DORIS SÁEZ HUEICHAPAN

Full Professor, Department of Electrical Engineering, University of Chile
Date and Place of Birth: July 26th, 1971, Chile
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EDUCATION

- Doctor in Engineering Sciences, Pontificia Universidad Católica de Chile, December 2000.
- Master in Engineering Sciences, Pontificia Universidad Católica de Chile, August 1995.
- Civil Engineering, Mayor in Electrical Engineering, Pontificia Universidad Católica de Chile, August 1995.
- Bachelor in Engineering Sciences, Pontificia Universidad Católica de Chile, March 1993.

POSITIONS

2018- Date	Full Professor, Department of Electrical Engineering, University of Chile.
2010 – 2018	Associate Professor, Department of Electrical Engineering, University of Chile.
2003-2010	Assistant Professor, Department of Electrical Engineering, University of Chile.
1997 - Date	Faculty Member, Department of Electrical Engineering, University of Chile.

JOURNAL ASSOCIATE EDITOR

2017 - Date	Associate Editor *IEEE Control Systems Magazine* (5-years Impact Factor: 4.884).
2011 - Date	Associate Editor *IEEE Transactions on Fuzzy Systems* (5-years Impact Factor: 8.290).
2012-2013	Associate Editor *Soft Computing* (5-years Impact Factor: 2.220).

PARTICIPATION IN SCIENTIFIC SOCIETIES

2011-2013	Chair of Chilean Chapter IEEE Computational Intelligence Society.
2009-2010	Vice-Chair of IEEE Chile Section.
2007-2008	Chair of IEEE Chile Section.
2008	Member of Ad Hoc Committee on IEEE as a Model Global Association.
2005 - Date	Senior Member IEEE.

PUBLICATIONS

- **BOOKS & BOOKS CHAPTERS**

[1] Núñez, A., **Sáez, D.**, Cortés, C. "Hybrid Predictive Control for Dynamic Transport Problems", Springer-Verlag London, Series Advances in Industrial Control, England, 2013, 172 Pages, ISBN-10: 1447143507 | ISBN-13: 978-1447143505.

[2] **Sáez, D.**, Cipriano, A., Ordys, A. "Optimization of Industrial Processes at Supervisory Level: Application to Control of Thermal Power Plants". Springer-Verlag London, Series Advances in Industrial Control, England, 2002, 187 Pages. ISBN: 1852333863.

[3] **Sáez, D.**, Cipriano, A. "Supervisory Predictive Control of a Combined Cycle Thermal Power Plant", Book Chapter "Thermal power plant simulation, monitor and control", Edited by D. Flynn; IEE, The Institution of Electrical Engineering, 2003, United Kingdom, pp. 161-178, ISBN: 0 85296 419 6.

- **ISI JOURNAL ARTICLES** (IF5: 5-year journal impact factor)

[1] Jaramillo, F., Orchard, M., Muñoz, C., Antileo, C., **Sáez, D.,** Espinoza, P., "On-line estimation of the aerobic phase length for partial nitrification processes in SBR based on features extraction and SVM classification", Chemical Engineering Journal, Vol. 331, pp. 114-123, 2018. (IF5: 6.159).

[2] Bayas, A., Skrjanc, I., **Sáez, D.,** "Design of Fuzzy Robust Control Strategies for a Distributed Solar Collector Field". Applied Soft Computing. 2018. (IF5: 3.811).

[3] Donoso, F., Cárdenas, R., Mora, A., Angulo, A., **Sáez, D.**, Rivera, M., "Finite-Set Model Predictive Control Strategies for a 3L-NPC Inverter Operating with Fixed Switching Frequency". IEEE Transactions on Industrial Electronics, 2018. (IF5: 7.829).

[4] Llanos, J., Morales, R., Núñez, A., **Sáez, D.**, Lacalle, M., Marín, L., Hernández, R., Lanas, F. "Load Estimation for Microgrid Planning based on a Self-Organizing Map Methodology", Applied Soft Computing, Vol. 53, pp. 323–335, 2017 (IF5: 3.811).

