

PERSONAL INFORMATION

Senén Barro Ameneiro



 Research Centre on Intelligent Technologies (CITIUS) - University of Santiago de Compostela (USC)

 Phone Number: +34 881 816 469  Mobile Number: +34 600 940 025

 senen.barro@usc.es

 <https://citius.usc.es/v/senen-barro-ameneiro>

 ORCID ID: [0000-0001-6035-540X](https://orcid.org/0000-0001-6035-540X)  Scopus ID: [57200671857](https://scopus.com/authid/detail.url?authorID=57200671857)

Sex Male | Date of birth 21/11/1962 | Nationality Spanish

WORK EXPERIENCE

- 2019 - Present **Scientific Director** of the Research Centre in Intelligent Technologies (CITIUS), University of Santiago de Compostela (USC)
- January 1986 - Present **Professor and Full Professor** (since June 1995) of Artificial Intelligence, University of Santiago de Compostela (USC)
- 1990- 2019 **Founder and director** of the Intelligent Systems Group of the University of Santiago de Compostela (USC)
- October 2010 – June 2017 **President** of RedEmprendia
RedEmprendia is a University Network aimed at supporting knowledge & technology transfer and entrepreneurship involving 28 of the best Latin American, Spanish, and Portuguese universities.
- June 2002 – June 2010 **Rector** of the University of Santiago de Compostela (USC)
- May 2008 – June 2010 **Vice-president** of the Conference of Rectors of Spanish Universities (CRUE)
- May 2003 – June 2010 Member of the **Steering Committee** of the Conference of Rectors of Spanish Universities (CRUE)
- June 2003 – October 2005 **President** of the ICT working group of the Conference of Rectors of Spanish Universities (CRUE)

EDUCATION AND TRAINING

- 1988 PhD in Physics, University of Santiago de Compostela EQF level 7
- 1985 Degree in Physics, University of Santiago de Compostela EQF level 8

General R&D activity and entrepreneurship indicators

R&D activity and entrepreneurship indicators	
Number of supervised PhD theses	15 (+3 in supervision)
Number of scientific publications	>80 in international journals (2 out of 3 in Q1 in last 10 years)
h-index	37 (Google Scholar, February 2022), with 7,228 citations
Resource-raising as an IP (over the past 10 years)	R&D projects: > 4 million €
	R&D contracts: > 4.2 million €
Software licensing	6 (4 were transferred for commercial exploitation)
Spin-offs creation	Situm Technologies , created in 2014 (>35 employees and > 3 million € of investment) and InVerbis Analytics , created in December 2020 (> 600k € of investment)
Articles published in mass media, social media, scientific and academic outreach (from 2015)	>200

SUMMARY

- I obtained my **B.Sc. (1985) and Ph.D. (1988) degrees (with honors)** in Physics from the University of Santiago de Compostela (USC). I am a full professor of Artificial Intelligence since 1995; **Director of the Department of Electronics and Computer Science** at the USC (1993-2002). Since July 2019 I am the **scientific director of the Research Centre on Intelligent Technologies (CiTIUS) of the USC** (the only research centre in AI in Galicia region and one of the few Spanish ones).
- **Founder of the Intelligent Systems Group (1990)**, which involves more than 50 members at present and is one of the leading Spanish research groups in terms of R&D and technology transfer indicators. This group is focused on multiple AI fields (natural language technologies, explainable AI, data and process analytics, intelligent fuzzy systems, machine learning, federated learning, and neural computing, and intelligence in mobile and autonomous systems). I have directly supervised the research training of **one out of every three PIs at CiTIUS**.
- **Rector of the University of Santiago de Compostela (USC) (2002-2012)**, promoting internationalisation, research, and entrepreneurship, and achieving on of the national eight accreditations as “Campus of International Excellence” from the Spanish Government for the main Campus (Campus Vida) of the USC (2009).
- **I chaired the Conference of Rectors of Spanish Universities (CRUE) ICT Working Group** from June 2003 until October 2005. I joined the Board of the CRUE in May 2005 and was appointed **Vice-President of the CRUE** in 2008, a position I held until the end of my term as Rector of the USC in June 2010.
- From **2010 to 2017** I was president of RedEmprendia, a network involving 28 of the most relevant Latin-American, Spanish and Portuguese universities, focused on knowledge and technology transfer, innovation, and entrepreneurship.
- I am editor or author of **seven books** including: "Fuzzy Logic in Medicine", S. Barro and R. Marín (Eds.), Springer-Verlag, 2002; author/co-author of **more than 300 scientific papers**, and I was **chair of the Organising Committee** of the IEEE International Symposium on Multiple-Valued Logic (ISMVL-1996); the International Conference on European University on Information Systems (EUNIS-2009); the 10th International Conference on Natural Language Generation (INLG2017), and the **24th European Conference on Artificial Intelligence (ECAI2020)**.

