

# PROF. CONCHA BIELZA



## A. GENERAL INFORMATION

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### PERSONAL INFORMATION

Name: Concha Bielza  
Birthdate: April 16, 1966  
Nationality: Spanish  
Address: Department of Artificial Intelligence  
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### ACADEMIC POSITIONS

- Co-leader of the Computational Intelligence Group since its foundation in 2010
- Co-director and founder of the ELLIS Unit Madrid, the recently recognized Unit within the European Lab for Learning and Intelligent Systems (ELLIS) Society; a Unit that brings together the top machine learning researchers of the six public universities in Madrid (since 2022)
- Full Professor with the Department of Artificial Intelligence, Universidad Politécnica de Madrid, Spain (since 2010)
- Associate Professor with the Department of Artificial Intelligence, Universidad Politécnica de Madrid, Spain (1997-2010)
- Assistant Professor with the Department of Artificial Intelligence, Universidad Politécnica de Madrid, Spain (1991-1997)
- Part-time Lecturer with the Universidad Complutense de Madrid - St. Thomas Univ. (1989-1992)

### QUALIFICATIONS

- Habilitation for full Professor in Engineering, Madrid, Spain, 2009
- PhD in Computer Science, *Contributions to the Analysis of Decision-Making Supercomplex Problems*, Universidad Politécnica de Madrid, Spain, 1996. Awarded with the best PhD thesis in Universidad Politécnica de Madrid
- MSc in Mathematics, specialization in Statistics and Operation Research, Universidad Complutense de Madrid, Spain, 1989

### OTHER

- Four research periods (*sexenios*) awarded by the Ministry of Education, Culture and Sports: 1995-2000, 2001-2006, 2007-2012, 2013-2018
- Six teaching periods (*quinquenios*) awarded by the Technical University of Madrid: 1992-1996, 1997-2001, 2002-2006, 2007-2011, 2012-2016, 2017-2021
- (Unique) Knowledge transfer and innovation period awarded by the Ministry of Science, Innovation and Universities: 2011-2018

## RESEARCH INTEREST

My main research interests are: Machine learning, Bayesian networks (learning from data, supervised and unsupervised classification), explainable/interpretable artificial intelligence, evolutionary computation (genetic algorithms, estimation of distribution algorithms, multi-objective optimization), regularization, anomaly detection, data streams and temporal data, probabilistic graphical models (decision analysis under uncertainty specially with influence diagrams, partial information on probabilities and utilities, approximate solutions, explanation of results).

Application domains: medicine, bioinformatics, neuroscience, industry 4.0, reservoirs, auctions, project selection, astrophysics, agriculture, bibliometry.

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THE CV IN NUMBERS (*January 4, 2024*)

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#### PUBLICATION RECORD

- Books: 6
- Edited Books: 3
- Journal Papers (JCR, Web of Science): 158
- Journal Papers (Not in JCR): 16
- Book Chapters: 44
- Conference Publications: 76
- Conference Contributions: 181 (25 invited + 156 accepted)
- Technical Reports: 26
- Awards: 14 (personal) + 24 (jointly granted)

#### RESEARCH PROJECTS

- Public Research Projects: 64
- Private Research Projects: 38

#### TEACHING AND SUPERVISION

- Supervised Ph.D. Theses: 22
- Supervised Master Theses: 58
- Supervised Graduate Projects: 28

#### SERVICE TO THE ACADEMIC COMMUNITY

- Editorial Board of Journals: 2
  - Editor of Journal Special Issues: 4
  - Invited Talks in Universities/Institutions: 43
  - Plenary Talks in Conferences: 11
  - Organizer of Congress and Scientific Events: 18
  - Program Committee Member: 91
  - Session Chair of Conferences: 20
  - Round Tables: 4
  - Tutorials: 4
  - PhD committees: 21
  - Journal Referee: 84 manuscripts in 55 journals
  - Committees Evaluating Scientific Projects: 21
  - Committees Evaluating Grants and Research Careers: 23
  - Patents: 1
  - Registered Software: 3
  - Managerial positions: 7
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CITATIONS AND *h*-INDEX

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- Included in the list of the World Top 2% Most Cited Scientists in 2022 and 2023, a prestigious ranking done by the Stanford University
  - Web of Science (March 27, 2024)  
Citations: 4933  
*h*-index: 33  
Three Highly Cited Papers at Essential Science Indicators (top 1% of articles): papers #32, #67 and #104
  - Google Scholar ((March 27, 2024)  
Citations: 9384  
*h*-index: 42  
i10-index: 140  
Citations (since 2019): 4730  
*h*-index (since 2019): 30  
i10-index (since 2019): 85
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## B. PUBLICATION RECORD

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### BOOKS

1. Bielza, C., Larrañaga, P. (2021). *Data-Driven Computational Neuroscience. Machine Learning and Statistical Models*. Cambridge University Press. +700 pages
2. Larrañaga, P., Atienza, D., Diaz-Rozo, J., Ogbechie, A., Puerto-Santana, C., Bielza, C. (2019). *Industrial Applications of Machine Learning*. CRC Press. 336 pages (Chinese version also available since 2023, ISBN 978-7-5693-2481-5)
3. Ibáñez, A., Bielza, C., Larrañaga, P. (2011). *Scientific Productivity and Visibility of Public Spanish Universities Academic Staff in the Area of Computer Sciences*. Fundación General de la U.P.M. (in Spanish). 280 pages
4. Ríos-Insua, S., Mateos, A., Bielza, C., Jiménez, A. (2004). *Operation Research. Deterministic and Stochastic Models*. Centro de Estudios Ramón Areces (in Spanish). 552 pages. Awarded with the Best Textbook Prize (UPM Foundation)
5. Ríos-Insua, S., Bielza, C., Mateos, A. (2002). *Fundamentals of Decision Support Systems*. Ra-Ma (in Spanish). 416 pages
6. Ballesteros, E., Bielza, C., Gómez, M., Maldonado, J.A., Ballbé, P. (1999). *Health Economy, Statistics for Medical Doctors, Computer-Based Clinical Training*. Dossat 2000 (in Spanish). 317 pages

### EDITED BOOKS

1. Juarez, J.M., Fernandez-Llatas, C., Bielza, C., Johnson, O., Kocbek, P., Larrañaga, P., Martin, N., Munoz-Gama, J., Stiglic, G., Sepulveda, M. Vellido, A. (2024). *Explainable Artificial Intelligence and Process Mining Applications for Healthcare, Communications in Computer and Information Science, Vol. 2020*, Springer. 131 pages
2. Bielza, C., Salmerón, A., Alonso-Betanzos, A., Hidalgo, J.I., Martínez, L., Troncoso, A., Corchado, E., Corchado, J.M. (2013). *Advances in Artificial Intelligence, Lecture Notes in Artificial Intelligence, Vol. 8109*. Springer. 404 pages
3. Bielza, C., Salmerón, A. (2013). *Proceedings of the XV Conference of the Spanish Association for Artificial Intelligence (CAEPIA 2013)*. CEDI (in Spanish). 158 pages

### JOURNAL PAPERS (JCR - WEB OF SCIENCE, WITH QUARTILE)

1. C.E. Puerto-Santana, P. Larrañaga, C. Bielza (2024). Feature saliencies in asymmetric hidden Markov models. *IEEE Transactions on Neural Networks and Learning Systems*, 35, 3, 3586-3600, Q1
2. P. Larrañaga, C. Bielza (2023). Estimation of distribution algorithms in machine learning: A survey. *IEEE Transactions on Evolutionary Computation*, in press (DOI: 10.1109/TEVC.2023.3314105), Q1
3. N. Bernaola, M. Michiels, P. Larrañaga, C. Bielza (2023). Learning massive interpretable gene regulatory networks of the human brain by merging Bayesian networks. *PLOS Computational Biology*, 19, 12, e1011443, Q1
4. C. Puerto-Santana, P. Larrañaga, C. Bielza (2023). Feature subset selection in data-stream environments using asymmetric hidden Markov models and novelty detection. *Neurocomputing*, 554, 126641, Q2
5. C. Villa-Blanco, C. Bielza, P. Larrañaga (2023). Feature subset selection for data and feature streams: A review. *Artificial Intelligence Review*, 56, Suppl 1, 1011-1062, Q1
6. V.P. Soloviev, C. Bielza, P. Larrañaga (2023). Semiparametric estimation of distribution algorithms for continuous optimization. *IEEE Transactions on Evolutionary Computation*, in press (DOI: 10.1109/TEVC.2023.3290), Q1

7. G. Valverde, D. Quesada, P. Larrañaga, C. Bielza (2023). Causal reinforcement learning based on Bayesian networks applied to industrial settings. *Engineering Applications of Artificial Intelligence*, 125, 106657, Q1
8. E. Valero-Leal, C. Bielza, P. Larrañaga, S. Renooij (2023). Efficient search for relevance explanations using MAP-independence in Bayesian networks. *International Journal of Approximate Reasoning*, 160, 108965, Q2
9. C. Villa-Blanco, A. Bregoli, C. Bielza, P. Larrañaga, F. Stella (2023). Constraint-based and hybrid structure learning of multidimensional continuous-time Bayesian network classifiers. *International Journal of Approximate Reasoning*, 159, 108945, Q2
10. V.P. Soloviev, C. Bielza, P. Larrañaga (2023). Quantum approximate optimization algorithm for Bayesian network structure learning. *Quantum Information Processing*, 22:19, 1-28, Q1
11. D. Quesada, C. Bielza, P. Fontán, P. Larrañaga (2022). Piecewise forecasting of nonlinear time series with model tree dynamic Bayesian networks. *International Journal of Intelligent Systems*, 37, 9108-9137, Q1
12. D. Atienza, C. Bielza, P. Larrañaga (2022). PyBNesian: An extensible Python package for Bayesian networks. *Neurocomputing*, 504, 204-209, Q2
13. V.P. Soloviev, P. Larrañaga, C. Bielza (2022). Estimation of distribution algorithms using Gaussian Bayesian networks to solve industrial optimization problems constrained by environment variables. *Journal of Combinatorial Optimization*, 44, 1077-1098, Q3
14. C. Puerto-Santana, C. Bielza, J. Diaz-Rozo, G. Ramirez-Gargallo, F. Mantovani, G. Virumbrales, J. Labarta, P. Larrañaga (2022). Asymmetric HMMs for online ball-bearing health assessments. *IEEE Internet of Things Journal*, 9, 20 20160-20177, Q1
15. P. Laccourreye, C. Bielza, P. Larrañaga (2022). Explainable machine learning for longitudinal multi-omic microbiome. *Mathematics*, 10, 1994, Q1
16. D. Atienza, P. Larrañaga, C. Bielza (2022). Rejoinder on: Hybrid semiparametric Bayesian networks. *TEST*, 31, 344-347, Q3
17. D. Atienza, P. Larrañaga, C. Bielza (2022). Hybrid semiparametric Bayesian networks. *TEST*, 31, 299-327, Q3
18. C. Puerto-Santana, P. Larrañaga, C. Bielza (2022). Autoregressive asymmetric linear Gaussian hidden Markov models. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 44, 9, 4642-4658, Q1
19. D. Atienza, C. Bielza, P. Larrañaga (2022). Semiparametric Bayesian networks. *Information Sciences*, 584, 564-582, Q1
20. F. Rodriguez-Sanchez, C. Bielza, P. Larrañaga (2022). Multipartition clustering of mixed data with Bayesian networks. *International Journal of Intelligent Systems*, 37, 2188-2218, Q1
21. F. Rodriguez-Sanchez, C. Rodriguez-Blazquez, C. Bielza, P. Larrañaga, D. Weintraub, P. Martinez-Martin, A. Rizos, A. Schrag, K. Chaudhuri (2021). Identifying Parkinson's disease subtypes with motor and non-motor symptoms via model-based multi-partition clustering. *Scientific Reports*, 11, Article 23645, Q1
22. C. Villa-Blanco, P. Larrañaga, C. Bielza (2021). Multi-dimensional continuous time Bayesian network classifiers. *International Journal of Intelligent Systems*, 36, 12, 7839-7866, Q1
23. M. Benjumbeda, Y.-L. Tan, K.A. González-Otárula, D. Chandramohan, E.F. Chang, J.A. Hall, C. Bielza, P. Larrañaga, E. Kobayashi, R.C. Knowlton (2021). Patient specific prediction of temporal lobe epilepsy surgical outcomes. *Epilepsia*, 62, 2113-2122, Q1
24. D. Quesada, G. Valverde, P. Larrañaga, C. Bielza (2021). Long-term forecasting of multivariate time series in industrial furnaces with dynamic Gaussian Bayesian networks. *Engineering Applications of Artificial Intelligence*, 103, Article 104301, Q1