[5] Roje, T., Marín, L., **Sáez, D.**, Orchard, M., Jiménez, G., "Consumption modeling based on Markov chains and Bayesian networks for a demand side management design of isolated microgrids", International Journal of Energy Research, Vol. 41, pp. 365-376, 2017 (IF5: 2.430).

[6] Burgos, C., Hernández, C., Cárdenas, R., **Sáez, D.**, Sumner, M., Costabeber, A., Morales, H., "Experimental Evaluation of a CPT-Based 4-Leg Active Power Compensator for Distribution Generation", IEEE Journal of Emerging and Selected Topics in Power Electronics, Vol. 5, No. 2, pp. 747-759, June 2017. (IF5: 5.230).

[7] Ponce, C., **Sáez, D.**, Bordons, C., Núñez, A., "Dynamic simulator and model predictive control of an integrated solar combined cycle plant", Energy, Vol. 109, pp. 974-986. 2016 (IF5: 5.182).

[8] Cortés, C., Rey, P., **Sáez, D.**, "Selected papers from the eighth Triennial Symposium on Transportation Analysis (TRISTAN VIII): Special Issue on Advances in transportation and logistics", Editorial in Transportation Research Part C, Vol. 70, pp. 98-99, Sept. 2016 (IF5: 4.334).

[9] L. Tarisciotti, G. Lo Calzo, A. Gaeta, P. Zanchetta, F. Valencia, and **D. Sáez**, "A Distributed Model Predictive Control Strategy for Back-to-Back Converters", IEEE Transactions on Industrial Electronics, Vol. 63, No. 9, pp. 5867-5878, Sept. 2016 (IF5: 7.829).