RECENT PAPERS IN INTERNATIONAL JOURNALS (selection of the last 10 years)

All other publications in international journals are listed immediately after these

- 1) M. Fernández-Delgado, J. Ribeiro, E. Cernadas, S. Barro, “Direct Parallel Perceptrons (DPPs): fast analytical calculation of the Parallel Perceptrons weights with margin control for classification tasks”, IEEE Transactions on Neural Networks, Vol. 22, No. 11, 1837-1848, 2011, ISSN: 1045-9227 (Q1; 12/111, Computer Science, Artificial Intelligence).
- 2) A. Otero, P. Félix, S. Barro y C. Zamarrón, “A structural knowledge-based proposal for the identification and characterization of apnoea episodes”, Applied Soft Computing, Vol. 12, No. 1, 516-526, 2012, <https://doi.org/10.1016/j.asoc.2011.08.009> (Q1; 23/115, Computer Science, Artificial Intelligence).
- 3) M. Lama, J.C. Vidal, E. Otero-García, A. Bugarín, S. Barro. “Semantic Linking of Learning Object Repositories to DBpedia, Journal of Educational Technology and Society, Vol. 15, No. 4, 47-61, 2012, Springer, ISSN: 1436-4522.
- 4) M. Fernández-Delgado, E. Cernadas, S. Barro, J. Ribeiro, J. Neves, “Direct Kernel Perceptron (DKP): ultra-fast kernel ELM-based classification with non-iterative closed-form weight calculation”, Neural Networks, Vol. 50, 60-71, 2014, ISSN: 0893-6080 (Q1; 18/123, Computer Science, Artificial Intelligence).
- 5) **M. Fernández-Delgado, E. Cernadas, D. Amorim, S. Barro, “Do We Need Hundreds of Classifiers to Solve Real World Classification Problems?”, Journal of Machine Learning Research, Vol. 15, 3133-3181, 2014. ISSN 1533-7928 (electronic edition) y 1532-4435 (print issue) (D1; 10/115, Computer Science, Artificial Intelligence).**

[Highly cited article. Google Scholar data (February 2022)]



This paper challenges the status quo in the field of classification problems to demonstrate we have an overabundance of low-value solutions, which have generated thousands of papers and which ultimately consume public time and resources.

- 6) **A. Ramos-Soto, A. Bugarín, S. Barro y J. Taboada, “Linguistic Descriptions for Automatic Generation of Textual Short-Term Weather Forecasts on Real**

Prediction Data”, IEEE Transactions on Fuzzy Systems, Vol. 23, No. 1, 44-57, 2015, IEEE Press, ISSN: 1063-6706. DOI: 10.1109/TFUZZ.2014.2328011 (D1; 1/130, Computer Science, Artificial Intelligence).

This paper was explicitly selected in the IEEE Computational Intelligence Magazine (Vol. 1, No. 3, pp. 5-6) as one of the highlight papers published by the journals of the IEEE Computational Intelligence Society.