25. B. Mihaljević, C. Bielza, P. Larrañaga (2021). Bayesian networks for interpretable machine learning and optimization. *Neurocomputing*, 456, 648-665, Q2
26. B. Mihaljević, P. Larrañaga, C. Bielza (2021). Comparing the electrophysiology and morphology of human and mouse layer 2/3 pyramidal neurons with Bayesian networks. *Frontiers in Neuroinformatics*, 15, Article 580873, Q2
27. D. Atienza, C. Bielza, J. Diaz-Rozo, P. Larrañaga (2021). Efficient anomaly detection in a laser surface heat treatment process via laser-spot tracking. *IEEE/ASME Transactions on Mechatronics*, 26, 1, 405-415, Q1
28. S. Gil-Begue, C. Bielza, P. Larrañaga (2021). Multi-dimensional Bayesian network classifiers: A survey. *Artificial Intelligence Review*, 54, 519-559, Q1
29. M. Michiels, P. Larrañaga, C. Bielza (2021). BayeSuites: An open web framework for massive Bayesian networks focused on neuroscience. *Neurocomputing*, 428, 166-181, Q2
30. F. Rodriguez-Sanchez, P. Larrañaga, C. Bielza (2020). Incremental learning of latent forests. *IEEE Access*, 8, 224420-224432, Q2
31. B. Mihaljević, P. Larrañaga, R. Benavides-Piccione, J. DeFelipe, C. Bielza (2020). Comparing basal dendrite branches in human and mouse hippocampal CA1 pyramidal neurons with Bayesian networks. *Scientific Reports*, 10, Article 18592, Q1
32. R. Yuste, M. Hawrylycz, N. Aalling, A. Aguilar-Valles, D. Arendt, R., Armananzas, G.A. Ascoli, C. Bielza, et al. (Copenhagen Convention Group) (2020). A community-based transcriptomics classification and nomenclature of neocortical cell types. *Nature Neuroscience*, 23, 1456-1468, Q1  
→ Highly Cited Paper at Essential Science Indicators (top 1 % of articles by total citations)
33. I. Córdoba-Sánchez, G. Varando, C. Bielza, P. Larrañaga (2020). On generating random Gaussian graphical models. *International Journal of Approximate Reasoning*, 125, 240-250, Q2
34. I. Córdoba-Sánchez, C. Bielza, P. Larrañaga, G. Varando (2020). Sparse Cholesky covariance parametrization for recovering latent structure in ordered data. *IEEE Access*, 8, 154614-154624, Q2
35. J. Diaz-Rozo, C. Bielza, P. Larrañaga (2020). Machine-tool condition monitoring with Gaussian mixture models-based dynamic probabilistic clustering. *Engineering Applications of Artificial Intelligence*, 89, Article 103434, Q1
36. I. Córdoba-Sánchez, C. Bielza, P. Larrañaga (2020). A review of Gaussian Markov models for conditional independence. *Journal of Statistical Planning and Inference*, 206, 127-144, Q3
37. B. Mihaljević, R. Benavides-Piccione, C. Bielza, P. Larrañaga, J. DeFelipe (2019). Classification of GABAergic interneurons by leading neuroscientists. *Scientific Data*, 6, Article 221, Q1
38. P. Fernández-González, C. Bielza, P. Larrañaga (2019). Random forests for regression as a weighted sum of k-potential nearest neighbors. *IEEE Access*, 7, 1, 25660-25672, Q1
39. M. Benjumbeda, S. Luengo-Sanchez, P. Larrañaga, C. Bielza (2019). Tractable learning of Bayesian networks from partially observed data. *Pattern Recognition*, 91, 190-199, Q1
40. S. Luengo-Sanchez, P. Larrañaga, C. Bielza (2019). A directional-linear Bayesian network and its application for clustering and simulation of neural somas. *IEEE Access*, 7, 1, 69907-69921, Q1
41. I. Leguey, P. Larrañaga, C. Bielza, S. Kato (2019). A circular-linear dependence measure under Johnson-Wehrly distributions and its application in Bayesian networks. *Information Sciences*, 486, 240-253, Q1
42. I. Leguey, C. Bielza, and P. Larrañaga (2019). Circular Bayesian classifiers using wrapped Cauchy distributions. *Data & Knowledge Engineering*, 122, 101-115, Q3
43. M. Benjumbeda, C. Bielza, and P. Larrañaga (2019). Learning tractable Bayesian networks in the space of elimination orders. *Artificial Intelligence*, 274, 66-90, Q1

44. B. Mihaljević, C. Bielza and P. Larrañaga (2018). **bnclassify**: Learning Bayesian network classifiers. *The R Journal*, 10, 2, 455-468, Q1
45. L. Anton-Sanchez, F. Effenberger, C. Bielza, P. Larrañaga, H. Cuntz (2018). A regularity index for dendrites - local statistics of a neuron's input space. *PLOS Computational Biology*, 14, 11, e1006593, Q1
46. B. Mihaljević, P. Larrañaga, R. Benavides-Piccione, S. Hill, J. DeFelipe, C. Bielza (2018). Towards a supervised classification of neocortical interneuron morphologies, *BMC Bioinformatics*, 19, 511, Q1
47. S. Luengo-Sanchez, I. Fernaud-Espinosa, C. Bielza, R. Benavides-Piccione, P. Larrañaga, J. DeFelipe (2018). 3D morphology-based clustering and simulation of human pyramidal cell dendritic spines. *PLOS Computational Biology*, 14, 6, e1006221, Q1
48. J. Diaz-Rozo, C. Bielza, P. Larrañaga (2018). Clustering of data streams with dynamic Gaussian mixture models. An IoT application in industrial processes. *IEEE Internet of Things Journal*, 5, 5, 3533-3547, Q1
49. G. Varando, R. Benavides-Piccione, A. Muñoz, A. Kastanauskaite, C. Bielza, P. Larrañaga, J. DeFelipe (2018). MultiMap: A tool to automatically extract and analyze spatial microscopic data from large stacks of confocal microscopy images. *Frontiers in Neuroanatomy*, 12, Article 37, Q1
50. M. Benjumbeda, C. Bielza, and P. Larrañaga (2018). Tractability of most probable explanations in multidimensional Bayesian network classifiers. *International Journal of Approximate Reasoning*, 93, 74-87, Q3
51. J. Mu, K.R. Chaudhuri, C. Bielza, J. de Pedro-Cuesta, P. Larrañaga, P. Martinez-Martin (2017). Parkinson's disease subtypes from cluster analysis of motor and non-motor symptoms. *Frontiers in Aging Neuroscience*, 9, Article 301, Q2
52. L. Anton-Sanchez, P. Larrañaga, R. Benavides-Piccione, I. Fernaud-Espinosa, J. DeFelipe, C. Bielza (2017). Three-dimensional spatial modeling of spines along dendritic networks in human cortical pyramidal neurons. *PLoS ONE*, 12, 6, e0180400, Q2
53. L. Anton-Sanchez, C. Bielza, P. Larrañaga (2017). Network design through forests with degree- and role-constrained minimum spanning trees. *Journal of Heuristics*, 23 (1), 31-51, Q2
54. Rodriguez-Lujan, L., Larrañaga, P., Bielza, C. (2017). Frobenius norm regularization for the multivariate von Mises distribution. *International Journal of Intelligent Systems*, 32, 2, 153-176, Q1
55. Fernandez-Gonzalez, P., Benavides-Piccione, R., Leguey, I., Bielza, C., Larrañaga, P., DeFelipe, J. (2017). Dendritic branching angles of pyramidal neurons of the human cerebral cortex. *Brain Structure & Function*, 222, 4, 1847-1859, Q1
56. Anton-Sanchez, L., Bielza, C., Larrañaga, P., DeFelipe, J. (2016). Wiring economy of pyramidal cells in the juvenile rat somatosensory cortex. *PLoS ONE*, 11, 11, e0165915, Q2
57. Anton-Sanchez, L., Bielza, C., Benavides-Piccione, R., DeFelipe, J., Larrañaga, P. (2016). Dendritic and axonal wiring optimization of cortical GABAergic interneurons. *Neuroinformatics*, 14, 4, 453-464, Q1
58. Leguey, I., Bielza, C., Larrañaga, P., Kastanauskaite, A., Rojo, C., Benavides-Piccione, R., DeFelipe, J. (2016). Dendritic branching angles of pyramidal cells across layers of the juvenile rat somatosensory cortex. *Journal of Comparative Neurology*, 524, 13, 2567-2576, Q1
59. Leitner, F., Bielza, C., Hill, S.L., Larrañaga, P. (2016). Data publications correlate with citation impact. *Frontiers in Neuroscience*, 10, Article 419, Q2
60. Varando, G., Bielza, C., Larrañaga, P. (2016). Decision functions for chain classifiers based on Bayesian networks for multi-label classification. *International Journal of Approximate Reasoning*, 68, 164-178, Q1



61. Borchani, H., Larrañaga, P., Gama, J., Bielza, C. (2016). Mining multi-dimensional concept-drifting data streams using Bayesian network classifiers. *Intelligent Data Analysis*, 20, 2, 257-280, Q4
62. Rojo, C., Leguey, I., Kastanauskaite, A., Bielza, C., Larrañaga, P., DeFelipe, J., Benavides-Piccione, R. (2016). Laminar differences in dendritic structure of pyramidal neurons in juvenile rat somatosensory cortex. *Cerebral Cortex*, 26, 6, 2811-2822, Q1
63. Varando, G., Bielza, C., Larrañaga, P. (2015). Decision boundary for discrete Bayesian network classifiers. *Journal of Machine Learning Research*, 16, 2725-2749, Q1
64. Bielza, C., Gama, J., Jorge, A., Žliobaitė, I. (2015). Guest editors introduction: special issue of the ECMLPKDD 2015 journal track. *Data Mining and Knowledge Discovery*, 29, 1113-1115, Q1
65. Bielza, C., Gama, J., Jorge, A., Žliobaitė, I. (2015). Guest editors introduction: special issue of the ECMLPKDD 2015 journal track. *Machine Learning*, 100, 157-159, Q2
66. Luengo-Sanchez, S., Bielza, C., Benavides-Piccione, R., Feraud-Espinosa, I., DeFelipe, J., Larrañaga, P. (2015). A univocal definition of the neuronal soma morphology using Gaussian mixture models. *Frontiers in Neuroanatomy*, 9, Article 137, Q1
67. Borchani, H., Varando, G., Bielza, C., Larrañaga, P. (2015). A survey on multi-output regression. *Wiley Interdisciplinary Reviews—Data Mining and Knowledge Discovery*, 5, 216-233, Q1  
→ Highly Cited Paper at Essential Science Indicators (top 1% of articles by total citations in discipline Computer Science)
68. Olazarán, J., M. Valentí, B. Frades, M.A. Zea-Sevilla, M. Ávila-Villanueva, M.A. Fernández-Blázquez, M. Calero, J.L. Dobato, J. A. Hernández-Tamames, B. León-Salas, L. Agüera-Ortiz, J. López-Álvarez, P. Larrañaga, C. Bielza, J. Álvarez-Linera, P. Martínez-Martin (2015). The Vallecas Project: a cohort to identify early markers and mechanisms of Alzheimer’s disease. *Frontiers in Aging Neuroscience*, 7, Article 181, Q1
69. Larrañaga, A., Bielza, C., Pongrácz, P., Faragó, T., Bálint, A., Larrañaga, P. (2015). Comparing supervised learning methods for classifying sex, age, context and individual Mudi dogs from barking. *Animal Cognition*, 18, 2, 405-421, Q1
70. Bielza, C., Moral, S., Salmerón, A. (2015). Recent advances in probabilistic graphical models. Editorial. *International Journal of Intelligent Systems*, 30, 3, 207-208, Q2
71. Varando, G., López-Cruz, P.L., Nielsen, T., Larrañaga, P., Bielza, C. (2015). Conditional density approximations with mixtures of polynomials. *International Journal of Intelligent Systems*, 30, 3, 236-264, Q2
72. Mihaljević, B., Benavides-Piccione, R., Guerra, L., DeFelipe, J., Larrañaga, P., Bielza, C. (2015). Classifying GABAergic interneurons with semi-supervised projected model-based clustering. *Artificial Intelligence in Medicine*, 65, 49-59, Q2
73. Masegosa, A. R., Armañanzas, R., Abad-Grau, M. M., Potenciano, V., Moral, S., Larrañaga, P., Bielza, C., Matesanz, F. (2015). Discretization of expression quantitative trait loci in association analysis between genotypes and expression data. *Current Bioinformatics*, 10, 2, 144-164, Q4
74. López-Cruz, P.L., Bielza, C., Larrañaga, P. (2015). Directional naive Bayes classifiers. *Pattern Analysis and Applications*, 18, 225-246, Q3
75. Mihaljević, B., Benavides-Piccione, R., Bielza, C., DeFelipe, J., Larrañaga, P. (2015). Bayesian network classifiers for categorizing cortical GABAergic interneurons. *Neuroinformatics*, 13, 2, 193-208, Q1
76. Karshenas, H., Bielza, C., Larrañaga, P. (2015). Interval-based ranking in noisy evolutionary multi-objective optimization. *Computational Optimization and Applications*, 61, 2, 517-555, Q1
77. Mihaljević, B., Bielza, C., Benavides-Piccione, R., DeFelipe, J., Larrañaga, P. (2014). Multi-dimensional classification of GABAergic interneurons with Bayesian network-modeled label uncertainty. *Frontiers in Computational Neuroscience*, 8, Article 150, Q2