[10] Valencia, F., Collado, J., **Sáez, D.**, Marín, L., "Robust Energy Management System for a Microgrid Based on a Fuzzy Prediction Interval Model", IEEE Transactions on Smart Grid, Vol. 7, No. 3, pp. 1486-1494, Mayo 2016 (IF5: 8.315).
[11] Ahumada, C., Cárdenas, R., **Sáez, D.**, Guerrero, J., "Secondary Control Strategies for Frequency Restoration in Islanded Microgrids with Consideration of Communication Delays", IEEE Transactions on Smart Grid, Vol. 7, No. 3, pp. 1430-1441, May 2016 (IF5: 8.315).
[12] C. Burgos, M. Orchard, M. Kazerani, R. Cárdenas, **D. Sáez**, "Particle-Filtering-Based Estimation of Maximum Available Power State in Lithium-Ion Batteries", Applied Energy, Vol. 161, pp. 349-363, January 2016 (IF5: 7.500).
[13] Valencia, F., **Sáez, D.**, Collado, J. Avila, F., Marquez, A., Espinosa, J. "Robust Energy Management System Based on Interval-Fuzzy-Models", IEEE Transactions on Control Systems Technology, Vol. 24, No. 1, pp. 140–157, January 2016 (IF5: 4.444).
[14] **Sáez, D.**, Ávila, F., Olivares, D., Cañizares, C., Marin, L. "Fuzzy Prediction Interval Models for Forecasting Renewable Resources and Loads in Microgrids", IEEE Transactions on Smart Grid, Vol. 6, No. 2, pp. 548-556, 2015 (IF5: 8.315).
[15] Burgos, C., **Sáez, D.**, Orchard, M., Cárdenas, R. "Fuzzy Modelling for the State-of-charge Estimation of Lead-acid Batteries", Journal of Power Sources, Vol. 274, pp. 355-366, 2015 (IF5: 6.117).
[16] Muñoz, D., **Sáez, D.**, Cortés, C.E., Núñez, A., "A Methodology based on Evolutionary Algorithms to Solve Dynamic Pickup and Delivery Problem under Hybrid Predictive Control Approach", Transportation Science, Vol. 49, No. 2, pp. 239-253, 2015 (IF5: 4.217).
[17] Núñez, A., C.E. Cortés, **D. Sáez**, B. De Schutter, M. Gendreau, "Multiobjective Model Predictive Control for Dynamic Pickup and Delivery Problems", Control Engineering Practice, Vol. 32, pp. 73-86, 2014 (IF5: 3.090).
[18] Ponce, C., **Sáez, D.**, Núñez, A. "Fuzzy Predictive Control Strategy for a Distributed Solar Collector Plant", IEEE Latin America Transactions, Vol. 12, N°4, pp. 626-633, 2014 (IF5: 0.583).
[19] Núñez, A., De Schutter, B., **Sáez, D.**, Škrjanc, I., "Hybrid-Fuzzy Modeling and Identification", Applied Soft Computing, Vol. 17, pp. 67-78, 2014 (IF5: 3.811).
[20] Muñoz, J. C., Cortés C., Giesen R., **Sáez D.**, Delgado F., Valencia F., Cipriano A., "Comparison of Dynamic Control Strategies for Transit Operations", Transportation Research Part C: Emerging Technologies, Vol. 28, pp. 101–113, 2013 (IF5: 4.334).
[21] Palma-Behnke, R., Benavides, C., Lanas, F., Severino, B., Reyes, L., Llanos, J., **Sáez, D.** "A Microgrid Energy Management System Based on the Rolling Horizon Strategy", IEEE Transactions on Smart Grid, Vol. 4, No. 2, pp. 996-1006, 2013 (IF5: 8.315).
[22] Matus, M., **Sáez, D.**, Favley, M., Suazo, C., Moya, J., Jimenez-Estevez, G., Palma-Behnke, R., Olguin, G., Jorquera, P., "Identification of Critical Spans for Monitoring Systems in Dynamic Thermal Rating", IEEE Transactions on Power Delivery, Vol. 27, No. 2, pp. 1002-1009, 2012 (IF5: 3.856).
[23] Milla, F., **Sáez, D.**, Cortés, C.E., Cipriano, A., "Bus-stop Control Strategies Based on Fuzzy Rules for the Operation of a Public Transport System", IEEE Transactions on Intelligent Transportation Systems, Vol. 13, No. 3, pp. 1394-1403, Sept. 2012 (IF5: 4.467).
[24] **Sáez D.**, Cortés C.E., Milla F., Riquelme M., Núñez A, Tirachini, A. "Hybrid Predictive Control Strategy for a Public Transport System with Uncertain Demand", Transportmetrica, Vol. 8, No. 1, pp. 61-86, 2012 (IF5: 2.684).
[25] Cortés, C.E., **Sáez, D.**, Milla, F., Riquelme, M., Núñez, A. "Hybrid Predictive Control for Real-time Optimization of Public Transport System' Operations based on Evolutionary Multiobjective Optimization", Transportation Research Part C-Emerging Technologies, Vol. 18, No. 5, pp. 757-769, 2010 (IF5: 4.334).