- 7) S. Barro, “The Learning Cube”, Journal of Innovation Management, Vol. 3, No. 1, 9-13, 2015.
- 8) A. Ramos-Soto, B. Vázquez-Barreiros, A. Bugarín, A. Gewerc y S. Barro, “Evaluation of a Data-To-Text System for Verbalizing a Learning Analytics Dashboard”, International Journal of Intelligent Systems, Vol. 32, No. 2, 2016, (Q1; 31/133, Computer Science, Artificial Intelligence).
- 9) A. Canedo-Rodríguez, V. Alvarez-Santos, C.V. Regueiro, R. Iglesias, S. Barro, J. Presedo, “Particle filter robot localisation through robust fusion of laser, WiFi, compass, and a network of external cameras”, Information Fusion, Vol. 27, 170-188, 2016 (D1; 9/133, Computer Science, Artificial Intelligence).
- 10) A. Ramos-Soto, A. Bugarín, S. Barro, “On the role of linguistic descriptions of data in the building of Natural Language Generation systems”, Fuzzy Sets and Systems, Vol. 285, 31-51, 2016, Elsevier, 0165-0114. DOI: 10.1016/j.fss.2015.06.019 (Q1; 18/104, Computer Science, Artificial Intelligence).

This paper includes part of the analysis of the state of the art carried out in a doctoral thesis co-supervised by me, which focused on developing a model for the integration of fuzzy logic and natural language generation, together with its application to the public weather forecasting service of Galicia (Meteogalicia), resulting in a software, GALiWeather, which has been in operation on the Meteogalicia website since 2015. Among others, this thesis merited the following awards:

- National Computer Science Award Young Researchers modality, from the Spanish Scientific Society of Computer Science (SCIE) - BBVA Foundation, 2017.
- 2016 European Society for Fuzzy Logic and Technologies (EUSFLAT) Best PhD Thesis Award
- 2017 Best applied thesis of the Galician Association of Telecommunication Engineers
- 1st prize for the best app with Artificial Intelligence, Spanish Association for Artificial Intelligence (AEPIA), 2015

- 11) A. Ramos-Soto, A. Bugarín y S. Barro, “Fuzzy sets across the natural language generation pipeline”, Progress in Artificial Intelligence, Vol. 5, No. 4, 261-276, 2016, Springer.
- 12) S. Barro y S. Fernández, “Universities’ Performance in Knowledge Transfer: An Analysis of the Ibero-American Region Over the Golden Decade”, Journal of

Innovation Management, Vol. 4, No. 2, 16-29, 2016.