78. Bielza, C., Larrañaga, P. (2014). Bayesian networks in neuroscience: A survey. *Frontiers in Computational Neuroscience*, 8, Article 131, Q2
79. Anton-Sanchez, L., Bielza, C., Merchán-Pérez, A., Rodríguez, J.-R., DeFelipe, J., Larrañaga, P. (2014). Three-dimensional distribution of cortical synapses: A replicated point pattern-based analysis. *Frontiers in Neuroanatomy*, 8, Article 85, Q1
80. Bielza, C., Benavides-Piccione, R., López-Cruz, P.L., Larrañaga, P., DeFelipe, J. (2014). Branching angles of pyramidal cell dendrites follow common geometrical design principles in different cortical areas. *Scientific Reports*, 4, Article 5909, Q1
81. Morales, J., Benavides-Piccione, R., Dar, M., Fernaud, I., Rodríguez, A., Anton-Sanchez, L., Bielza, C., Larrañaga, P., DeFelipe, J., Yuste, R. (2014). Random positions of dendritic spines in the human cerebral cortex, *Journal of Neuroscience*, 34, 30, 10078-10084, Q1
82. Bielza, C., Larrañaga, P. (2014). Discrete Bayesian network classifiers: A survey. *ACM Computing Surveys*, 47, 1, Article 5 (43 pages), Q1
83. López-Cruz, P.L., Larrañaga, P., DeFelipe, J., Bielza, C. (2014). Bayesian network modeling of the consensus between experts: An application to neuron classification. *International Journal of Approximate Reasoning*, 55, 1, 3-22, Q1
84. Ibáñez, A., Bielza, C., Larrañaga, P. (2014). Cost-sensitive selective naive Bayes classifiers for predicting the increase of the h-index for scientific journals. *Neurocomputing*, 135, 5, 45-52, Q2
85. Guerra, L., Bielza, C., Robles, V., Larrañaga, P. (2014). Semi-supervised projected model-based clustering. *Data Mining and Knowledge Discovery*, 28, 4, 882-917, Q1
86. Sucar, L.E., Bielza, C., Morales, E.F., Hernandez-Leal, P., Zaragoza, J.H., Larrañaga, P. (2014). Multi-label classification with Bayesian network-based chain classifiers. *Pattern Recognition Letters*, 41, 14-22, Q2
87. López-Cruz, P.L., Bielza, C., Larrañaga, P. (2014). Learning mixtures of polynomials of multidimensional probability densities from data using B-spline interpolation. *International Journal of Approximate Reasoning*, 55, 989-1010, Q1
88. Merchán-Pérez, A., Rodríguez, J.R., González, S., Robles, V., DeFelipe, J., Larrañaga, P., Bielza, C. (2014). Three-dimensional spatial distribution of synapses in the neocortex: A dual-beam electron microscopy study. *Cerebral Cortex*, 24, 1579-1588, Q1
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25. Bielza, C., Vidakovic, B. (1996). *Time adaptive wavelet denoising*, Discussion Paper 1996-24, ISDS, Duke University (14 pp)
26. Ríos Insua, D., Salewicz, K.A., Müller, P., Bielza, C. (1996). *Bayesian methods in reservoir operations: The Zambezi river case*, Discussion Paper 1996-30, ISDS, Duke University (49 pp)

#### PERSONAL AWARDS/HONORS

1. ELLIS Fellow (European Laboratory for Learning and Intelligent Systems), Tübingen, since 2023
2. Sigma Xi Membership (The Scientific Research Honor Society), North Carolina, since 2023
3. IEEE Senior Membership (to those who have made significant contributions to the profession), New Jersey, since 2022
4. Finalist in Ada Byron Award (among 154 applicants) awarded by Deusto University, Bilbao (2022)
5. Finalist in Ada Byron Award (among 137 applicants) awarded by Deusto University, Bilbao (2021)
6. Finalist in Ada Byron Award (among 156 applicants) awarded by Deusto University, Bilbao (2020)
7. Amity Researchers Award for Significant Contribution in the field of Machine Learning, New Delhi (2020)
8. Recognized as a Member of the European Lab for Learning and Intelligent Systems (ELLIS) (2020)
9. Finalist in Ada Byron Award (among 112 applicants) awarded by Deusto University, Bilbao (2019)
10. 2014 Universidad Politécnica de Madrid Research Prize
11. Best referee in the *XIII Conference of the Spanish Association for the Artificial Intelligence* (CAE-PIA 2009), Sevilla (2009)
12. Finalist in IV Annual Awards “Decision Analysis Society Practice Award Competition”, awarded by the *Decision Analysis Society of the INstitute For Operations Research and Management Science (INFORMS)*, San José, California, USA (2002)
13. Best PhD thesis in Engineering in the *Universidad Politécnica de Madrid*, Madrid (1997)
14. Award Student Paper Competition in Decision Analysis, awarded by the *Decision Analysis Society of the INstitute For Operations Research and Management Science (INFORMS)*, Atlanta, USA (1996)

#### JOINTLY GRANTED AWARDS

1. Best Master Thesis of R. Sojo (under my supervision) awarded by the Technical University of Madrid, Madrid (2023)



2. Best PhD thesis of D. Atienza (under my supervision) awarded by the Technical University of Madrid, Madrid (2023)
3. 2021 Most Cited Scientific Paper Prize awarded by the Technical University of Madrid (2021)
4. Best Paper of the *II Workshop of Spanish Research Groups on Artificial Intelligence in Biomedicine (IABiomed-2021)*, Málaga (2021)
5. Best Master Thesis of M.A. Riaño (under my supervision) awarded by the Technical University of Madrid, Madrid (2021)
6. Best Master Thesis of S. Gil-Begué (under my supervision) awarded by the Technical University of Madrid, Madrid (2018)
7. Best PhD thesis of L. Anton-Sanchez (under my supervision) awarded by the Technical University of Madrid, Madrid (2018)
8. Second Prize in the *Frances Allen Award of the XVIII Conferencia de la Asociación Española de Inteligencia Artificial (CAEPIA-2018)* to PhD thesis of L. Anton-Sanchez (under my supervision), Granada (2018)
9. BayesFusion Best Student Paper Award of the *9th International Conference on Probabilistic Graphical Models*, Prague (2018)
10. Second Prize in the *Poster Competition of the Second Triennial International Workshop on Advances in Directional Statistics (ADISTA-2017)*, Rome (2017)
11. Best *PhD Project on Artificial Intelligence –Doctoral Consortium–* of G. Varando (under my supervision), given by the Spanish Association for Artificial Intelligence to “Theoretical Studies and New Approaches to Bayesian Network Classifiers”, CAEPIA-2015, Albacete (2015)
12. Best paper of the *1st Machine Learning for Cyber Physical Systems Conference (ML4CPS-2015)* awarded by Fraunhofer IOSB, Lemgo, Germany (2015)
13. Best PhD thesis of P.L. López-Cruz (under my supervision) awarded by the Technical University of Madrid, Madrid (2015)
14. Best student paper in the *15th Annual Genetic and Evolutionary Computation Conference (GECCO-2013)*, Amsterdam (2013)
15. “Marco Ramoni” best paper award of the *European Society for Artificial Intelligence in MEDicine (AIME)*, Murcia (2013)
16. Second position in the “MEG Mind Reading” competition in *PASCAL2 and the International Conference on Artificial Neural Networks*, Espoo, Finland (2011)
17. Best PhD thesis of M. Correa (under my supervision) awarded by the *Spanish Mathematics Society*, Santiago de Compostela, 2011
18. Best paper of the *International Society of Applied Intelligence in IEA-AIE 2010*, Córdoba (2010)
19. First Position in “Biomag Data Analysis Competition 2010” in *Multivariate Classification of MEG Brain Data* in the International Conference on Biomagnetism (Biomag 2010), Dubrovnik, Croacia (2010)
20. Best paper award of the *Mexican International Conference on Artificial Intelligence*, Guanajuato, México (2009)
21. Best graduate project of D. Soto (under my supervision) awarded by *Cátedra Mercamadrid* from Universidad Politécnica de Madrid, Madrid (2009)
22. Best textbook *Operation Research. Deterministic and Stochastic Models* awarded by *Fundación of Universidad Politécnica de Madrid*, Madrid (2004)

23. Best work to spread the health informatics applications of the *Spanish Society of Health Informatics*, Madrid (2004)
24. Best PhD thesis of M. Gómez (under my supervision) awarded by the *Spanish Royal Academy of Doctors*, Madrid (2002)

### C. RESEARCH PROJECTS

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#### PUBLIC PROJECTS

1. *New Solutions Based on Artificial Intelligence for Industrial Production Efficiency and Flexibility*. Ministry of Science and Innovation, Transmissions Program, 2024-2027
2. *Estimation of Distribution Algorithms in Machine Learning and Optimization*. Ministry of Science and Innovation, 2023-2026. Project Leader
3. *Community for Neuroscience and Neurotechnology*, Universidad Politécnica de Madrid. 2022-2024
4. *Convenio entre la Comunidad de Madrid y la Universidad Politécnica de Madrid para la concesión directa de una subvención para el apoyo al desarrollo del Nodo ELLIS mediante la implantación de una Unidad ELLIS en la Comunidad de Madrid*. Madrid Autonomous Region. 2022-2023. Project CoLeader
5. *Bayesian Networks for Interpretable Machine Learning and Optimization (BAYES-INTERPRET)*. Ministry of Science and Innovation, 2022-2024. Project CoLeader
6. *MAIAR (MAterials Informatics & Advanced Robotics Lab) – Desarrollo de una solución flexible de self-driving lab basada en la integración de Materials Informatics y Robótica Avanzada para el diseño de nuevos productos con baja huella de carbono*. PI: Repsol. Ministry of Economic Affairs and Digital Transformation, 2022-2024
7. *Plataforma Científico-Tecnológica para Alerta, Diagnóstico, Pronóstico, Terapia y Seguimiento de la Enfermedad COVID19 y Futuras Pandemias (COVIDTECH-CM)*. Madrid Autonomous Region, 2020-2023
8. *Investigación y Desarrollo de Metodología de la Inteligencia Artificial (ML) Orientado a Casos Industriales de Uso de Datos Continuos de Ultra-Alta Velocidad (DSTREAMS)*. Ministry of Science, Innovation and Universities, 2020-2024. Project CoLeader
9. *Bayesian Networks for Data Streams*. Ministry of Science, Innovation and Universities, 2020-2022. Project Leader
10. *IT Basket*. Madrid Autonomous Region, 2019-2020
11. *HBP - Human Brain Project. SGA3 Phase*. Horizon 2020, FET Flagship Initiative, European Commission, 2020-2023. Task leader
12. *Research Spanish Network “Therapeutic Applications of Systems Neuroscience to Central Nervous System Diseases” (Clisyne)*. Ministry of Science, Innovation and Universities, 2019-2021
13. *Research Spanish Network “Artificial Intelligence in Biomedicine”*. Ministry of Science, Innovation and Universities, 2019-2021
14. *Clasificadores Bayesianos Multidimensionales para la Interpretación de Emociones en Texto y Vídeo*, National Commission of Scientific and Technological Research (CONICYT), Chile, 2018-2019
15. *HBP - Human Brain Project. SGA2 Phase*. Horizon 2020, FET Flagship Initiative, European Commission, 2018-2020. Task leader
16. *Supercomputación para la Inteligencia Artificial*. Ministry of Economy, Industry and Competitiveness, 2018-2020