[26] Núñez, A., **Sáez, D.**, Oblak, S., Skrjanc, I. "Fuzzy-Model-Based Hybrid Predictive Control". ISA Transactions, Vol. 48, Nº 1, pp. 24-31, 2009 (IF5: 3.488).
[27] Cortés, C.E., **Sáez, D.**, Núñez, A., Muñoz-Carpintero, D. "Hybrid Adaptive Predictive Control for a Dynamic Pick-up and Delivery Problem". Transportation Science, Vol. 43, Nº1, 2009, pp. 27-42, 2009 (IF5: 4.217).
[28] **Sáez D.**, Berenguel M., "Applications on Hybrid Predictive Control", International Journal of Adaptive Control and Signal Processing, Vol.22, Nº2, pp. 101-102, 2008. (IF5: 1.849).
[29] Causa, J., Karer, G., Núñez, A., **Sáez, D.**, Skrjanc, I., Zupancic, B. "Hybrid Fuzzy Predictive Control based on Genetic Algorithm for the Temperature Control of a Batch Reactor". Computers & Chemical Engineering, Vol. 32, Nº12, pp. 3254-3263, 2008 (IF5: 3.041).
[30] **Sáez, D.**, Cortés C.E., Núñez, A. "Hybrid Adaptive Predictive Control for the Multi-Vehicle Dynamic Pickup and Delivery Problem based on Genetic Algorithms and Fuzzy Clustering". Special Issue "Real-time Supply Chain Management" of Computers & Operations Research, Vol 35, Nª11, pp. 3412-3438, 2008 (IF5: 2.829).
[31] Cortés, C.E., Núñez, A., **Sáez, D.** "Hybrid Adaptive Predictive Control for a Dynamic Pickup and Delivery Problem including Traffic Congestion". International Journal of Adaptive Control and Signal Processing. Vol. 22, Nº 2, pp. 103-123, 2008 (IF5: 1.849).
[32] **Sáez, D.**, Zúñiga, R., Cipriano, A. "Adaptive Hybrid Predictive Control for a Combined Cycle Power Plant Optimization" International Journal of Adaptive Control and Signal Processing. Vol. 22, Nº 2, pp.198-220, 2008 (IF5: 1.849).
[33] **Sáez, D.**, Milla, F., Vargas L. "Fuzzy Predictive Supervisory Control based on Genetic Algorithms for Gas Turbines of Combined Cycle Power Plants", IEEE Transactions on Energy Conversion, Vol. 22, Nº 3, pp. 689- 696, 2007 (IF5: 4.662).
[34] **Sáez, D.**, Ordys, A., Grimble, J. "Design of a Supervisory Predictive Controller and its Applications to Thermal Power Plants", Optimal Control Applications and Methods, Wiley Journal. Vol. 26, Nº 4, pp. 169-198, 2005 (IF5: 1.667).
[35] Corona, A., **Sáez, D.**, Agosín, E. "Effect of Water Activity on Gibberellic Acid Production by Gibberella Fujikuroi Under Solid State Fermentation Conditions". Process Biochemistry, Vol. 40, Nº 8, pp. 2655-2658, 2005. (IF5: 2.964).
[36] Flores, A., **Sáez, D.**, Araya, J., Berenguel, M., Cipriano, A. "Fuzzy Predictive Control of a Solar Power Plant". IEEE Transactions on Fuzzy Systems, Vol. 13, Nº 1, pp. 58-68, 2005. (IF5: 8.290).
[37] **Sáez, D.**, Book Review "Genetic Algorithms", Authors: K. F. Man, K. S. Tang, S. Kwong, Springer-Verlag, ISBN 1-85233-072-4, International Journal of Adaptive Control and Signal Processing, Vol. 19, Nº1, pp. 59, 2005. (IF5: 1.849).
[38] **Sáez, D.**, Book Review "Fuzzy Control Systems Design and Analysis. A Linear Matrix Inequality Approach", Authors: K. Tanaka and H. Wang, Wiley Interscience, ISBN 0-471-32324-1. International Journal of Adaptive Control and Signal Processing, Vol. 19, Nº1, pp. 61-62, 2005. (IF5: 1.849).
[39] Hernández, S., **Sáez, D.**, Mery, D. "Neuro-Fuzzy Method for Automated Defect Detection in Aluminium Castings". Lecture Notes in Computer Science, LNCS 3212 pp. 826-833, 2004, ISSN 0302-9743, ISBN 3-540-23240-0. (IF5: 0.402).
[40] **Sáez, D.**, Cipriano, A. "A New Method for Structure Identification of Fuzzy Models and its Application to a Combined Cycle Power Plant". Engineering Intelligent Systems for Electrical Engineering and Communications, Vol. 9, Nº 2, pp. 101-107, 2001. (IF5: 0.168).
[41] **Sáez, D.**, Book Review "Non-Linear Model Based Process Control", Authors R. Ansari and M. Tadé, Springer-Verlag, ISBN 1430-9491, International Journal of Adaptive Control and Signal Processing, Vol. 15, Nº4, pp. 427, 2001. (IF5: 1.849).