- 13) D. Mera, M. Fernández-Delgado, J.M. Cotos, J.R.R. Viqueira, S. Barro, "Comparison of a massive and diverse collection of ensembles and other classifiers for oil spill detection in SAR satellite images", *Neural Computing & Applications*, Vol. 28, 1101-1117, 2017, Springer, <https://doi.org/10.1007/s00521-016-2415-4> (Q1; 15/132, Computer Science, Artificial Intelligence).
- 14) S. Alawadi, M. Fernández-Delgado, D. Mera and S. Barro, "Polynomial Kernel Discriminant Analysis for 2D visualization of classification problems", *Neural Computing & Applications*, 1-17, 2017, ISSN 1433-3058 (Q1; 15/132, Computer Science, Artificial Intelligence).
- 15) A. Ramos-Soto, B. Vázquez-Barreiros, A. Bugarín, A. Gewerc, S. Barro, "Evaluation of a Data-To-Text System for Verbalizing a Learning Analytics Dashboard", *International Journal of Intelligent Systems*, Vol. 32, 177-193, 2017, Elsevier ISSN: 0884-8173. DOI: 10.1002/int.21835 (Q1; 25/132, Computer Science, Artificial Intelligence).
- 16) M.S. Sirsat, E. Cernadas, M.Fernández-Delgado and S. Barro, "Automatic prediction of village-wise soil fertility for several nutrients in India using a wide range of regression methods", *Computers and Electronics in Agriculture*, Vol. 154, 120- 133, 2018. ISSN 0168-1699 (Q2; 39/105, Computer Science, Interdisciplinary Applications; 2017 data).
- 17) M. Fernández-Delgado, M.S. Sirsat, E. Cernadas, S. Alawadi, S. Barro, M. Febrero-Bande, "An extensive experimental survey of regression methods", *Neural Networks*, Vol. 111, 11-34, 2019, ISSN 0893-6080 (D1; 7/132, Computer Science, Artificial Intelligence; 2017 data). DOI: <https://doi.org/10.1016/j.neunet.2018.12.010>
- 18) Senén Barro and Thomas H. Davenport "People and Machines: Partners in Innovation". *MIT Sloan Management Review*, Vol. 60, No. 4., 22-28, 2019 [Q1].
- 19) David Santos, Eric López, Xosé M. Pardo, Roberto Iglesias, Senén Barro and Xosé R. Fernández "Robust and fast scene recognition in robotics through the automatic identification of meaningful images" *Sensors*, vol. 19, No. 18. 2019 [Q1].
- 20) S. Alawadi, M. Fernández-Delgado, D. Mera y S. Barro, "Polynomial Kernel Discriminant Analysis for 2D visualization of classification problems", *Neural Computing and Applications*, Vol. 31, No. 8, 3515-3531, 2019 [Q2]. <https://doi.org/10.1007/s00521-017-3290-3>
- 21) D. Santos-Saavedra, R. Iglesias, X.M. Pardo, S. Barro y X.R. Fernández-Vidal, "Robust and Fast Scene Recognition in Robotics Through the Automatic Identification of Meaningful Images", *Sensors*, Vol. 19, No. 18, 2019 [Q2]. DOI: 10.3390/s19184024
- 22) F. E. Casado, G. Rodríguez, R. Iglesias, C. V. Regueiro, S. Barro y A. Canedo-Rodríguez, "Walking Recognition in Mobile Devices", accepted for publication in *Sensors*, 2020 [Q2].

- 23) Alí Hammouri, Ziad; Delgado, Manuel Fernandez; Cernadas, Eva; and Barro, Senén, "Fast SVC for large-scale classification problems", accepted for publication in IEEE Transactions on Pattern Analysis and Machine Intelligence, 2021 [Q1].
- 24) Casado, F.E., Lema, D., Criado, M.F. et al. Concept drift detection and adaptation for federated and continual learning. *Multimed Tools Appl* 81, 3397–3419 (2022). <https://doi.org/10.1007/s11042-021-11219-x>
- 25) Albtoush, A., Fernández-Delgado, M., Cernadas, E. et al. Quick extreme learning machine for large-scale classification. *Neural Comput & Applic* (2022). <https://doi.org/10.1007/s00521-021-06727-8>
- 26) Akram-Ali-Hammouri, Audi Albtoush, M. Fernández-Delgado, E. Cernadas, S. Barro Ideal kernel tuning: fast and scalable selection of the radial basis kernel spread for support vector classification. *Neurocomputing*, 2022 (aceptado). NEUCOM-D-21-03489R2.

PAPERS IN INTERNATIONAL JOURNALS (until 2010)

Later publications are listed above.