17. *Excellence Spanish Network "Big Data and Scalable Data Analysis"*. Ministry of Economy, Industry and Competitiveness, 2017-2019
18. *HBP - Human Brain Project. SGA1 Phase*. Horizon 2020, FET Flagship Initiative, European Commission, 2016-2018. Task leader
19. *Advances in Multidimensional Classification and Anomaly Detection with Bayesian Networks*. Ministry of Economy and Competitiveness, 2017-2019. Project Leader
20. *Excellence Spanish Network "Multimodal Interaction in Pattern Recognition and Computer Vision"*. Ministry of Economy and Competitiveness, 2015-2016
21. *Excellence Spanish Network "Big Data and Scalable Data Analysis"*. Ministry of Economy and Competitiveness, 2015-2017
22. *Bayesian Network Learning with non-Directional and Directional Variables for Association Discovery, Multi-Target Prediction and Clustering*. Ministry of Economy and Competitiveness, 2014-2016. Project Leader
23. *Concepts and Applications of Intelligent Systems*. Madrid Autonomous Region, 2014-2016
24. *HBP - Human Brain Project. Rump Up Phase*. FET Flagship Initiative, European Commission, 2013-2016
25. *Spanish Network for the Advancement and Transference of Computational Intelligence*. Ministry of Economy and Competitiveness, 2012-2012
26. *Spanish Network on Data Mining and Machine Learning*. Ministry of Science and Innovation, 2010-2012
27. *HBP - Human Brain Project*. FET Flagship Initiative Preparatory Actions, European Commission, 2011-2011
28. *Data Mining with Probabilistic Graphical Models: New Algorithms and Applications*. Ministry of Science and Innovation, 2011-2013. Project Leader
29. *Follow-up Congress for Computer Technology Projects*, Ministry of Science and Innovation, 2010-2011. Project Leader
30. *Follow-up Congress for Computer Technology Projects*, Ministry of Science and Innovation, 2009-2010. Project Leader
31. *Intelligent Probabilistic System to Model Scientific Productivity in the Computer Science Area*, Ministry of Science and Innovation, 2009-2011. Project Leader
32. *Cajal Blue Brain Project*. Ministry of Science and Innovation, 2008-2018. Group Leader
33. *CENIT: Technologies for Rendering Services in Mobility in the Intelligent Future Universe*, Ministry of Science and Innovation, Center for the Industrial Technological Development, 2008-2012
34. *Incremental Learning of Bayesian Networks with Data Streams from Data Coming from Time-Varying Distributions with Applications to Spam Detection*. Ministry of Foreign Affairs and Cooperation, 2008-2009. Project Leader
35. *Assessing Quality of Individual Predictions in Medical Decision Support Systems*. National Institutes of Health, USA (1-R01-LM009520-01), 2007-2010
36. *CONSOLIDER: Multimodal Interaction in Pattern Recognition and Computer Vision*, Ministry of Education and Science, 2007-2012
37. *Follow-up Congress for Computer Technology Projects*, Ministry of Education and Science, 2008-2009. Project Leader
38. *New Approaches for Multiobjective Learning of Supervised Classification Models and for Knowledge Synthesis in Decision Analysis Models*, Ministry of Education and Science, 2007-2010. Project Leader

39. *Concepts and Support Systems to Electronic Democracy*, Madrid Autonomous Region, 2006-2009
40. *Spanish Network on Probabilistic Graphical Models and Applications (Renewal)*, Ministry of Education and Science, 2007-2008
41. *Spanish Network on Multicriteria Decisions (Renewal 2)*, Ministry of Education and Science, 2006-2007
42. *E-Democracy: Internet-Based Support to Complex Decisions*, Ministry of Education and Science, 2005-2007
43. *Spanish Network on Multicriteria Decisions (Renewal 1)*, Ministry of Education and Science, 2005-2006
44. *Research, Development, Validation and Implementation of a Real State Valuation System Based on Artificial Intelligence Techniques*, Ministry of Economy and Treasury, 2005-2006
45. *Spanish Network on Probabilistic Graphical Models and Applications*, Ministry of Education and Science, 2005-2006
46. *Spanish Network on Pattern Recognition and Applications*, Ministry of Science and Technology, 2004-2006
47. *Spanish Network on Multicriteria Decisions*, Ministry of Science and Technology, 2003-2004
48. *Towards Electronic Democracy: Internet-Based Complex Decision Support*, European Science Foundation, 2002-2006
49. *Spanish Network on Research on Health Results and Public Health Services*, Ministry of Health and Consumption, 2003-2006
50. *Monitoring System of the Post-Harvest Evolution of Fruits and Vegetables, Using Sensor Matrices Based on Different Detection Principles*, Ministry of Science and Technology, 2004-2006
51. *A Multiobjective Decision Support System in Time and with Imprecision*, Ministry of Science and Technology, 2002-2004
52. *Simulation of Movement, Diffusion and Accumulation of Gases in Fruit and Vegetable Cold Storage Chambers Using Cellular Automata*, Universidad Politécnica de Madrid, 2001-2002. Project Leader
53. *Contributions to Intelligent Decision Support System Development*, Madrid Autonomous Region, 2001-2002
54. *New Approaches for the Development of the IctNeo System for Neonatal Jaundice Decision Support*, Universidad Politécnica de Madrid, 1999-2000. Project Leader
55. *Implementing Computerised Methodologies to Evaluate the Effectiveness of Countermeasures for Restoring Radionuclide Contaminated Fresh Water Ecosystems*, European Commission, 1999-2001
56. *Development of a Simulator of Damage Occurrence on a Fruit Grading Line*, Universidad Politécnica de Madrid, 1999-2000. Project Leader
57. *New Approaches to Influence Diagrams-Based Intelligent Decision Systems: Applications to Neonatal Jaundice and Extracorporeal Life Support*, Ministry of Science, Culture and Sports, 1998-1999
58. *An Intelligent System for Reservoir Management*, Ministry of Education and Science, 1998-2000
59. *Complex Decision Problems*, Madrid Autonomous Region, 1997-1999
60. *A Knowledge-Based System for Neonatal Jaundice Treatment*, Ministry of Health and Consumption, 1997-1998
61. *A Model-Based Computerised System for Management Support to Identify Optimal Remedial Strategies for Restoring Radionuclide Contaminated Aquatic Ecosystems and Drainage Areas*, European Commission, 1996-1999

62. *Bayesian Analysis of Stochastic Processes (I y II)*, NATO, 1995-1998
63. *Robust Decision Analysis Implementation*, Ministry of Education and Science, 1995-1998
64. *A Knowledge Based System for Bayesian Reliability Predictions in Repairable Equipments*, Ministry of Education and Science, 1995-1996

#### PRIVATE PROJECTS

1. REPSOL S.A. *Specific Collaboration Agreement Number 8: Multiobjective Experimental Design*, February-December 2024. Project Leader
2. REPSOL S.A. *Specific Collaboration Agreement Number 7: USET Unconventional Fields*, February-December 2024. Project Leader
3. ArcelorMittal. *Induce draft fans anomaly detection*, February-July 2024
4. Etxe-Tar S.A. *Investigación del proceso de mecanizado y corte láser de piezas esbeltas de Aluminio para el sector de la movilidad sostenible y desarrollo de la nueva solución de manufactura híbrida y digital del futuro (AI2Future)*, 2023-2025
5. REPSOL S.A. *Specific Collaboration Agreement Number 5: Induced Seismicity*, 2022-2023. Project Leader
6. Titanium Industrial Security. *Network SLIcing SEcurity for next generation communications (SLI-SE)*. 2021-2024. Project CoLeader
7. REPSOL S.A. *Specific Collaboration Agreement Number 4: Bayesian Approach for AI*, 2021-2022. Project Leader
8. Aingura IIoT. *Desarrollo de un sistema diagnóstico basado en Machine Learning para la detección en tiempo real de degradación temprana en el proceso de fabricación de medicamentos (MLpharma)*. 2021-2022
9. Idealista. *Herramienta de optimización de carteras en mercados inmobiliarios*, 2021-2022. Project CoLeader
10. Aingura IIoT. *MANtenimiento Predictivo FEderado e Inteligente de CRUZamientos (MANFECRUZ)*, 2021-2023. Project CoLeader
11. Adif (Competitive public tender). *Federated Artificial Intelligence for Comprehensive Infrastructure Maintenance (FAI4CIM)*, 2021-2023. Project CoLeader
12. Aingura IIoT. *Investigación y desarrollo de un sistema basado en Machine Learning para la caracterización y monitorización de puentes en tiempo real (ML4bridges)*, 2021-2023
13. IkerGune AIE. *Nueva sonda de ciberseguridad para la detección, gestión y respuesta de brechas de seguridad, ataques o anomalías en redes industriales (INMAP-R2)*, 2021-2021
14. REPSOL S.A. *Specific Collaboration Agreement Number 3: Batch Reinforcement Learning*, 2020-2021. Project Leader
15. (Competitive) Grant of Fundación BBVA to Research Groups on the topic of Big Data and Artificial Intelligence with project *Outcome prediction and treatment efficiency in patients hospitalized with COVID-19 in Madrid: A Bayesian network approach*, 2020-2022. Project Leader
16. (Competitive) Grant of Fundación BBVA to Research Groups on the topic of Big Data with project *Score-based nonstationary temporal Bayesian networks. Applications in climate and neuroscience (BAYES-CLIMA-NEURO)*, 2020-2022
17. REPSOL S.A. *Specific Collaboration Agreement Number 2: Artificial intelligence and data science to analyze complex problems*, 2019-2020. Project Leader
18. REPSOL S.A. *Specific Collaboration Agreement Number 1*, 2018-2019. Project Leader

19. OLOCIP 11 S.L. *Probabilistic models for football predictions*, 2018. Project CoLeader
20. Etxe-Tar S.A. and Aingura IIoT S.L.U. Subcontracting within project *Nueva infraestructura IoT industrial para la fábrica que aprende (LEARNIIoT)*, granted by Centro para el Desarrollo Tecnológico Industrial (CDTI) of the Ministry of Economy and Competitiveness within Proyectos de Investigación y Desarrollo Individuales Program, 2018-2020. Project CoLeader
21. Etxe-Tar S.A. *Gestión energética avanzada para máquina herramienta de nueva generación (EMON)*, 2017-2017. Project CoLeader
22. Etxe-Tar S.A. Subcontracting within project *Investigación en sistemas ciber-físicos para la detección de anomalías mediante modelos probabilísticos dinámicos en nuevos procesos de tratamiento térmico medioambientalmente sostenibles (TERMPROB)*, granted by Centro para el Desarrollo Tecnológico Industrial (CDTI) of the Ministry of Economy and Competitiveness within Proyectos de Investigación y Desarrollo Individuales Program, 2016–2018. Project CoLeader
23. (Competitive) Grant of Fundación BBVA to Research Groups on the topic of Big Data with project *Multi-view clustering with Bayesian networks*, 2016-2018
24. OLOCIP 11 S.L. *Development of a computer program for prediction and analysis in sports using artificial intelligence*, 2016-2017. Project CoLeader
25. Etxe-Tar S.A. Subcontracting within project *Desarrollo de bienes de equipo avanzados para la cadena de valor manufacturera basados en nuevos conceptos para la ayuda a la toma de decisiones orientada a la generación de servicios de alto valor añadido para la recuperación de la competitividad de la industria española (CARES)*, TIC-20150093, granted by Centro para el Desarrollo Tecnológico Industrial (CDTI) of the Ministry of Economy and Competitiveness within Programa Estratégico de Consorcios de Investigación Empresarial Nacional (CIEN), 2015-2019. Project CoLeader
26. Gaindu S.L. Subcontracting within project *Desarrollo de bienes de equipo avanzados para la cadena de valor manufacturera basados en nuevos conceptos para la ayuda a la toma de decisiones orientada a la generación de servicios de alto valor añadido para la recuperación de la competitividad de la industria española (CARES)*, TIC-20150093, granted by Centro para el Desarrollo Tecnológico Industrial (CDTI) of the Ministry of Economy and Competitiveness within Programa Estratégico de Consorcios de Investigación Empresarial Nacional (CIEN), 2015-2019. Project CoLeader
27. Abbott Products Operations AG. *Probabilistic Mapping of PDQ-39 (or PDQ-8) to the EQ-5D Utility Index Based on Multi-Dimensional Bayesian Network Classifiers*, 2011. Project Leader
28. Atos Origin (P10-1015-100). *Dynamic Probabilistic Graphical Models and their Applications*, 2009-2011. Project Leader
29. Produban (Banco Santander). *Minería de Datos y Geomarketing sobre Datos Financiero/Bancarios*, 2009-2010
30. Panda Security. *Adaptación Dinámica del Cambio en Sistemas de Aprendizaje. Problemática Drift*, 2009. Project Leader
31. Fundación Gil Gayarre. *Implantación y Explotación de una Medida de la Calidad de los Servicios en la Fundación Gil Gayarre*, 2005-2006
32. European Computing Consultants. *Modelos Dinámicos Lineales Bayesianos para la Previsión de la Demanda*, 2004. Project Co-leader
33. Telefónica, Publicidad e Información (TPI). *Predicción de Ventas por Anuncios en Páginas Amarillas*, Sept2002-Feb2003. Project Co-leader
34. Fundación Gil Gayarre. *Definición, Construcción, Implantación y Explotación de una Medida de la Calidad de los Servicios en la Fundación Gil Gayarre*, 2001-2002
35. Arthur Andersen. *Modelo de Predicción de Precios del Mercado Eléctrico*, 2001-2003. Project Co-leader