- **INTERNATIONAL CONFERENCES**

[1] Caquilpan, V., **Sáez, D.,** Hernández, R., Llanos, J., Roje, T., Nuñez, A. "Load Estimation Based on Self-Organizing Maps and Bayesian Networks for the Microgrids Design", IEEE PES Innovative Smart Grid Technologies Latin America, ISGT-LA 2017, Quito, Ecuador, September 20-22, 2017.

[2] Morales, R., **Sáez, D.,** Marin, L., Nuñez, A., "Microgrid Planning based on Fuzzy Interval Models of Renewable Resources", IEEE International Conference on Fuzzy Systems, WCCI 2016, Vancouver, Canada, July 24-29, 2016.

[3] Andonovski, G., Bayas, **Sáez, D.,** Skrjanc, I., "Robust Evolving Cloud-based Control for the Distributed Solar Collector Field", IEEE International Conference on Fuzzy Systems, WCCI 2016, Vancouver, Canada, July 24-29, 2016.

[4] Marin, L., Valencia, F., **Sáez, D.,** "Prediction Interval based on type-2 Fuzzy Systems for Wind Power Generation and Loads in Microgrid Control Design", IEEE International Conference on Fuzzy Systems, WCCI 2016, Vancouver, Canada, July 24-29, 2016.

[5] Cortés, C., **Sáez D.,** Valencia, F., Clavería, R., Milla, F. "Distributed fuzzy control applied to a two-line transit system with transfers" LAND-TRANSLOG, Joint Workshop on Location and Network Design – Transportation and Logistics, Santa Cruz, Chile, March 13-17, 2016.

[6] Veltman F., Marin L., **Sáez D.,** Núñez, A., Gutiérrez, L., "Prediction Interval Modeling Tuned by an Improved Teaching Learning Algorithm Applied to Load Forecasting in Microgrids", 2015 IEEE Symposium Series on Computational Intelligence, SSCI 2015, Cape Town, South Africa, December 8-10, 2015.

[7] Ávila, F., Cañizares, C., **Sáez, D.,** and Valencia, F., "Load Modelling Using Affine Arithmetic for Demand Side Management", IEEE/PES Innovative Smart Grid Technologies Latin America, Montevideo, Uruguay, October 5-7, 2015

[8] Morales, R., Valencia, F., **Sáez, D.,** Lacalle, M., "Supervisory Fuzzy Predictive Control for a Concentrated Solar Power Plant", 19th IFAC World Congress, Cape Town, South Africa, August 24-29, 2014.

[9] Gutiérrez, L., Valencia, F., **Sáez, D.,** "New Fuzzy Model with Second Order Terms for the Design of a Predictive Control Strategy", 2014 IEEE International Conference on Fuzzy Systems, WCCI 2014, Beijing, China, July 6-11, 2014.

[10] Avila, F., **Sáez, D**., Jiménez-Estévez, G., Reyes L., Núñez, A. "Fuzzy Demand Forecasting in a Predictive Control Strategy for a Renewable-energy based Microgrid", Proceedings of the European Control Conference ECC 2013, Zurich, Switzerland, July 17-19, 2013.

[11] Vargas-Serrano, A., **Sáez, D.,** Reyes, L., Severino, B., Palma-Behnke, R., Cárdenas-Dobson, R., "Design and Experimental Validation of a Dual Mode VSI Control System for a Micro-grid with Multiple Generators", Proceedings of the 38th Annual Conference of the IEEE Industrial Electronics Society, Montreal, Canada, October 24-28, 2012.

