CURRICULUM VITÆ

Luis Manuel Fernandes Mendonça

Junho de 2017

1 Abstract

Luis Manuel Fernandes Mendonça is Adjunct Professor at the Escola Superior Náutica Infante D. Henrique (ENIDH), in Portugal.

Doctor of Philosophy in Mechanical Engineering by Instituto Superior Técnico, Technical University of Lisbon, 2007.

Master of Science in Mechanical Engineering, by Instituto Superior Técnico, Technical University of Lisbon, 1997.

Graduated in Mechanical Engineering by Instituto Superior Técnico, Technical University of Lisbon, in 1992.

In scientific terms, their preferred areas of research lie in the fields of soft computing, especially in fuzzy systems, fault tolerant control and fault diagnosis, task scheduling, health systems, decision support systems, fuzzy modeling and identification, evolving soft computing, water network distribution systems, energy management of smart buildings end transportation networks and supply chains. He has also been developing work in other areas, such as fuzzy-based control, model-based predictive control, fuzzy decision making, fuzzy modeling and identification, and genetic algorithms. His research led to a number of book chapters, scientific papers in international journals, conference papers published in Springer's Lecture Notes (referenced in the ISI Web of Science as journal papers), and papers published in proceedings of international conferences.

2 Publications

2.1 Publications in international journals

[1] Cátia M. Salgado, Susana M. Vieira, Luís F. Mendonça, Stan Finkelstein, João M. C. Sousa. "Ensemble fuzzy models in personalized medicine: Application to vasopressors administration", Engineering Applications of Artificial Intelligence 49 (2016) 141–148.

[2] João Lemos Nabais, Luís F. Mendonça, Miguel Ayala Botto, "A multi-agent architecture for diagnosing simultaneous faults along water canals", Control Engineering Practice, Vol. 31, pp. 92-106, 2014. DOI: 10.1016/j.conengprac.2013.08.015.

[3] Susana M. Vieira, Luís F. Mendonça, Gonçalo J. Farinha, João Miguel da Costa Sousa. Modified binary PSO for feature selection using SVM applied to mortality prediction of septic patients. Applied Soft Computing, 13, 3494-3504, 2013. Impact Factor in ISI: 2.140, nº C=0; DOI: **10.1016/j.asoc.2013.03.021,** Impact Factor in ISI: 2.140, WOS 000321494200007.

[4] Luís F. Mendonça, João Miguel da Costa Sousa, José M. G. Sá da Costa. Fault tolerant control using a fuzzy predictive approach. Expert Systems With Applications, Volume 39, Issue 12, 10630-10638, 2012. Impact Factor in ISI: 1.854, **DOI: 10.1016/j.eswa.2012.02.094. WOS** 000305863300031.

[5] D. Chivala, L.F. Mendonça, J.M.C. Sousa, J.M.G. Sá da Costa, "Application of evolving fuzzy modeling to fault tolerant control", in Evolving Systems, An Interdisciplinary Journal for Advanced Science and Technology, Vol. 1 (4), pp. 209-223, December 2010.

[6] L. F. Mendonça, J.M.C. Sousa and J.M.G. Sá da Costa. An architecture for fault detection and isolation based on fuzzy models. *Expert Systems With Applications*, Volume 36, Issue 2, 1092-1104, March 2009, doi:10.1016/j.eswa.2007.11.009. Impact Factor in ISI: 0.957.

[7] P. Gonçalves, L. F. Mendonça, J. M.C. Sousa and J. C. Pinto. Uncalibrated eye-to-hand visual servoing using inverse fuzzy models. *IEEE Transactions on Fuzzy Systems*, Volume 16, Issue 2, 341-353, April 2008, doi: 10.1109/TFUZZ.2007.896226. Impact Factor in ISI: 1.803.

[8] L. F. Mendonça, S. M. Vieira and J. M. C. Sousa. Decision tree search methods in fuzzy modeling and classification. *International Journal of Approximate Reasoning*, 44(2): 106-123, February 2007. Impact Factor in ISI: 1.262.

[9] L.F. Mendonça, J. M. Sousa, U. Kaymak and J.M.G. Sá da Costa. Weighting goals and constraints in fuzzy predictive control. *Journal of Inteligent and Fuzzy Systems*, 17(5): 517-532, 2006. Impact Factor in ISI: 0.283.