36. Airtel Móvil. *Optimización de Costes a Través de la Calidad y Fidelización: Un Enfoque Estadístico*, 1999
37. Coopers & Lybrand. *Una Metodología de Evaluación de la Calidad*, 1996-1997
38. Iberdrola. *Una Metodología para la Gestión de Embalses Hidroeléctricos*, 1995-1997

#### D. TEACHING AND SUPERVISION

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##### UNDERGRADUATE COURSES

Machine Learning, Data Mining, Decision Support Systems, Information Systems, Models and Simulation, Simulation Methods, Stochastic Processes and Networks, Probability and Statistics, Statistical Inference, Mathematics for the Financial and Social Sciences

##### MASTER COURSES

Decision Support Systems, Machine Learning, Bayesian Networks, Data Mining, Intelligent Data Analysis, Bayesian Reasoning with Graphical Models

##### DOCTORATE COURSES

Bayesian Reasoning with Graphical Models, Probabilistic Graphical Models in Medicine, Fundamentals of Probabilistic Graphical Models, Decision Support Systems, Bayesian Methods in Artificial Intelligence, Randomized Computation, Simulation and Artificial Intelligence

##### SUMMER SCHOOLS

Madrid UPM Advanced Statistics and Data Mining Summer School (a worldwide top ten maths and stats summer school according to INOMICS, with 15 editions since 2006), named as Madrid UPM Machine Learning and Advanced Statistics summer school since 2023. Coordinator and Instructor

##### SUPERVISED PH.D. THESES –All PhD in Computer Science, Universidad Politécnica de Madrid

1. D. Quesada (2023). *Multivariate Time-Series Modelling and Forecasting with High-Order Dynamic Bayesian Networks Applied in Industrial Settings*
2. C.E. Puerto-Santana (2023). *Asymmetric Hidden Markov Models and Extensions Applied to Industry*. International Mention
3. D. Atienza (2021). *Nonparametric Models and Bayesian Networks. Applications to Anomaly Detection*. International Mention
4. F. Rodríguez-Sánchez (2021). *Multidimensional Clustering with Bayesian Networks*. International Mention
5. I. Córdoba (2020). *Unifying Methodologies for Graphical Models with Gaussian Parametrization*
6. P. Fernández-González (2019). *Developments in Probabilistic Graphical Models, Circular Distributions and Theory of Random Forests with Applications in Neuroscience*
7. S. Luengo (2019). *Clustering Based on Bayesian Networks with Gaussian and Angular Predictors. Applications in Neuroscience*. International Mention
8. J. Díaz-Rozo (2019). *Clustering Probabilístico Dinámico para la Búsqueda de Patrones de Degradación de Elementos de Máquina en el Ámbito del Industrie 4.0*
9. M. Benjumbeda (2019). *Learning Tractable Bayesian Networks*. International Mention

10. B. Mihaljević (2018). *Contributions to Bayesian Network Classifiers and Interneuron Classification*. International Mention
11. G. Varando (2018). *Theoretical Studies on Bayesian Network Classifiers*. International Mention
12. I. Leguey (2018). *Directional-linear Bayesian Networks and Applications in Neuroscience*. International Mention
13. L. Anton-Sanchez (2017). *Statistical and Optimization Methods for Spatial Data Analysis Applied to Neuroscience*. International Mention
14. A. Ibañez (2015). *Machine Learning in Scientometrics*
15. P.L. López-Cruz (2013). *Contributions to Bayesian Networks Learning with Applications to Neuroscience*. International Mention
16. H. Karshenas (2013). *Regularized Model Learning in EDAs for Continuous and Multi-Objective Optimization*. International Mention
17. H. Borchani (2013). *Multi-Dimensional Classification using Bayesian Networks for Stationary and Evolving Streaming Data*. International Mention
18. L. Guerra (2012). *Semi-supervised Subspace Clustering and Applications to Neuroscience*. International Mention
19. D. Vidaurre (2012). *Regularization for Sparsity in Statistical Analysis and Machine Learning*. International Mention
20. M. Correa (2010). *Inteligencia Artificial para Predicción y Control del Acabado Superficial en Procesos de Fresado a Alta Velocidad*. European Mention
21. J.A. Fernández del Pozo (2006). *Listas KBM2L para la Síntesis de Conocimiento en Sistemas de Ayuda a la Decisión*
22. M. Gómez (2002). *IctNeo: Un Sistema de Ayuda a la Decisión para el Tratamiento de la Ictericia en Recién Nacidos*

#### SUPERVISED MASTER THESES –All in Universidad Politécnica de Madrid

1. V. Alejandro (2023). *Interpreting Bayesian Network-Based Clustering*
2. N. Amigo (2023). *Explainable Cascading System for Network Intrusion Detection in Industry*
3. R. Sojo (2023). *Improving Machine Learning-Based Bridge Health Monitoring Systems Scalability with Transfer Learning*
4. M. Alonso (2023). *Facilitating the Inference Interpretation in Bayesian Networks*
5. I. Tello (2023). *Interactive Structure Learning for Discrete Bayesian Network Classifiers*
6. J. Angulo (2023). *Predicción de Capacidad de Difusión de Monóxido de Carbono a Largo Plazo en Pacientes de COVID-19 con Redes Bayesianas*
7. I. López (2022). *Redes Bayesianas Semiparamétricas para la Monitorización y Detección de Anomalías con Aplicaciones al Deterioro de los Puentes de la Red de Carreteras*
8. A. González (2022). *Redes Bayesianas de Consenso para la Inicialización de Sistemas de Monitorización y Detección de Anomalías*
9. J. Fernández Hernández (2022). *Monitorización de Puentes y Detección de Cambios de Concepto con Redes Bayesianas Dinámicas*
10. J. Casajús (2022). *Autocodificador Evolutivo de Red Bayesiana para Detección de Anomalías Aplicado a Ciberseguridad*



11. P. Cordero (2022). *Anomaly-based Network Intrusion Detection System Using Semi-supervised Models*
12. R. Uttamchandani (2022). *Hidden Structure- Continuous Time Bayesian Networks*
13. J. Jiménez López de Castro (2022). *Análisis Post-Covid19 con Herramientas de Aprendizaje Automático*
14. J. Gallego (2022). *A Genetic Atlasing Toolbox with a Standalone Web Interface and Basic Functionality Plugin in the EBRAINS Interactive Atlas Viewer*
15. E. Valero (2022). *Explanations for Dynamic Bayesian Networks: A Case Study in Climate Science*
16. C. Li (2021). *Network Intrusion Detection for Industrial Devices Using Continuous Time Bayesian Networks*
17. P. Laccourreye (2021). *Explainable Machine Learning for Longitudinal Multi-omic Microbiome*
18. J. Díez García-Victoria (2021). *Score-Based Bayesian Networks for the Discovery of Effective Connectivity in fMRI Data with the Use of the Balloon Model*
19. M.A. Riaño (2021). *Avances en Árboles de Decisión y su Aplicación para Clasificar Enfermos Críticos de COVID-19*
20. S. González-Carvajal (2021). *Cadena de Clasificadores Bayesianos en Tiempo Continuo*
21. I. Maiza (2021). *Detección de Anomalías en Fundiciones Industriales de Hornos de Arco Eléctrico Desarrollando una Técnica de Clustering de Series Temporales Multivariantes*
22. I. Múgica (2021). *Bridge Online Condition Monitoring with Linear Gaussian Bayesian Networks-Based Dynamic Clustering*
23. H. Nugra (2020). *Machine Learning Implementations on NeuroSuites Software*
24. S. Alderisi (2020). *Machine Learning Applied to COVID-19*
25. L.E. Angulo (2020). *Redes Bayesianas en R: Análisis de los Paquetes Disponibles*
26. V. Pérez-Soloviev (2020). *Optimización de un Proceso de una Refinería Usando Algoritmos Evolutivos Basados en Redes Bayesianas Gaussianas*
27. J. Zapatero (2019). *Continuous Data Imputation Applied to Massive Instances*
28. C. Fernández (2019). *Estudio y Aplicación de Métodos Basados en Interacciones para el Aprendizaje Automático sobre Conjuntos de Elementos*
29. J. Ramos (2019). *Aprendizaje Automático para Flujos de Datos*
30. J. Arlandis (2019). *Generative Modeling and Calcium Imaging*
31. F. Parrales (2019). *Estudio de Metodologías de Preprocesamiento y Clasificación Multietiqueta para Datos Clínicos de Pacientes con Migraña*
32. S. Paniego (2019). *Visualization and Interpretation in Large Bayesian Networks*
33. N. Bernaola (2019). *Learning Interpretable Gene Regulatory Networks via Merging Bayesian Networks*
34. A. Rodríguez-González (2018). *Aprendizaje Automático Aplicado al Scouting Futbolístico*
35. A. Alcón (2018). *Modelos de Aprendizaje Automático sobre el Juego del Club Movistar Estudiantes*
36. D. Valero (2018). *Nuevo Algoritmo de Clasificación Multietiqueta con Redes Bayesianas. Aplicación a un Problema Industrial*

37. S. Gil-Begué (2018). *Nuevos CLasificadores Bayesianos Multi-Dimensionales. Aplicaciones a la Eficiencia Energética en la Industria 4.0*
38. C. Villa (2018). *Estudio de la Deriva Térmica sobre una Máquina de Medición de Alta Precisión mediante Análisis de Regresión Multi-Respuesta*
39. C.E. Puerto-Santana (2018). *Asymmetric Linear Gaussian Hidden Markov Models with an Application to Determine Bearings Health State*
40. M. Llera (2017). *A Novel Multi-dimensional Regression Model based on Gaussian Networks*
41. S. Vakaruk (2017). *Redes Bayesianas Clasificadoras Multidimensionales en Tiempo Continuo*
42. F.J. Mesonero (2017). *Arquitectura para Detección de Anomalías en un Proceso de Templado Laser*
43. A. Ogbechie (2017). *Using Dynamic Bayesian Networks for the Automated Visual Inspection and Analysis of an Industrial Laser Process*
44. D. Atienza (2016). *Detección de Anomalías durante un Proceso de Templado Láser con un Seguimiento Espacio-Temporal*
45. F. Rodríguez Sánchez (2016). *Multi-view Clustering with Bayesian Networks*
46. I. Córdoba-Sánchez (2015). *Fusión de Redes Bayesianas Gaussianas*
47. L. Antón-Sánchez (2015). *Computación Evolutiva de Bosques de Expansión Mínimos con Restricciones de Grado y de Rol*
48. L. Rodríguez-Luján (2015). *Caracterización y Simulación de Arborizaciones Dendríticas con Redes Bayesianas Incluyendo Variables Angulares*
49. Patricia Maraver (2015). *Clasificación Supervisada de las Neuronas de la Base de Datos NeuroMorpho*
50. M. Benjumeda (2014). *Learning Bayesian Networks from Data by the Incremental Compilation of New Network Polynomials*
51. S. Luengo (2014). *Clustering Basado en Redes Bayesianas con Predictoras Continuas. Aplicaciones en Neurociencia*
52. P. Fernández-González (2014). *Contributions to the truncated von Mises distribution for the univariate and bivariate case*
53. P. López-Adeva (2013). *Markov models for the multivariate von Mises distribution*
54. B. Mihaljević (2013). *BAYESCLASS. An R package for learning Bayesian network classifiers. Applications to neuroscience*
55. J. Pérez (2012). *Replicated spatial point processes for statistical neuroscience*
56. P. López-Cruz (2010). *Simulación de morfologías dendríticas mediante redes Bayesianas*
57. A. Ibáñez (2009). *Técnicas de aprendizaje automático aplicadas a la bibliometría*
58. M.A. Abad (2009). *Minería de datos dependiente del contexto en dispositivos ubicuos*