- 27) E.L. Zapata, R. Doallo y S. Barro, "A DBT-based VLSI systolic architecture for hard square error clustering", *Microprocessing and Microprogramming*, Vol. 27, 299- 305, 1989, Elsevier.
- 28) S. Barro, R. Ruiz y J. Mira, "Fuzzy beats labelling for intelligent arrhythmia monitoring", *Computers and Biomedical Research*, Vol. 23, No. 3, 240-258, 1990.
- 29) S. Barro, R. Ruiz y J. Mira, "A multi-microprocessor system for on-line monitoring in a CCU", *Med Biol Eng Comput*. Vo. 28, No. 4, 339-349, 1990.
- 30) S. Barro, R. Ruiz, J. Presedo y J. Mira, "Grammatic representation of beat sequences for fuzzy arrhythmia diagnosis", *International Journal of Bio-Medical Computing*, Vol. 27, No. 3-4, 245-259, 1991, Elsevier.
- 31) D. Cabello, S. Barro, J. M. Salceda, R. Ruiz y J. Mira, "Fuzzy K-nearest neighbor classifiers for ventricular arrhythmia detection", *International Journal of Bio-Medical Computing*, Vol. 27, No. 2, 77-93, 1991, Elsevier.
- 32) S. Barro, J. Presedo, J. Vila, R. Ruíz y F. Palacios, "Patient management in CCUs: Need for an intelligent interpretation of signals", *Expert Systems with Applications*, Vol. 6, No. 4, 421-432, 1993, DOI: 10.1016/0957-4174(93)90034-4.
- 33) R. Marín, S. Barro, A. Bosch y J. Mira, "Modeling the representation of time from a fuzzy perspective", *Cybernetics and Systems*, Vol. 25, 217-231, 1994, Taylor & Francis.
- 34) R. Marín, S. Barro, F. Palacios, R. Ruiz y F. Martín, "An approach to fuzzy temporal

- reasoning in medicine”, *Mathware & Soft Computing*, Vol. 1, No. 3, 265-276, 1994, <http://hdl.handle.net/2099/2455>.
- 35) A. Bugarín, S. Barro y R. Ruíz, “Fuzzy Control Architectures”, *Journal of Intelligent & Fuzzy Systems*, Vol. 2, No. 2, 125-146, 1994, IOS Press
- 36) A. Bugarín y S. Barro, “Fuzzy reasoning supported by Petri nets”, *IEEE Transactions on Fuzzy Systems*, Vol. 2, No. 2, 135-150, 1994, DOI: 10.1109/91.277962.
- 37) S. Barro, R. Marín, J. Mira y A. Patón, “A model and a language for the fuzzy representation and handling of time”, *Fuzzy Sets and Systems*, Vol. 61, No. 2, 153- 175, **1994**. Elsevier.
- 38) A. Bugarín y S. Barro, “Representation of fuzzy knowledge bases using Petri Nets: operation in the truth space”, *Mathware & Soft Computing*, Vol. 3, No. 3, 341-356, 1996.
- 39) J. Presedo, J. Vila, S. Barro, F. Palacios, R. Ruíz, A. Taddei y M. Emdin, “Fuzzy modelling of the expert’s knowledge in ECG-based ischemia detection”, *Fuzzy Sets and Systems*, Vol. 77, No. 1, 63-75, 1996, Elsevier, [https://doi.org/10.1016/0165-0114\(95\)00124-7](https://doi.org/10.1016/0165-0114(95)00124-7)
- 40) J. Vila, F. Palacios, J. Presedo, M. Fernández-Delgado, P. Félix y S. Barro, “Time-Frequency analysis of heart-rate variability”, *IEEE Engineering in Medicine and Biology Magazine*, Vol. 16, No. 5, 119-126, 1997, DOI: 10.1109/51.620503
- 41) J. Vila, J. Presedo, M. Fernández-Delgado, S. Barro, R. Ruíz y F. Palacios, “SUTIL: intelligent ischemia monitoring system”, *International Journal of Medical Informatics*, Vol. 47, No. 3, 193-214, 1997, Elsevier, [https://doi.org/10.1016/S1386-5056\(97\)00095-6](https://doi.org/10.1016/S1386-5056(97)00095-6)
- 42) A. Bugarín y S. Barro, “Reasoning with truth values on compacted fuzzy chained rules”, *IEEE Transactions on Systems, Man, and Cybernetics*, Vol. 28, No. 1, 34-46, 1998, DOI: 10.1109/3477.658576
- 43) M. Fernández-Delgado y S. Barro, “MART: A multichannel ART-based neural network”, *IEEE Transactions on Neural Networks*, Vol. 9, No. 1, 139-150, 1998, DOI: 10.1109/72.655035
- 44) S. Barro, M. Fernández-Delgado, J.A. Vila-Sobrino, C.V. Regueiro y E. Sánchez, “Classifying multichannel ECG patterns with an adaptive neural network”, *IEEE Engineering in Medicine and Biology Magazine*, Vol. 17, No. 1, 55-55, 1998, DOI: 10.1109/51.646221
- 45) M. Taboada, M. Lama, S. Barro, R. Marín, J. Mira y F. Palacios, “A problem-solving method for unprotocolised therapy administration task in medicine”, *Artificial Intelligence in Medicine*, Vol. 17, No. 2, 157-180, 1999
- 46) P. Cariñena, A. Bugarín, S. Fraga y S. Barro, “Enhanced Fuzzy Temporal Rules and