[12] Bustos, G., Vargas, L., Milla, F., **Sáez, D.,** Zareipou, H., "Comparison of Fixed Speed Wind Turbines Models: A Case Study", Proceedings of the 38th Annual Conference of the IEEE Industrial Electronics Society, Montreal, Canada, October 24-28, 2012.

[13] Llanos, J., **Sáez, D.,** Palma-Behnke, R., Núñez, A., Jiménez-Estévez, G. "Load Profile Generator and Load Forecasting for a Renewable Based Microgrid Using Self Organizing Maps and Neural Networks", 2012 International Joint Conference on Neural Networks, Brisbane, Australia, June 10-15, 2012.

[14] Núñez, A., **Sáez, D.,** Škrjanc, I., De Schutter, B., "A New Method for Hybrid-fuzzy identification", Proceedings of the 18th IFAC World Congress, Milano, Italy, August 28 - September 2, 2011.

[15] Núñez, A., **Sáez, D.,** Cortés, CE., Gendreau, M., De Schutter, B., "Multiobjective model predictive control applied to a dial-a-ride system", Proceedings of the 90th Annual Meeting of the Transportation Research Board, Washington, USA, January 23-27, 2011.
[16] Palma-Behnke R., Benavides C., Aranda E., Llanos J., **Sáez D.** "Energy Management System for a Renewable based Microgrid with a Demand Side Management Mechanism", IEEE Symposium Series on Computational Intelligence - SSCI 2011, Paris, France, April 11-15, 2011.
[17] Muñoz-Carpintero, D., **Sáez, D.,** Skrjanc, I. "Hybrid Predictive Control Design with Mixed Inputs based on PSO and its Application for Control of a Batch Reactor", IEEE WCCI2010, IEEE Congress on Evolutionary Computation, Barcelona, July 20-25, 2010.
[18] Muñoz-Carpintero, D., Núñez, A., **Sáez, D.,** Cortés, C.E. "Evolutionary Algorithms and Fuzzy Clustering for Control of a Dynamic Vehicle Routing Problem Oriented to User Policy", IEEE WCCI2010, IEEE Congress on Evolutionary Computation, Barcelona, July 20-25, 2010.
[19] Muñoz, J., Giesen, R., Delgado, F., Cipriano, A., Cortés, C.E**., Sáez, D.,** Valencia, F. "Comparison of control strategies for real-time optimization of public transport systems", Triennial Symposium on Transportation Analysis (TRISTAN 2010), Tromso, Norway, June 20-25, 2010.
[20] Núñez, A., Cortés, C., Sáez, D., Gendreau, M. "Multiobjective Hybrid Predictive Control Applied to a Dial-A-Ride System". TRANSLOG, Transportation and Logistics Workshop, December 8-11, 2009.
[21] Milla, F., **Sáez, D.,** Vargas, L. "Combined Cycle Power Plant Optimization Based on Supervisory Predictive Controllers", European Control Conference ECC 2009, Budapest, Hungary, August 23-26, 2009.
[22] Otarola, G., Cortés, C.E., **Sáez, D.** "Hybrid Predictive Control Based on Traffic Signal Priority for Public Transport Systems", European Control Conference ECC 2009, Budapest, Hungary, August 23-26, 2009.
[23] **Sáez, D.,** Cortés, C.E., Pillajo, A. "Real-time Control Strategies for a Public Transport System based on Fleet Assignment Operational Schemes", Fourth International Workshop on Freight Transportation and Logistics, Odysseus 2009, Çeşme, İzmir, Turquía, May 26-29, 2009.
[24] Cortés, C.E., **Sáez, D.,** Núñez, A., Gendreau, M. "Hybrid Predictive Control for the Dynamic Pick-up and Delivery Problem with Variable Fleet Size based on an Evolutionary Multiobjective Optimization Approach (EMO)". International Federation of Operational Research Societies Conference, IFORS 2008, Sandton, South Africa, July 13-18, 2008.
[25] Causa, J., Karer, G., Núñez, A., **Sáez, D.,** Skrjanc, I., Zupancic, B. "Hybrid Fuzzy Predictive Control of a Batch Reactor using Branch and >Bound and a Genetic Algorithm Approach", 17th IFAC World Congress, Seoul, Korea, pp. 8381-8386, July 6-11, 2008.
[26] Núñez, A., **Sáez, D.,** Cortés, C.E. "Hybrid Predictive Control for the Vehicle Dynamic Routing Problem based on Evolutionary Multiobjective Optimization (EMO)". 17th IFAC World Congress, Seoul, Korea, pp. 13085-13090, July 6-11, 2008.
[27] Torres, P, **Sáez, D.** "Type-2 Fuzzy Logic Identification Applied to the Modeling of a Robot Hand", 2008 IEEE World Congress on Computational Intelligence (WCCI2008), Hong Kong, China, pp. 854-861, June 1-6, 2008. Seleccionado para Best Student Paper de la conferencia.
[28] Medina, P., **Sáez, D.,** Roman, R. "On Line Fault Detection and Isolation in Gas Turbines Combustion Chambers", ASME Turbo Expo 2008: Power for Land, Sea and Air, Berlin, Germany, June 9-13, 2008.
[29] **Sáez, D.,** Cortes, C., Núñez, A., Riquelme, M., Milla, F., Otarola, G. "Hybrid Predictive Control for Real-Time Optimization of Public Transport Systems' Operations". Bus Rapid Transit International Workshop, Santiago, Chile, August 26-29, 2008.