#### SUPERVISED GRADUATE PROJECTS –All in Universidad Politécnica de Madrid

1. L. Ameneiro (2017). *Diseño de un entorno en R para redes Bayesianas*
2. N. de Lucas (2017). *Desarrollo en R de algoritmos de aprendizaje de clasificadores Bayesianos para variables continuas*
3. A. Canales (2009). *Estudio bibliométrico de la producción científica del Departamento de Inteligencia Artificial, UPM, 2004-2008*

4. M. Vaquero (2009). *Heurísticos de optimización para regresión logística regularizada*
5. F. Andrés (2009). *Clasificadores Bayesianos para la detección de correo basura*
6. M. Fernández (2008). *Interfaz gráfico en vendimiadora para viticultura de precisión*
7. R. Gómez (2008). *Construcción de un filtro anti-spam con distintos clasificadores*
8. D. Soto (2008). *Diseño y desarrollo de un interfaz gráfico con LabVIEW para un Equipo espectrofotométrico de campo en la evaluación de frutos intactos*
9. I. Barrilero (2008). *Identificación de variables relevantes en modelos de toma de decisiones con diagramas de influencia*
10. A. Pérez (2007). *Detección de movimiento robusta a cambios de iluminación*
11. V. Oliva (2004). *Ajuste y generación de distribuciones para simular líneas de clasificación de fruta. SimLin 3.0*
12. D. Quero (2003). *Técnicas de seguimiento en visión computacional*
13. S. Galán (2003). *Simulación distribuida mediante la arquitectura HLA*
14. M. Calles (2002). *Simulador del movimiento, difusión y acumulación de gases en cámaras de frigoconservación de frutas y hortalizas mediante autómatas celulares. Versión 2.0*
15. V. Canseco (2002). *Distribución selectiva de la información*
16. E. Córcoles (2002). *Algoritmo genético para la búsqueda de secuencias de borrado de nodos en diagramas de influencia*
17. M. Ramos (2001). *Aspectos computacionales relacionados con la evaluación de diagramas de influencia*
18. S. Bielza (2001). *Simulador del movimiento, difusión y acumulación de gases en cámaras de frigoconservación de frutas y hortalizas mediante autómatas celulares*
19. R. Heradio (2000). *Regresión logística para la predicción de daño y simulación de líneas de clasificación de fruta*
20. M. Gersol (1999). *Gestión y control de la calidad en el servicio y su aplicación en entidades bancarias*
21. M. Cruz (1999). *Programa BAYES para inferencia estadística Bayesiana*
22. O. Pacios (1999). *Simulador de líneas de clasificación*
23. J.A. Fernández del Pozo (1998). *Sistema de ayuda a la decisión para el tratamiento de la ictericia neonatal: IctNeo*
24. J. Rey (1997). *Optimización discreta con computación local*
25. E. Pérez (1997). *BayRes: Un sistema de gestión de embalses. Módulo de optimización*
26. J. Fuertes (1997). *BayRes: Un sistema de gestión de embalses. Módulo de preferencias*
27. M. Farache (1996). *BayRes: Un sistema de gestión de embalses. Módulo de predicción*
28. A. Alberite (1995). *Redes de evaluación: Una herramienta para representar y resolver problemas de análisis de decisión*

#### E. SERVICE TO THE ACADEMIC COMMUNITY

#### EDITORIAL BOARD OF JOURNALS

1. Associate Editor of *Frontiers in Computational Neuroscience*

## 2. Editorial Board of *Neuroinformatics*

### EDITOR OF JOURNAL SPECIAL ISSUES

1. C. Bielza, J. Gama, A. Jorge, I. Žliobaitė (2015). Special ECML PKDD issue. *Machine Learning*
2. C. Bielza, J. Gama, A. Jorge, I. Žliobaitė (2015). Special ECML PKDD issue. *Data Mining and Knowledge Discovery*
3. C. Bielza, A. Salmerón, S. Moral (2015). Special issue on Recent Advances in Probabilistic Graphical Models. *International Journal of Intelligent Systems*
4. C. Bielza, P. Larrañaga (2014). Special issue on Bayesian Networks in Neuroscience. *Frontiers in Computational Neuroscience*

### INVITED SPEAKER IN UNIVERSITIES/INSTITUTIONS

- Chile: Northern Catholic University (2019)
- Denmark: Aalborg University (2009), Copenhagen Business School (online, 2022)
- Italy: Consiglio Nazionale delle Ricerche (1997)
- Germany: Spanish Embassy in Germany (Berlin) (2008), Cervantes Institute (Berlin) (2006)
- Greece: University of Patras (2010)
- Portugal: University of Aveiro (2009)
- South Korea: Seoul National University (2010)
- Spain: Spanish Open University (1998), Rey Juan Carlos University (2002, 2004, 2006, 2006), University of the Basque Country (2002, 2004), University of Sevilla (2004, 2007), University of Castilla - La Mancha (1998, 2010, 2011), University of Málaga (2012), Fiscal Studies Institute (2005, 2006, 2006), Carlos III Health Institute (2009), University Pablo de Olavide (2016), Royal Academy of Engineering (2015), AEPIA Summer School (2016), Spanish Royal Society of Mathematics (2021), Institute of Mathematical Sciences (ICMAT) (2021), University of Santiago de Compostela (2022), AXPE Consulting (2023), DIH AIR4S (2023), AEPIA (2024)
- The Netherlands: Radboud University Nijmegen (2009, 2012)
- Tunisia: Institut Supérieur de Gestion de Tunis (Université de Tunis) (2008)
- United Kingdom: University of Essex (2009)
- United States of America: Institute of Statistics and Decision Sciences (Duke University, USA) (1996), University of Kansas (1997, 2000), Harvard Medical School (2005)

### PLENARY TALKS IN CONFERENCES

1. 10th International Conference on Optimization and Applications (ICOA-2024), Almería (2024)
2. Joint Workshops on XAI Methods, Challenges and Applications (XAI3) at ECAI 2023, Krakow (2023)
3. Artificial Intelligence for the Fight against COVID-19, Basque Center for Applied Mathematics (BCAM) and AXA, Bilbao (2022)
4. 19th Annual Meeting of the Spanish Society of Neuroscience (SENC-2021), Lleida (2021)
5. International Joint Conferences 16th HAIS - 16th SOCO - 14th CISIS - 12th ICEUTE, Bilbao (2021)
6. 10th International Conference on Cloud Computing, Data Science and Engineering (CONFLUENCE-2020), Noida (India) (2020)

7. Global Innovation Day (Past, Present and Future of Artificial Intelligence), XIX Science Week, Euskalduna Palace, Bilbao (2019)
8. Women in Data Science (WiDS-2017), Madrid (2017)
9. 8th European Conference on Data Mining 2014 (ECDM-2014) / 8th International Conference on Intelligent Systems and Agents 2014 (ISA-2014), Lisbon (2014)
10. 26th IEEE International Symposium on Computer-Based Medical Systems (CBMS), Porto (2013)
11. Sixth European Workshop on Probabilistic Graphical Models (PGM), Granada (2012)

#### ORGANIZER OF CONFERENCES AND SCIENTIFIC EVENTS

1. *Co-Chair of the Journal Track* (journals: Machine Learning, Data Mining and Knowledge Discovery), within The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD-2025), Porto, 2025
2. Workshop *30 years of EDAs*, within the 18th International Conference on Parallel Problem Solving from Nature (PPSN-2024), Hagenberg (Austria), 2024
3. Session *Advances in Machine Learning and Data-Driven System Identification Techniques for Structural Health Monitoring* within 12th International Conference on Bridge Maintenance, Safety and Management (IABMAS-2024), Copenhagen, 2024
4. *3rd International Workshop on eXplainable Artificial Intelligence in Healthcare (XAI-Healthcare)*, Portoroz (Slovenia), 2023
5. Minisymposium *High-dimensional Bayesian networks* within “New Bridges between Mathematics and Data Science”, Valladolid, 2021
6. Panel *Current Trends and Controversies: The AI Act, is it moving Europe in the right direction?* within 8th IEEE International Conference on Data Science and Advanced Analytics (IEEE-DSAA-2021), Porto (online), 2021
7. *Co-Chair of the Journal Track* (journals: Machine Learning, Data Mining and Knowledge Discovery), within The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD-2015), Porto, 2015
8. *Jornadas Científico-Técnicas y Seminario Doctoral de la Red ATICA (SEMÁTICA-2013)*, Madrid, 2013
9. Program Chair of the *XV Conference of the Spanish Association for the Artificial Intelligence (CAE-PIA'13)*, Madrid, 2013
10. Session *Optimization and Data Mining* within XXV European Conference on Operational Research (EURO XXV - 2012), Vilnius, 2012
11. *IX Jornada de Seguimiento de Proyectos en Tecnologías Informáticas*, Madrid, 2010
12. Session *Optimization and Data Mining* within XXIV European Conference on Operational Research (EURO XXIV - 2010), Lisbon, 2010
13. *VIII Jornada de Seguimiento de Proyectos en Tecnologías Informáticas*, Madrid, 2009
14. *VII Jornada de Seguimiento de Proyectos en Tecnologías Informáticas*, Zaragoza, 2007
15. *Doctorado Interuniversitario “Modelos Probabilísticos para la Inteligencia Artificial y la Minería de Datos”*, San Lorenzo de El Escorial (Madrid), 2006
16. *Primera Reunión de la Red Temática sobre Modelos Gráficos Probabilísticos y Aplicaciones*, San Lorenzo de El Escorial (Madrid), 2006
17. *Workshop on Graphical Modelling of Dependent Uncertainties for Decision Support in Public Policy*, Gartmore (UK), 2004

18. Sessions *Graphical Models in Decision Analysis: Complex Applications* and *Graphical Models in Decision Analysis: Novel Representations and Algorithms* within EURO XV-INFORMS XXXIV, Barcelona, 1997

#### PROGRAM COMMITTEE MEMBER

1. 27th European Conference on Artificial Intelligence (ECAI-2024), Santiago de Compostela, 2024
2. XX Conferencia de la Asociación Española para la Inteligencia Artificial (CAEPIA-2024), A Coruña, 2024
3. 12th International Conference on Probabilistic Graphical Models (PGM-2024), Nijmegen, 2024
4. 22nd International Conference on Machine Learning and Applications (ICMLA-2023), Florida, 2023
5. 2nd AIXIA Workshop on Artificial Intelligence for Healthcare (HC@AIXIA-2023), Rome, 2023
6. 10th IEEE International Conference on Data Science and Advanced Analytics (IEEE-DSAA-2023), Thessaloniki (Greece), 2023
7. 26th International Conference on Discovery Science (DS-2023), Porto, 2023
8. 32nd International Joint Conference on Artificial Intelligence (IJCAI-2023), Macao (China), 2023
9. 39th Conference on Uncertainty in Artificial Intelligence (UAI-2023), Pittsburgh, 2023
10. 3rd International Workshop on eXplainable Artificial Intelligence in Healthcare (XAI-Healthcare), Portoroz (Slovenia), 2023
11. 11th International Conference on Probabilistic Graphical Models (PGM-2022), Almería, 2022
12. 31st International Joint Conference on Artificial Intelligence and 25th European Conference on Artificial Intelligence (IJCAI-ECAI-2022), Vienna, 2022
13. XIX Conferencia de la Asociación Española para la Inteligencia Artificial (CAEPIA-2020/21), Málaga, 2021
14. 16th European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty (ECSQARU-2021), Prague, 2021
15. 30th International Joint Conference on Artificial Intelligence (IJCAI-2021): Senior Program Committee Member, Montreal (Canada), 2021
16. 29th International Joint Conference on Artificial Intelligence and 17th Pacific Rim International Conference on Artificial Intelligence (IJCAI-PRICAI-2020), Yokohama (Japan), 2021
17. 23rd International Conference on Discovery Science (DS-2020), Thessaloniki (Greece), 2020
18. 10th International Conference on Probabilistic Graphical Models (PGM-2020), Aalborg (Denmark), 2020
19. 24th European Conference on Artificial Intelligence (ECAI-2020), Santiago de Compostela, 2020
20. 22nd International Conference on Discovery Science (DS-2019), Split (Croatia), 2019
21. 15th European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty (ECSQARU-2019), Belgrade, 2019
22. X Congreso Internacional de Computación e Informática del Norte de Chile (INFONOR-2019), Antofagasta (Chile), 2019
23. XVIII Conferencia de la Asociación Española para la Inteligencia Artificial (CAEPIA-2018), Granada, 2018
24. II Workshop en Big Data y Análisis de Datos Escalable (II BigDADE), Granada, 2018