- Their Projection onto Fuzzy Petri Nets”, International Journal of Intelligent Systems, Vol. 14, No. 8, 775-804, 1999, DOI: 10.1002/(SICI)1098-111X(199908)14:8<775:AID-INT4>3.0.CO;2-Q
- 47) M. Lama, M. Taboada, S. Barro, R. Marin y F. Palacios, “Design of a therapeutic specialist for acute myocardial infarct”, Cybernetics and Systems, Vol. 30, No. 3, 227-248, 1999
- 48) S. Barro, P. Félix, S. Fraga y R. Marín, “Trend detection based on a fuzzy temporal profile model”, Artificial Intelligence in Engineering, Vol. 13, No. 4, 341-349, 1999, DOI: 10.1016/S0954-1810(99)00006-0
- 49) S. Barro, P. Félix, S. Fraga y R. Marín, “Linguistic Representation of Fuzzy Temporal Profiles”, International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems, Vol. 7, No. 3, 243-256, 1999, World Scientific
- 50) S. Barro, “Some Ideas Concerning Fuzzy Intelligent Systems”, Mathware & soft computing, Vol. 6, No. 2-3, 141-154, 1999.
- 51) S. Barro, D. Castro, M. Fernández-Delgado, S. Fraga, M. Lama, J. Presedo y J. Vila, “Intelligent Telemonitoring of Critical-Care Patients”, IEEE Engineering in Medicine and Biology Magazine, Vol. 18, No. 4, 80-88, 1999, DOI: 10.1109/51.775492
- 52) J. Vila, Y. Gang, J. Presedo , M. Fernández-Delgado, S. Barro y M. Malik, “A new approach for TU complex characterization”, IEEE Trans Biomed Eng., Vol. 47, No. 6, 764-772, 2000, DOI:10.1109/10.844227
- 53) P. Cariñena, A. Bugarín, M. Mucientes y S. Barro, “A language for expressing fuzzy temporal rules”, Mathware & Soft Computing, Vol. 7, No. 2-3, 213-227, 2000.
- 54) M. Mucientes, R. Iglesias, C.V. Regueiro, A. Bugarín, P. Cariñena y S. Barro, “Fuzzy temporal rules for mobile robots guidance in dynamic environments”, IEEE Transactions on Systems, Man, and Cybernetics, Vol. 31, No. 3, 391-398, 2001, DOI: 10.1109/5326.971667
- 55) P. M. Padín, R. M. Peña, , M. S. García-Martín, R. Iglesias, S. Barro y C. Herrero, “Characterization of Galician (NW Spain) Quality Brand Potatoes: A Comparison Study of Several Pattern Recognition Techniques”, Analyst, Vol. 126, 97-103, 2001, DOI: 10.1039/B007720H
- 56) F. Díaz-Hermida, P. Cariñena, A. Bugarín y S. Barro, “Probabilistic evaluation of fuzzy quantified sentences”, Mathware & Soft Computing, Vol. 8, No. 3, 255-274, 2001.
- 57) S. Barro, R. Marín, F. Palacios y R. Ruiz, “Fuzzy logic in a patient supervision system”, Artificial Intelligence in Medicine, Vol. 21, No. 1-3, 193-199, 2001, Elsevier.
- 58) P. Félix y S. Barro, “A fuzzy model for the representation and recognition of linguistically described trends”, Intelligent Data Analysis, Vol. 5, No. 6, 503-529, 2001, DOI: 10.3233/IDA-2001-5606