[10] L.F. Mendonça, J. M. Sousa and J.M.G. Sá da Costa. Optimization problems in multivariable fuzzy predictive control. *International Journal of Approximate Reasoning*, 36(3): 199-221, July 2004. (Citado 6 vezes no ISI Web of Science). Impact Factor in ISI: 1.262.

2.2 Chapters in books

[11] João Lemos Nabais, Rudy R. Negenborn, Rafael Bernardo Carmona-Benítez, Luís F. Mendonça and Miguel Ayala Botto, "Hierarchical MPC for Multi-Commodity Transportation Networks", in Distributed Model Predictive Control Made Easy, Editores José M. Maestre, Rudy R. Negenborn, pp. 535-552, Springer Science+Business Media, Dordrecht, 2014,ISBN:978-94-007-7005-8.

[12] João Lemos Nabais and Rudy R. Negenborn and Luís F. Mendonça and Rafael B. Carmona-Benítez and João Lourenço and Miguel Ayala Botto, *A Multi-agent Control Architecture for Supply Chains Using a Predictive Pull-Flow Perspective*, In: Highlights on Practical Applications of Agents and Multi-Agent Systems, ed. Juan M. Corchado, Javier Bajo, Jaroslaw Kozlak, Pawel Pawlewski, Jose M. Molina, Vicente Julian, Ricardo Azambuja Silveira, Rainer Unland, Sylvain Giroux, pages 94 - 105. ISBN: 978-3-642-38060-0. Berlin, Heidelberg: Springer Berlin Heidelberg, 2013. (doi: 10.1007/978-3-642-38061-7_10)

[13] L.F. Mendonça, J.M.C. Sousa and J.M.G. Sá da Costa. Fault detection and isolation of industrial processes using optimized fuzzy models. In V. Palade, C. Bocaniala and L. Jain, Eds., *Computational Intelligence in Fault Diagnosis*, Springer, July 2006, http://www.springer.com/west/home/computer/artificial?SGWID=4-147-22-134661302-0

[14] P.J. Gonçalves, L.F. Mendonça, J.M.C. Sousa and J. C. Pinto. Fuzzy model based control applied to image-based visual servoing. In J. Braz, H. Araújo, A. Vieira and B. Encarnação, Eds., *Informatics in Control, Automation and Robotics I*, Springer, Julho 2006, http://www.springer.com/west/home/generic/search/results?SGWID=4-40109-22-118834824-0.

[15] Sequeira Gonçalves P.J., Mendonça L.F., Sousa J.M., Caldas Pinto J.R., "Fuzzy Model Based Control Applied to Image-Based Visual Servoing", Informatics in Control, Automation and Robotics I, José Braz, Hélder Araújo, Alves Vieira, Bruno Encarnação (Eds.), Springer, 2006, ISBN: 1-4020-4136-5. Book with the best papers from the conference: ICINCO 2004.

[16] Sequeira Gonçalves P.J., Mendonça L.F., Sousa J.M., Caldas Pinto J.R.. Fuzzy Model Based Control Applied to Path Planning Visual Servoing. In Progress in Pattern Recognition, Image Analysis and Applications, Alberto Sanfeliu, José F. Martínez Trinidad, Jesús A. Carrasco Ochoa (Eds.), Lecture Notes in Computer Science, Volume 3287, Pages 224 - 231, Springer-Verlag Berlin Heidelberg, 2004. (catalogued in ISI Web of Science).

[17] Sequeira Gonçalves P.J., Mendonça L.F., Sousa J.M., Caldas Pinto J.R., "Image Recognition Applied to Robot Control Using Fuzzy Modeling", In Image Analysis and Recognition, Aurélio Campilho, Mohamed Kamel (Eds.), Lecture Notes in Computer Science, Volume 3211, Pages 253 - 260, Springer-Verlag Berlin Heidelberg, 2004. (catalogued in ISI Web of Science).

2.3 Papers in international conferences

[18] P.J.S. Gonçalves, L.F. Mendonça, J.M.C. Sousa and J.C. Pinto. Fuzzy model based control applied to path planning in visual servoing. In A. Sanfeliu, J.F.M. Trinidad, J.A.C. Ochoa (Eds.), *Lecture Notes in Computer Science 3287, Progress in Pattern Recognition, Speech and Image Analysis*, *Proc. 9th Iberoamerican Congress on Pattern Recognition, CIARP 2004*, 224-231, Puebla, Mexico, Oct. 2004.

