-conference Interplay between Natural and Artificial Computation (IWINAC 2011). Las Palmas de Gran Canaria, Spain. *Published in:* New Challenges on Bioinspired Applications. IWINAC 2011. Lecture Notes in Computer Science, vol 6687, pp. 41-48. DOI: 10.1007/978-3-642-21326-7_5

8. Book Chapters

2017 **F.J. Martinez-Murcia**, J.M. Górriz, and J. Ramírez. ***Feature Extraction***. In: Wiley Encyclopedia of Electrical and Electronics Engineering. 1-9. Wiley, 2017. Doi: 10.1002/047134608X.W5506.pub2.

2016 **F.J. Martinez-Murcia**, J. Górriz, and J. Ramírez. ***Computer Aided Diagnosis in Neuroimaging***. In: Computer-aided Technologies - Applications in Engineering and Medicine. Ed. by Razvan Udroiu. 1st ed. InTech, Dec. 2016. Chap. 7, pp. 137–160. ISBN: 978-953-51-4895-1. DOI: 10.5772/64980.

2011 **F. J. Martínez Murcia**. ***Sonido Digital***. Periféricos Avanzados. Editorial Garceta (editor: Alberto Prieto Espinosa). Vol 1, pp. 99-103. ISBN: 978-84-15452-03-4 (Book Chapter).

9. Software

PETRA. Matlab Toolbox for brain image processing and classification, with collaboration of PTEC for testing and distributing the software in clinical environments.

PETRA-WEB. Online platform for brain image processing and classification, based on PETRA, developed in collaboration with Everyware Technologies.

Spherical Brain Mapping (SBM). A framework for projecting 3D structural images to bidimensional maps representing statistical and morphological texture features.

BrainSimulator. Synthesis of nuclear functional brain images for standardization of evaluation and data augmentation.

10. Ad-hoc reviewing

Confirmed at publons.com: *International Conference on Innovation in Medicine and Healthcare, IEEE Access, Computer Methods and Programs in Biomedicine, International Journal of Computer Assisted Radiology and Surgery, The Scientific World Journal, Artificial Intelligence in Medicine, Behavioural Neurology, Current Alzheimer Research*.

11. Participation in Research Projects

Modelos estadisticos de neurodegeneracion para sistemas de ayuda al diagnostico (STM-NEUROCAD). Aplicacion al diagnostico precoz de las enfermedades de Alzheimer y parkinson. Consejeria de economia, innovacion y ciencia, Junta de Andalucia 06/06/2014 – 05/06/2017. IP: Javier Ramirez Perez de Inestrosa

Diagnostico mediante modelos estadisticos e inteligentes (DIAGNOSIS). Ministerio de Ciencia e Innovación. 01/01/2013 – 31/12/2015. IP: Juan Manuel Górriz Sáez.

Plataforma abierta de procesamiento de imagenes para ayuda al diagnostico de alteraciones neurologicas (PAPI-ADAN). Consejería de Innovación y Ciencia, Junta de Andalucía. 05/09/2013 – 31/12/2014. IP: Juan Manuel Górriz Sáez.

Toolbox for biomedical signal and image processing based on information theory. Ministerio de Ciencia y Tecnología. 01/01/2009 – 31/12/2010. IP: Juan Manuel Górriz Sáez

Analisis multimodal y longitudinal de biomarcadores para el diagnostico y prediccion de la enfermedad de Alzheimer y de Parkinson (LAGRANGE). Ministerio de Economía y Competitividad. 01/01/2016 – 31/12/2018. IP: Javier Ramírez Pérez de Inestrosa.