- 59) E. A. Fernández, P. Willshow, CA. Perazzo, J. Presedo y S. Barro, "Detection of abnormality in the electrocardiogram without prior knowledge by using the quantization error of a self-organising map, tested on the European ischemia database", *Medical & Biological Engineering & Computing*, Vol. 39, No. 3, 330- 337, 2001, DOI: 10.1007/BF02345288
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- 67) P. Cariñena, C. V. Regueiro, A. Otero, A. Bugarín y S. Barro, "Landmark Detection in Mobile Robotics Using Fuzzy Temporal Rules", *IEEE Transactions on Fuzzy Systems*, Vol. 12, No. 4., 423 – 435, **2004**, DOI: 10.1109/TFUZZ.2004.832534.
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- 69) F. Díaz-Hermida, D.E. Losada, A. Bugarín y S. Barro, "A probabilistic quantifier fuzzification mechanism: the model and its evaluation for information retrieval", *IEEE Transactions on Fuzzy Systems*, Vol. 13, No. 5, 688-700, **2005**, DOI: 10.1109/TFUZZ.2005.856557.
- 70) P. Félix, S. Barro y A. Otero, "Some Comments on the Semantics of a Fuzzy Constraint",

International Journal of Computational Cognition, Vol. 3, No. 2, 66- 73, 2005.

- 71) M. Mucientes, D.L. Moreno, A. Bugarín y S. Barro, "Evolutionary learning of a fuzzy controller for wall-following behavior in mobile robotics", *Soft Comput*, Vol. 10, No. 10, 881-889, **2006**, <https://doi.org/10.1007/s00500-005-0014-x>.
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- 76) D. Gomes, M. Fernández-Delgado y S. Barro, "Polytope ARTMAP: Pattern Classification Without Vigilance Based on General Geometry Categories", *IEEE Transactions on Neural Networks*, Vol. 18, No. 5, 1306-1325, **2007**, DOI: 10.1109/TNN.2007.894036.
- 77) R. Iglesias, F. Ares, M. Fernández-Delgado, J.A. Rodríguez, J. Bregains y S. Barro, "Element Failure Detection in Linear Antenna Arrays using Case-Based Reasoning", *IEEE Antennas and Propagation Magazine*, Vol. 50, No. 4, 198 - 204, **2008**, DOI: 10.1109/MAP.2008.4653709.
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SOME RECENT RESEARCH PROJECTS

- **NL4XAI: Interactive Natural Language Technology for Explainable Artificial Intelligence.**
Role: ETN Coordinator. Funded by the H2020-MSCA-ITN-2019. Grant Agreement No. 860621.
Overall budget: 2.843.888,04 €; CiTIUS budget: 501.809,76€.
Start date: 01.10.19; end date: 30.09.23.
Consortium: Univ. of Aberdeen, Agencia Estatal Consejo Superior de Investigaciones Científicas, Technische Universiteit Delft, Centre National de la Recherche Scientifique, Univ. of Malta, Univ. Utrecht, Univ. of Twente, Politechnika Warszawska and Indra.
- **CiTIUS: Intelligent Technologies at every step.**
Role: Principal Researcher and Scientific Director. Funded by Galicia Research Centres Programme, by the Galician Ministry of Education and University Planning, Xunta de Galicia (Regional Government).
Overall budget: 2.207.777,77€.
Start date: 01.01.20; end date: 31.10.22.
- **InVerbis: tell it in words.**
Role: Principal Researcher. Funded by the Proof of Concept Programme, by the Galician Innovation Agency (GAIN), Xunta de Galicia (Regional Government).
Overall budget: 361.217,00€.
Start date: 01.01.19; end date: 30.09.20.
- **Spin-off Lean Acceleration (SOLA).**

Role: Principal Investigator.