[19] P.J.S. Gonçalves, L.F. Mendonça, J.M.C. Sousa and J.C. Pinto. Image recognition applied to robot control using fuzzy modeling. In A. Campilho and M. Kamel, Eds., *Lecture Notes in Computer Science 3211, Image Analysis and Recognition, Proc. Int. Conf. on Image Analysis and Recognition, ICIAR 2004*, pp. 253-260, Porto, Portugal, September/October 2004 (Citado 1 vez no ISI Web of Science).

[20] Marta Fernandes, Paulo Oliveira, Susana Vieira, Luís Mendonça, João Lemos Nabais and Miguel Ayala Botto, "Data Based Modeling of a Large ScaleWater Delivery System", *Proceedings of Controlo'2016 - 11th Portuguese Conference on Automatic Control*. Guimarães, Portugal, pp 797-807, Julho 2016. DOI 10.1007/978-3-319-43671-5_24

[21] Mário Assunção and Luis Mendonça, "Study of Quality Service in AIS Gateway System", *Proceedings of Controlo'2016 - 11th Portuguese Conference on Automatic Control*. Guimarães, Portugal, pp 797-807, Julho 2016. DOI 10.1007/978-3-319-43671-5_67

[22] João Pardelhas, Miguel Silva, Luis Mendonça and Luis Baptista, "Speed Control of an Experimental Pneumatic Engine", *Proceedings of Controlo'2016 - 11th Portuguese Conference on Automatic Control*. Guimarães, Portugal, pp. 821-829, Julho 2016. DOI 10.1007/978-3-319-43671-5_69

[23] Santos, R. M., Zong, Y., Sousa, J. M. C., Mendonça, L., You, S., and Mihet-Popa, L. (2016). Fuzzy Predictive Filtering in Nonlinear Economic Model Predictive Control for Demand Response. In 2016 IEEE Electrical Power and Energy Conference, 12-14 Ottawa.

[24] Santos, R. M., Zong, Y., Sousa, J. M. C., Mendonça, L., and Thavlov, A. (2016). Nonlinear Economic Model Predictive Control Strategy for Active Smart Buildings. In 2016 IEEE PES Innovative Smart Grid Technologies, Europe, 9-12 Ljubljana.

[25] João Lemos Nabais, Luís F. Mendonça, Miguel Ayala Botto, "Promoting collaborative relations at intermodal hubs using an iterative MPC Approach", 11th Portuguese Conference on Automatic Control, 10 páginas, Porto, Portugal, Julho 2014.

[26] João Lemos Nabais, Rudy R. Negenborn, Rafael Bernardo Carmona Benitez, Luís F. Mendonça, João Lourenço, Miguel Ayala Botto, "A multi-agent architecture for supply

chains using a predictive pull-flow perspective", 11th International Conference on Practical Applications of Agents and Multi-Agent Systems, pp. 94-105, Salamanca, Spain, 2013.

[27] José M. Rodrigues, André S. Fialho, Susana M. Vieira, Luis F. Mendonça and João M. C. Sousa. Data Mining and Modeling to Predict the Necessity of Vasopressors for ICU Patients. *FUZZ-IEEE 2013, 2013 IEEE International conference on Fuzzy Systems*, F-1372, July 7-10, India 2013.

[28] João Lemos Nabais and Luis F. Mendonça and Miguel Ayala Botto, Sensor fault tolerant architecture for irrigation canals, *In Proceedings of the 10th Portuguese Conference on Automatic Control*, pp.353-358, Funchal, Portugal, 2012.

[29] João Nabais, Luís F. Mendonça, Miguel Ayala Botto. New Fault Isolation Architecture for Irrigation Canals. *In 8th IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes (SafeProcess 2012).* pp. 450-455, Cidade de México, Agosto, México, 2012. doi: 10.3182/20120829-3-MX-2028.00237

[30] Susana M. Vieira, Luís F. Mendonça, Gonçalo J. Farinha, João M. C. Sousa. Metaheuristics for feature selection: Application to sepsis outcome prediction. *IEEE Congress on Evolutionary Computation 2012*, Brisbane Convention Centre Brisbane, Australia, pp. 1-8, 2012.