[30] Núñez, A., Cortés, C.E., **Sáez, D.,** Riquelme, M., "Hybrid Predictive Control for Real-time Optimization of Public Transport System' Operations based on Evolutionary Multiobjective Optimization". 10th International Conference on Application of Advanced Technologies in Transportation, Greece, pp. 2326-2331, May 27-31, 2008.
[31] **Sáez, D.,** Núñez, A., Oblak, S., Skrjanc, I. "Hybrid Fuzzy Predictive Control based on Evolutionary Multiobjective Optimization". Eurosim 2007, Ljubljana, Slovenia. September 9-13, 2007.
[32] **Sáez, D.,** Milla, F., Ordys, A. "Hybrid Predictive Supervisory Control Based on Genetic Algorithms for a Gas Turbine of Combined Cycle Power Plants" European Control Conference 2007, Kos, Greece, July 2-5, 2007.
[33] Cortés, C.E., **Sáez, D.,** Sáez, E., Núñez, A., Tirachini, A. "Hybrid Predictive Control Strategy for a Public Transport System with Uncertain Demand", Sixth Triennial Symposium on Transportation Analysis TRISTAN 2007, Phuket Island, Thailand, June 10-15, 2007.
[34] **Sáez, D.,** Uribe, R. "Methodological Innovation in Electrical Engineering Department Control Systems Course", 3rd International CDIO Conference, MIT, Cambridge, Massachusetts, June 11-14, 2007.
[35] **Sáez, D.,** Ordys, A. "Comparison of Optimal Control Strategies for Supervisory and Regulatory Level", International Conference Control 2006 Glasgow, Scotland, 30th August to 1st September, Nº 249, 6 pages, 2006.
[36] Núñez, A., Oblak, S., **Sáez, D.,** Skjranc, I. "Hybrid Predictive Control based on Fuzzy Model". 2006 IEEE World Congress on Computational Intelligence, International Conference on Fuzzy Systems Vancouver, Canada, pp. 9079-9085, July 16-21, 2006.
[37] Solis, J., **Sáez, D.,** Estévez, P. "Particle Swarm Optimization-based Fuzzy Predictive Control Strategy". 2006 IEEE World Congress on Computational Intelligence, International Conference on Fuzzy Systems Vancouver, Canada, pp. 8525- 8530, July 16-21, 2006.
[38] Chacón, G., Ruiz del Solar, J., **Sáez, D.** "Fuzzy Sliding Mode Control based on Takagi & Sugeno Model Design and its application to a Simulated Robot Hand", IEEE Latin American Robotics Symposium, Santiago, October 26-27, 2006.
[39] **Sáez, D.,** Zúñiga, R. "Takagi-Sugeno Fuzzy Model Structure Selection based on New Sensitivity Analysis", 2005 IEEE International Conference on Fuzzy Systems FUZZ-IEEE 2005, Reno, USA, pp. 501-506, May 22-25, 2005.
[40] Hernández, S., **Sáez, D.,** Mery, D., Da Silva, R., Siqueira, M. "Automated Defect Detection in aluminium Castings and Welds using Neuro-fuzzy Classifiers". Proceedings of 16th World Conference on Non-Destructive Testing (WCNDT 2004), Montreal, August 30 – September 03, 2004.
[41] Alayón, M., **Sáez, D.,** Veiga, R. "Comparative Analysis of Neural Predictive Controllers and Its Application to a Laboratory Tank System". International Joint Conference on Neural Networks IJCNN2004, Budapest, Hungary, July 25-29, 2004.
[42] **Sáez, D.,** Zúñiga, R. "Cluster Optimization for Takagi & Sugeno Fuzzy Models and Its Application to a Combined Cycle Power Plant Boiler", American Control Conference, ACC' 2004, Boston, USA, June 30 – July 2, 2004.
[43] **Sáez, D.**, Kemerer, E. "Fuzzy Predictive Strategies and its Application to a Laboratory Tank". Proceedings of the European Control Conference, ECC' 2003, University of Cambridge, UK, pp. 1716-1781, September 1-4, 2003.
[44] Alayon, M., **Sáez, D.**, Veiga, R. "Analysis and Design of Control Strategies based on Neural Networks". Proceedings of the IASTED International Conference Intelligent Systems and Control, ISC 2003. Salzburg, Austria, pp. 212-217, June 25-27, 2003.