25. 9th International Conference on Probabilistic Graphical Models (PGM-2018), Prague, 2018
26. IX Congreso Internacional de Computación e Informática del Norte de Chile (INFONOR-2018), Iquique (Chile), 2018
27. International Workshop on Automatic Machine Learning (AutoML-2018) within the International Conference in Machine Learning, Stockholm (2018)
28. 4th IEEE International Conference on Data Science and Advanced Analytics (IEEE-DSAA-2017), Tokyo, 2017
29. 14th European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty (ECSQARU-2017), Lugano, 2017
30. 30th International Conference on Industrial, Engineering, Other Applications of Applied Intelligent Systems (IEA-AIE 2017). Special Track on “Graphical Models: from Theory to Applications”, Arras (France), 2017
31. 15th Ibero-American Conference on Artificial Intelligence (IBERAMIA 2016), San José (Costa Rica), 2016
32. Workshop on Data Science for Social Good (SoGood 2016), within ECML-PKDD 2016, Riva del Garda (Italy), 2016
33. XVII Conferencia de la Asociación Española para la Inteligencia Artificial (CAEPIA-2016), Salamanca, 2016
34. International Conference on Probabilistic Graphical Models (PGM-2016), Lugano, 2016
35. 22nd European Conference on Artificial Intelligence (ECAI-2016), The Hague, 2016
36. 25th International Joint Conference on Artificial Intelligence (IJCAI-16), New York, 2016
37. I Workshop “BigData y Análisis de Datos Escalable” (BigDADE-2015), Albacete, 2015
38. XVI Conferencia de la Asociación Española para la Inteligencia Artificial (CAEPIA-2015), Albacete, 2015
39. Workshop on Adaptive Treatments and Therapies (WATT-2015), Istanbul, 2015
40. 2015 Genetic and Evolutionary Computation Conference (GECCO-2015), Madrid, 2015
41. 3rd International Work-Conference on Bioinformatics and Biomedical Engineering (IWBBIO-2015), Granada, 2015
42. Seventh European Workshop on Probabilistic Graphical Models (PGM-2014), Utrecht, 2014
43. 21st European Conference on Artificial Intelligence (ECAI-2014), Prague, 2014
44. 2014 Genetic and Evolutionary Computation Conference (GECCO-2014), Vancouver, 2014
45. 15th Biennial European Conference of the Society for Medical Decision Making (ESMDM-2014), Antwerp, 2014
46. 2nd International Work-Conference on Bioinformatics and Biomedical Engineering (IWBBIO-2014), Granada, 2014
47. 23rd International Joint Conference on Artificial Intelligence (IJCAI-13), Beijing, 2013
48. 12th European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty (ECSQARU-2013), Utrecht, 2013
49. 2013 Genetic and Evolutionary Computation Conference (GECCO-2013), Amsterdam, 2013
50. IEEE Congress on Evolutionary Computation (IEEE CEC-2013), Cancún, 2013

51. International Work-Conference on Bioinformatics and Biomedical Engineering (IWBBIO-2013), Granada, 2013
52. Sixth European Workshop on Probabilistic Graphical Models (PGM-2012), Granada, 2012
53. 7th Conference on Prestigious Applications of Intelligent Systems (PAIS-2012), within ECAI-2012, Montpellier, 2012
54. 9th Bayesian Modelling Applications Workshop (within UAI-2012), Catalina Island, 2012
55. 28th Conference on Uncertainty in Artificial Intelligence (UAI-2012), Catalina Island, 2012
56. 2012 Genetic and Evolutionary Computation Conference (GECCO-2012), Philadelphia, 2012
57. IEEE Congress on Evolutionary Computation (IEEE CEC-2012), Brisbane, 2012
58. 4th Biennial European Conference of the Society for Medical Decision Making (ESMDM-2012), Oslo, 2012
59. International Conference on Pattern Recognition Applications and Methods (ICPRAM-2012), Algarve, 2012
60. XIV Conferencia de la Asociación Española para la Inteligencia Artificial (CAEPIA'11), Tenerife, 2011
61. 22th International Joint Conference on Artificial Intelligence (IJCAI-11), Barcelona, 2011
62. 27th Conference on Uncertainty in Artificial Intelligence (UAI-2011), Barcelona, 2011
63. 2011 Genetic and Evolutionary Computation Conference (GECCO-2011), Dublin, 2011
64. Probabilistic Problem Solving in Biomedicine (ProBioMed'11), within 13th Conference on Artificial Intelligence in Medicine (AIME-2011), Bled, 2011
65. 13th International Conference on Discovery Science (DS-2010), Canberra, 2010
66. Fifth European Workshop on Probabilistic Graphical Models (PGM-2010), Helsinki, 2010
67. 26th Conference on Uncertainty in Artificial Intelligence (UAI-2010), Catalina Island, 2010
68. 23rd International Conference on Industrial, Engineering & Other Applications of Applied Intelligent Systems (IEA-AIE 2010), Special Session on "New Frontiers in Data Analysis, Optimization and Visualization for Bioinformatics and Neuroscience", Córdoba, 2010
69. 13th European Meeting of the Society for Medical Decision Making (ESMDM-2010), Tyrol, 2010
70. XIII Conferencia de la Asociación Española para la Inteligencia Artificial (CAEPIA-TTIA 2009), Sevilla, 2009
71. 12th International Conference on Discovery Science (DS-2009), Porto, 2009
72. European Conference on Machine Learning – Conference on Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD 2009), Bled, 2009
73. 21th International Joint Conference on Artificial Intelligence (IJCAI-09), Pasadena, 2009
74. 25th Conference on Uncertainty in Artificial Intelligence (UAI-2009), Montreal, 2009
75. 11th Ibero-American Conference on Artificial Intelligence (IBERAMIA 2008), Lisbon, 2008
76. Fourth European Workshop on Probabilistic Graphical Models (PGM-2008), Hirtshals, 2008
77. IV International Symposium on Applications of Modelling as an Innovative Technology in the Agri-Food Chain (Model-IT 2008), Madrid, 2008
78. IFAC Conference on Cost Effective Automation in Networked Product Development and Manufacturing (IFAC-CEA-2007), Monterrey, 2007



79. 18th European Conference on Machine Learning (ECML) – 11th European Conference on Principles and Practice of Knowledge Discovery in Databases (PKDD), Varsovia, 2007
80. 23th Conference on Uncertainty in Artificial Intelligence (UAI-2007), Vancouver, 2007
81. IADIS International Conference Intelligent Systems and Agents (ISA-2007), Lisbon, 2007
82. Third European Workshop on Probabilistic Graphical Models (PGM-2006), Prague, 2006
83. 16th European Conference on Machine Learning (ECML) – 9th European Conference on Principles and Practice of Knowledge Discovery in Databases (PKDD), Porto, 2005
84. Second European Workshop on Probabilistic Graphical Models (PGM-2004), Leiden, 2004
85. 20th Conference on Uncertainty in Artificial Intelligence (UAI-2004), Banff, 2004
86. 14th European Conference on Machine Learning – 7th European Conference on Principles and Practice of Knowledge Discovery. Workshop on Probabilistic Graphical Models for Classification, Cavtat–Dubrovnik, 2003
87. 19th Conference on Uncertainty in Artificial Intelligence (UAI-2003), Acapulco, 2003
88. First European Workshop on Probabilistic Graphical Models (PGM-2002), Cuenca, 2002
89. 17th Conference on Uncertainty in Artificial Intelligence (UAI-2001), Seattle, 2001
90. International Symposium on Adaptive Systems. Evolutionary Computation and Probabilistic Graphical Models (ISAS2001), La Habana, 2001
91. 16th Conference on Uncertainty in Artificial Intelligence (UAI-2000), Stanford, 2000

#### SESSION CHAIR OF CONFERENCES

1. Keynote Mihaela van der Schaar in *3rd International Workshop on eXplainable Artificial Intelligence in Healthcare (XAI-Healthcare)*. Portoroz, 2023
2. Learning II in *International Conference on Probabilistic Graphical Models (PGM-2022)*, Almería, 2022
3. High-dimensional Bayesian networks in *New Bridges between Mathematics and Data Science*, Valladolid, 2021
4. Learning in *International Conference on Probabilistic Graphical Models (PGM-2020)*, Aalborg (virtual), 2020
5. Machine Learning: Multi-Instance/Multi-Label/Multi-View Learning in *24th European Conference on Artificial Intelligence (ECAI-2020)*, Santiago de Compostela, 2020
6. Inference in *International Conference on Probabilistic Graphical Models (PGM-2018)*, Prague, 2018
7. Dynamic Models in *International Conference on Probabilistic Graphical Models (PGM-2016)*, Lugano, 2016
8. Learning in *22nd European Conference on Artificial Intelligence (ECAI-2016)*, The Hague, 2016
9. Probabilistic Graphical Models in *XVI Conferencia de la Asociación Española para la Inteligencia Artificial (CAEPIA'15)*, Albacete, 2015
10. Classification and Clustering in *Sixth European Workshop on Probabilistic Graphical Models (PGM-2012)*, Granada, 2012
11. Optimization and Data Mining in EURO XXV, Vilnius, 2012
12. Machine Learning in *XIV Conferencia de la Asociación Española para la Inteligencia Artificial (CAEPIA'11)*, Tenerife, 2011

13. Influence Diagrams in *Fifth European Workshop on Probabilistic Graphical Models (PGM-2010)*, Helsinki, 2010
14. Optimization and Data Mining in *EURO XXIV*, Lisbon, 2010
15. Redes Bayesianas in *XIII Conferencia de la Asociación Española para la Inteligencia Artificial (CAEPIA-TTIA 2009)*, Sevilla, 2009
16. Statistical Data Analysis in *6th International Symposium on Intelligent Data Analysis (IDA'05)*, Madrid, 2005
17. Influence Diagrams and Decision Networks in *Second European Workshop on Probabilistic Graphical Models (PGM-2004)*, Leiden, 2004
18. Influence Diagrams in *First European Workshop on Probabilistic Graphical Models (PGM-2002)*, Cuenca, 2002
19. Computational Methods in Bayesian Statistics in *EURO XV-INFORMS XXXIV*, Barcelona, 1997
20. Graphical Models in Decision Analysis: Novel Representations and Algorithms, in *EURO XV-INFORMS XXXIV*, Barcelona, 1997

#### ROUND TABLES

1. “Welcome to the Future: Social and Human Impact of Artificial Intelligence” (50th anniversary of Universidad Autónoma de Madrid), CentroCentro Gallery at Cibeles, Madrid, 2018
2. “Collaborative Research in Computational Neuroscience USA-Spain”, organized by NSF, NIH and MINECO, Madrid, 2018
3. “Probabilistic Graphical Models and Neuroscience”, at 9th International Conference on Probabilistic Graphical Models (PGM-2018), Prague, 2018
4. “Women, Research and Artificial Intelligence”, at XVI Conference of the Spanish Association for Artificial Intelligence (CAEPIA-2015), Albacete, 2015

#### TUTORIALS

1. 19th Mexican International Conference on Artificial Intelligence, Mexico City, Mexico, 2020 (virtual)
2. 14th Conference on Artificial Intelligence in Medicine, Murcia, 2013
3. XIV Conference of the Spanish Association for Artificial Intelligence, Tenerife, 2011
4. 12th International Conference on Discovery Science, Porto, 2009

#### PHD COMMITTEES

1. Miguel López, Universidad de Granada (2022)
2. Carlos Villacampa, Universidad Autónoma de Madrid (2022)
3. Ridho Rahmadi, Radboud University Nijmegen (2019)
4. Dag Sonntag, Linköping University (2016)
5. Marina Segura, Universidad Politécnica de Valencia (2015)
6. Jerónimo Hernández, Universidad del País Vasco (2015)
7. Iñigo Bermejo, Universidad Nacional de Educación a Distancia (2015)
8. Ekhiñe Irurozqui, Universidad del País Vasco (2014)
9. Angela Fernández Pascual, Universidad Autónoma de Madrid (2014)