[31] Gonçalo J. Farinha, Susana M. Vieira, L. F. Mendonça and J.M.C. Sousa. Optimization of Fuzzy Models using a Novel PSO Algorithm: Application to Sepsis Outcome Prediction. Proc. of IFAC 2011, 18th IFAC World Congress, Volume 18, Part 1. August 28-September 2, 2011.

[32] D. Chivala, L.F. Mendonça, J.M.C. Sousa, J.M.G. Sá da Costa. Fault tolerant control using evolving fuzzy modeling. WCCI 2010 IEEE World Congress on Computational Intelligence, pp.1455-1462, 18-23 July 2010.

[33] L.F. Mendonça, J.M.C. Sousa and J.M.G. Sá da Costa. Weighted fault tolerant control of a three tank benchmark using predictive control. Accepted in *8th Portuguese Conference on Automatic Control, CONTROLO'2008*, Vila Real, Portugal, July 2008.

[34] L.F. Mendonça, J.M.C. Sousa and J.M.G. Sá da Costa. Fault accommodation of an experimental three tank system using fuzzy predictive control. *IEEE World Congress on Computational Intelligence, WCCI 2008*, pp. 1619 – 1625, Hong Kong, China, June 2008.

[35] L.F. Mendonça, J.M.C. Sousa and J.M.G. Sá da Costa. Fault tolerant control of a three tank benchmark using weighted predictive control. In O. Castillo, P. Mellin, J. Kacprzyk and W. Pedrycz, editors, *Lecture Notes in Artificial Intelligence 4529, Foundations of Fuzzy Logic and Soft Computing, Proc.12th International Fuzzy Systems Association World Congress, IFSA 2007*, pp. 732-742, Cancun, Mexico, June 2007.

[36] L.F. Mendonça, J.M.C. Sousa and J.M.G. Sá da Costa. Fault tolerant control of a three tank benchmark using predictive control. In *Proc. 7th Portuguese Conference on Automatic Control, Controlo 2006*, Session MP-2: Fault Detection and Isolation, Lisbon, Portugal, Set. 2006.

[37] L.F. Mendonça, C.A. Silva, and L.F. Baptista. Fuzzy fault tolerant control in electro hydraulic marine control systems. In *Proceedings of MCMC'2006, 7th IFAC Conference on Manoeuvring and Control of Marine Craft, Session WeC-2, Fault Detection and Tolerant Systems*, Lisbon, Portugal, 20-22 September 2006.

[38] L.F. Mendonça, J.M.C. Sousa and J.M.G. Sá da Costa. Fault tolerant control using fuzzy MPC. *Proc. of Safeprocess 2006, 6th IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes*, pp. 1501-1506, Beijing, China, Agosto 2006.

[39] L.F. Mendonça, J.M.C. Sousa and J.M.G. Sá da Costa. Fault isolation using fuzzy model-based observers. *Proc. of Safeprocess 2006, 6th IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes*, pp. 781-786, Beijing, China, Agosto 2006.

[40] L.F. Mendonça, S.M. Vieira, J.M.C. Sousa and J.M.G. Sá da Costa. Fault accommodation using fuzzy predictive control. In *Proc. 2006 IEEE International Conference on Fuzzy Systems, World Congress on Computational Intelligence*, pp. 7306-7313, Vancouver, Canada, July 2006 (apresentado oralmente por L.F. Mendonça, que ganhou o prémio de melhor artigo na sessão).

[41] L.F. Mendonça, S.M. Vieira and J.M.C. Sousa. Regularity criterion in multivariable dynamic fuzzy modeling of industrial processes. *Proceedings of the 11th World Congress of International Fuzzy Systems Association*, Vol. II, pp. 1167-1173, Beijing, China, July 2005.

[42] L.F. Mendonça, J.M.C. Sousa and J.M.G. Sá da Costa. Fault detection and isolation using optimized fuzzy models. *Proc. 11th International Fuzzy Systems Association World Congress,* Beijing, China, Vol. II, pp. 1125-1131, July 2005.

[43] S. M. Vieira, L. F. Mendonça and J.M.C. Sousa. Modified regularity criterion in dynamic fuzzy modeling applied to industrial processes. *Proc. 2005 IEEE International Conference on Fuzzy Systems, FUZZ-IEEE'2005*, pp. 483-488, Reno, U.S.A., May 2005.