Funding agency: EU Erasmus+ Project. Ref.: 561897-EPP-1-2015-1-ES-EPPKA2-CBHE-JP.

Budget: 924.892 €.

Duration: 15/10/2015-14/03/2018.

SPIN-OFF CREATION

Situm Technologies S.L., created in 2014.

It is a spin-off of the USC that was born from the research carried out at CITIUS in the field of indoor localisation of autonomous mobile robots. In 2014 Situm starts the development and commercialisation of an SDK that allows mobile application developers to calculate their location inside a large building without the need for a large hardware installation in the building and with very high accuracy. Situm was included in the first Magic Quadrant, produced by Gartner in 2018, on indoor geolocation services. Situm has been backed with €3M by venture capital firms Unirisco, Xesgalicia, Prosecur Ventures, Amadeus Ventures and Swanlaab Venture Capital. This has allowed Situm's technology to be marketed today in more than 20 countries and to help millions of visitors to large buildings find their destination every month. Currently 70% of turnover is international, with Japan, the USA and the Middle East being the top three markets. In terms of sectors, airports, shopping centres and large hospital complexes make up the top 3 users of this technology.

InVerbis Analytics S.L., created in December, 2020

It is a spin-off of which I am one of the promoter-founders and is part of the research of the Intelligent Systems Group (which I created in 1990) at the confluence of two research lines: process mining and natural language generation. In 2018 we won a €360K Ignicia project from the Xunta de Galicia, which allowed us to move from the lab to the market in less than two years. In December 2020, InVerbis was created, obtaining more than €600K of investment in its first year of life. InVerbis has an algorithmic technology deployed in the cloud, through which it markets process mining services that places it in the Top 10 of Gartner Peer Insights in its category.

RESEARCH STAYS

I have done research stays in several prestigious universities, among them: University of Maryland (College Park); University of South Florida; University of California at Berkeley; University of Bristol; and Babson College, Massachusetts.

HONOURS AND AWARDS

- **National Computer Science Prize**, "José García Santesmases" (2020). Awarded by the Scientific Society in Computer Science of Spain and the BBVA Foundation.
- Fellow of the **Royal Academy of Sciences of Galicia**. Oct-2015 - present.
- **Corresponding academic** representing Galicia in the Reial Acadèmia de Doctors, 2012.

- Member of the founding team (2012) of the “Spanish Association of Scientific Entrepreneurs”.
- Galician excellence in the category of Sciences and Medicine, 2010. Awarded by the association of Galician businessmen in Catalonia.
- Member of the “Spanish Association of Technologies and Fuzzy Logic” and of the “European Society for Fuzzy Logic and Technology”. 1996-1999.
- **Lotfi Zadeh medal** awarded by the European Center for Soft Computing, 2009.
- **Doctorate Honoris Causa**, Universidad San Luis Gonzaga de Ica, Perú, 2007.
- **Doctor José Tola Pasquel Medal**, CINDA, 2006.
- **Best Paper Award** “IEEE The International Conference on Intelligent Data Science Technologies and Applications”. A. Al-Btoush, M. Fernández-Delgado, E. Cernadas and S. Barro, "Extreme learning machine with confidence interval based bias initialization," *2021 Second International Conference on Intelligent Data Science Technologies and Applications (IDSTA)*, 2021, pp. 23-30, doi: 10.1109/IDSTA53674.2021.9660822.