10. Nicolaj Søndberg-Jeppesen, Aalborg University (2009)
11. Manuel Luque, Universidad Nacional de Educación a Distancia (2009)
12. Dinora Morales, Universidad del País Vasco (2009)
13. Constantino Malagón, Universidad Nebrija (2008)
14. Domingo Romero, Universidad del País Vasco (2007)
15. Roberto Santana, Universidad del País Vasco (2006)
16. María Jesús Rufo, Universidad de Extremadura (2005)
17. Rafael Rumí, Universidad de Almería (2003)
18. Carmen Lacave, Universidad Nacional de Educación a Distancia (2003)
19. Antonio Jiménez, Universidad Politécnica de Madrid (2002)
20. Miguel Ángel Virto, Universidad Politécnica de Madrid (2002)
21. Arminda Moreno, Universidad Politécnica de Madrid (2001)

#### JOURNAL REFEREE

1. Aging
2. Annals of Operations Research
3. Artificial Intelligence in Medicine
4. Artificial Intelligence Review
5. Bioinformatics
6. BMC Bioinformatics
7. BMC Medical Informatics and Decision Making
8. Communications in Statistics - Simulation and Computation
9. Computational Intelligence
10. Computational Statistics and Data Analysis
11. Computers in Biology and Medicine
12. Computer Methods and Programs in Biomedicine
13. Decision Analysis
14. Decision Support Systems
15. Entropy
16. European Journal of Operational Research
17. Evolutionary Computation
18. Frontiers in Neuroanatomy
19. Frontiers in Psychology
20. IEEE Access
21. IEEE Transactions on Artificial Intelligence
22. IEEE Transactions on Automation Science and Engineering

23. IEEE Transactions on Evolutionary Computation
24. IEEE Transactions on Industrial Informatics
25. IEEE Transactions on Knowledge and Data Engineering
26. IEEE Transactions on Neural Networks and Learning Systems
27. IEEE Transactions on Pattern Analysis and Machine Intelligence
28. Information Sciences
29. International Journal of Aerospace Engineering
30. International Journal of Approximate Reasoning
31. International Journal of Data Science and Analytics
32. International Journal of Intelligent Systems
33. International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems
34. Journal of Applied Statistics
35. Journal of Biomedical Informatics
36. Journal of Artificial Intelligence Research
37. Journal of Computational and Graphical Statistics
38. Journal of Computer Science and Technology
39. Journal of Neuroscience Methods
40. Journal of the Neurological Sciences
41. Knowledge-Based Systems
42. Machine Learning
43. Management Science
44. Medical Decision Making
45. Networks and Heterogeneous Media
46. Neurocomputing
47. Neuroinformatics
48. Pattern Recognition
49. PLOS Computational Biology
50. QÜESTIÓ (Quaderns d'Estadística i Investigació Operativa)
51. Statistics in Medicine
52. Shock and Vibration
53. Swarm and Evolutionary Computation
54. The Scientific World Journal
55. TOP

**BOOK PROPOSAL REVIEWER:**

1. *Chapman & Hall/CRC Press, 2013 and 2018*

2. *Cambridge University Press*, 2020

#### MEMBER OF COMMITTEES EVALUATING SCIENTIFIC PROJECTS

1. *Project Proposal for the Dutch Research Council (NWO)*, The Netherlands (2022)
2. *European Network of AI Excellence Centers (ELISE) Evaluation Committee* of the best AI and Machine Learning SME projects in Europe (2021)
3. *Project Proposal of the State R&D Plan in the Mathematical Sciences Area*, for the State Research Agency of the Spanish Ministry of Economy and Competitiveness, Madrid (2021, 2022)
4. *Project Proposals for the European Research Council: ERC-Consolidator Grants*, ERC (2020)
5. *Member of the Committee of Experts of the Test of Time Award 2020 at ECML/PKDD-2010* (2020)
6. *Project Proposals for The Education University of Hong Kong*, Hong Kong (2018)
7. *Project Proposal within the International PostDoc Initiative (IPODI) Fellowship Program*, Technische Universität Berlin (2017)
8. *Evaluating Committee of 2016 R+D Projects of Young Researchers*, Spanish Ministry of Economy and Competitiveness, Madrid (2016)
9. *Committee for the Evaluation of Fundamental Research Projects of the National Plan in the Computer Technology (TIN) area*, Spanish Ministry of Economy and Competitiveness, Madrid (2015, 2016)
10. *Project Proposals for Czech Science Foundation*, Czech Republic (2015)
11. *Follow-up Committee of Fundamental Research Projects of the National Plan in the Computer Technology (TIN) area*, Spanish Ministry of Economy and Competitiveness, Madrid (2014)
12. *Project Proposals for Junta de Andalucía*, Córdoba (2013)
13. *Project Proposals for Agence Nationale de la Recherche*, France (2012)
14. *Evaluating Committee to Certify R+D Industrial Projects*, Agencia de Acreditación de Proyectos de Investigación, Desarrollo e Innovación Tecnológica (AIDIT), Madrid (2012)
15. *Follow-up Commission for Computer Technology Projects*, Spanish Ministry of Science and Innovation, Madrid (2011)
16. *Evaluating Committee of Computer Technology Projects*, Spanish Ministry of Science and Innovation, Madrid (2009, 2009, 2011)
17. *Project Proposals for Agencia Nacional de Evaluación y Prospectiva*, Madrid (2000, 2004, 2005 (2), 2006, 2007, 2008 (2), 2012 (2), 2014, 2015 (5), 2016 (2), 2017 (1))

#### MEMBER OF COMMITTEES EVALUATING GRANTS AND RESEARCH CAREERS

1. *Expert Evaluator - 2024 Postgraduate Fellowships Abroad (Physical Sciences, Mathematics and Engineering)*, 25 applicants, “La Caixa” Foundation, Barcelona (2024)
2. *Assessment of Competences for an Associate Professor*, Agència per a la Qualitat del Sistema Universitari de Catalunya, AQU Catalunya (2022)
3. *Assistant Professors (with the possibility of Tenure-Track)*, 31 applicants, Aalborg University, Denmark (2022)
4. *Expert Evaluator - 2021 Postgraduate Fellowships Abroad (Physical Sciences, Mathematics and Engineering)*, 25 applicants, “La Caixa” Foundation, Barcelona (2021)
5. *Professor Positions at National Universities*: Universidad Carlos III de Madrid (2021, 4 applicants), Universidad Politécnica de Madrid (2021), Universidad de Extremadura (2019), UNED (2018), CSIC (2016)

6. *Associate Positions at National Universities*: UNED (2021), Universidad del País Vasco (2020)
7. *Evaluating Committee of Researchers*, Portuguese Public Funding Agency for R&D (FCT), Portugal (2019, 2020)
8. *Professor Position*, 4 applicants, Aalborg University, Denmark (2020)
9. *External Preselection Committee of 2019 Program of Postgraduate Scholarships for Studies in Europe, and in North America and the Asia-Pacific region*, 39 applicants, Obra Social “la Caixa”, Barcelona (2019)
10. *Associate Professor Position*, 2 applicants, Linköping University (2018)
11. *Assessment of Competences for a Full Professor*, Utrecht University (2016)
12. *Selection Committee of 2016 Program of PhD Scholarships*, 12 applicants, Obra Social “la Caixa”, Barcelona (2016)
13. *Evaluating Committee of 2014 Juan de la Cierva Postdoctoral Contracts*, Spanish Ministry of Economy and Competitiveness, Madrid (2015)
14. *ICREA (Catalan Institution for Research and Advanced Studies)–Peer Evaluation for Promotion of Research Professors*, Barcelona (2015, 2016, 2017)
15. *Associate Professor Position*, Aalborg University, Denmark (2010)

#### SCIENCE DISSEMINATION

- *Datos Inteligentes, Descarga la Tormenta Perfecta*, El Mundo - El Cultural, pp. 58-62, 18-12-20
- *Interview about COVID-19 Project Funded by FBBVA*, Radio RNE-News-Madrid, 4-11-20
- *La Matemática que Trata de Acabar con el Caos de Datos de la Covid en España y Salvar Vidas*, El Español, 18-10-20
- *Lessons from Sport to Compete with Artificial Intelligence*, IESE Business School Insight 156, pp. 68–74 (2020)
- *Inteligencia Artificial por Todos Lados*, El Correo Español-El Pueblo Vasco (2019)
- *Quality Control Process to Detect the Anomalies during Laser Surface Heat Treatment*, LIA TODAY Newsletter, 27, 1, p. 10 (2019)
- *Redes Bayesianas y Clasificación Neuronal*, Investigación y Ciencia, Blog de Neurociencia Computacional (2019)
- *La Máquina que Descifra el Cerebro de Maradona*, El País–Retina 1, pp. 86–91 (2017)
- *Podrá Gestionarse el Riesgo de Ciertas Enfermedades*. El Mundo–YoDona p. 30 (2017)
- *Data Science es una Tecnología Clave para la Investigación del Siglo XXI*, ABC and El Economista (2017)
- *Los Ladridos Caracterizan a los Perros Igual que la Voz a las Personas*. Madri+d News, Platform SINC (FECYT), AlphaGalileo, ABC (2015)
- *La Mente Artificial Aprende a Inventar*. El Correo Innova+, pp. 1–3 (2014)
- *Desarrollan un Kit que Predice la Supervivencia al Cáncer de Pulmón*. Madri+d News, Platform SINC (FECYT), AlphaGalileo, EuropaPress, 20minutos (2013)
- *Avances en el Pronóstico de la Cirugía de la Epilepsia*. Madri+d News, Física Hoy (2013)
- *La Inteligencia Computacional Abre Nuevas Vías en la Investigación del Alzheimer*. EuropaPress, Alzheimer Universal, AlphaGalileo, MathsNews, Fundación MonteMadrid (2012)

- *Alan Turing y la Estadística Bayesiana*. Blog El País newspaper (2012)
- *Inteligencia Artificial. Proyecto Cajal Blue Brain*. Interview in Radio3 of RNE (2011)
- *Predicen el Número de Citas que Tendrán los Artículos Científicos*. Madri+d News, Platform SINC (FECYT) (2010)

#### PATENTS

1. *Test Predictor de Supervivencia Global de Adenocarcinoma de Pulmón*. R. García, J.M. Paramio, P. Larrañaga, C. Bielza. P-2010-31626, Grant date: 4-26-2013

#### REGISTERED SOFTWARE

1. *Fidelización de Clientes a través de Internet*. Ríos-Insua, S., Bielza, C., Mateos, A., Martín, J. 103787, Registration date: 5-4-2001
2. Computer Program: *SimLin “Simulador del Comportamiento de una Línea de Clasificación de Fruta en Relación con la Aparición de Daños Mecánicos”*. Ruiz-Altisent, M., Barreiro, P., Bielza, C., García, F., García, F.J., Heradio, R., Pacios, O., Martín, J., Ríos-Insua, S., M-5928-02, Registration date: 6-30-2000
3. *Análisis de la Calidad en el Servicio*. Ríos-Insua, S., Bielza, C., Mateos, A., Martín, J., M-72228, Registration date: 3-26-1998, With effect from: 12-1-2003

#### ENTREPRENEURSHIP

- Technological Partner of company Olocip 11 S.L. (10 % stake) since March 2018 until August 2021

#### MANAGING

- Member of the Joint Committee for Secondment of Qualified Members to the Institute of Mathematical Sciences (ICMAT), 2023-2026
- Member of the Academic Council of ValgrAI (Valencian Graduate School and Research Network of Artificial Intelligence), since November 2021
- Member of the Transfer Committee of the Spanish Royal Society of Mathematics, since June 2021
- Member of the Scientific Advisory Board of NorwAI (Norwegian Research Center for AI Innovation), since 2021
- Member of Curriculum Itinerary Commission of Computer Science Degree (Technical University of Madrid), June 2009 - February 2017
- Academic Secretary of the Artificial Intelligence Department (Technical University of Madrid), May 2007 - December 2008
- Member of the Academic Planning Commission of Computer Science Degree (Technical University of Madrid), 2006-2008

#### MEMBERSHIP OF SOCIETIES

- SEIO, AEPIA, IEEE, ACM, Spanish Royal Society of Mathematics, Spanish Society of Artificial Intelligence in Biomedicine