[44] L.F. Mendonça, J.M.C. Sousa and J.M.G. Sa' da Costa. Fault detection and isolation of industrial processes using optimized fuzzy models. *Proc. 2005 IEEE International Conference on Fuzzy Systems, FUZZ-IEEE'2005*, pp. 851-856, Reno, U.S.A., May 2005.

[45] P. J. Gonçalves, L. F. Mendonça, J. M. Sousa and J. C. Pinto. Fuzzy model based control applied to image-based visual servoing. *Proc. IEEE International Conference on Informatics in Control, Automation and Robotics, ICINCO'2004*, pp. 143-150, Setúbal, Portugal, Agosto 2004.

[46] P. J. Gonçalves, L. F. Mendonça, J. M. Sousa and J. C. Pinto. Improving visual servoing using fuzzy filters. *Proc. IEEE International Conference on Fuzzy Systems, FUZZ-IEEE'2004*, pp. 1185-1190, Budapest, Hungary, Julho 2004. (catalogued in ISI and IEEE digital library)

[47] P. J. Gonçalves, L. F. Mendonça, J. M. Sousa and J. C. Pinto. Fuzzy filters applied to path planning visual servoing. *Proc. 6th Portuguese Conference on Automatic Control, Controlo'2004*, pp. 363-368, Faro, Portugal, Junho 2004.

[48] L. F. Mendonça, J. M. Sousa and J.M.G. Sá da Costa. Fuzzy model-based fault detection and isolation. *Proceedings of 9th IEEE International Conference on Emerging Technologies and Factory Automation, ETFA'2003*, pp. 768-774, Lisbon, Portugal, Setembro 2003.

[49] L. F. Mendonça, J.M.G. Sá da Costa and J. M. Sousa. Fault detection and diagnosis using fuzzy models. *Proc. of European Control Conference, ECC'2003*, pp. Session Fault Diagnosis 2, 1-6, Cambridge, United Kingdom, Setembro 2003.

[50] L.F. Mendonça, J. M. Sousa, U. Kaymak and J.M.G. Sá da Costa. Fuzzy issues in multivariable predictive control. *Proc. of 2003 IEEE International Conference on Fuzzy Systems, FUZZ-IEEE'2003,* pp. 506-511, St. Louis, USA, Maio 2003.

[51] L. F. Mendonça, J. M. Sousa and J.M.G. Sá da Costa. Comparison of classical and fuzzy multi-variable control. *Proceedings 5th Portuguese Conference on Automatic Control, Controlo'2002*, pp.19-24, Aveiro, Portugal, Setembro 2002.

[52] L. F. Mendonça, J. M. Sousa and J.M.G. Sá da Costa. Weighted criteria in multivariable fuzzy predictive control. *Proceedings 15th World Congress of the International Federation of Automatic Control, IFAC'2002*, Session T-Mo-M04, pp. 1-6, Barcelona, Spain, Julho 2002.

[53] L. F. Mendonça, J. M. Sousa, U. Kaymak and J.M.G. Sá da Costa. Fuzzy objective functions in multivariable predictive control. *Proceedings of 10th Mediterranean Conference on Control and Automation, MED'2002*, Session WP 4-1, pp. 1-10, Lisbon, Portugal, Julho 2002.

[54] J.M. Sousa, L.F. Mendonça and J. M. Sá da Costa. Fuzzy filters applied to predictive control of MIMO processes. *Proceedings of the European Control Conference, ECC'2001*, pp. 108-113, Porto, Portugal, Setembro 2001, (Citado uma vez no ISI Web of Science).

[55] L. F. Mendonça. Optimization issues in nonlinear model predictive control of MIMO systems. *Student forum of the European Control Conference, ECC'2001*, pp. 5-8, Porto, Portugal, September 2001.

[56] L.F. Mendonça, C.A. Silva and J.M. Sousa. Branch-and-bound optimization in model predictive control applied to MIMO systems. *Proceedings of Controlo'2000 - 4th Portuguese Conference on Automatic Control*. Guimarães, Portugal, pp. 43-48, Outubro 2000.

[57] L. Mendonça, C. Cardeira, P. Medina Martins. Fuzzy Concepts Applied to Preemtive Real-Time Tasks Scheduling, *Proceedings of 4th IFAC WORKSHOP on Algorithms and Architectures for Real-Time Control*, pp 135-140, Vilamoura, Portugal, April, 1997.