[45] Binstock, M., **Sáez, D.**, Aignstein, M. “Trajectory Control based on Fuzzy Logic for a Robotic Manipulator”. Proceedings of the IASTED International Conference Intelligent Systems and Control, ISC 2003, Salzburg, Austria, pp. 168-173, June 25-27, 2003.

[46] **Sáez, D.**, Cipriano, A. “Design of a Supervisory Predictive Controller based on Fuzzy Models”. Proceedings of the 10th IEEE International Conference on Fuzzy Systems, FUZZ-IEEE’2001, Melbourne, Australia, December 2-5, 2001.

[47] **Sáez, D.**, Cipriano, A. “Fuzzy Models based Economic Predictive Control for a Combined Cycle Power Plant Boiler”. Proceedings of the 1999 IEEE International Symposium on Intelligent Control, Intelligent Systems & Semiotics, ISIC’99, Cambridge, USA, pp. 417-422, September 15-17, 1999.

[48] **Sáez, D.**, Cipriano, A. “Economic Optimal Control for a Combined Cycle Power Plant Boiler”. Proceedings of the European Control Conference, ECC’99, Karlsruhe, Germany, August 31-September 3, 1999.

[49] **Sáez, D.**, Cipriano, A. “Fuzzy Modeling of a Combined Cycle Power Plant”. Proceedings of the 8th International Conference on Fuzzy Systems, FUZZ-IEEE’99, Seoul, Korea, pp. 1186-1190, August 22-25, 1999.

[50] **Sáez, D.**, Cipriano, A. “Economical Optimal Control with Environmental Constraints for Combined Cycle Power Plants”. Proceedings of the 24th Annual Conference of the IEEE Industrial Electronics Society, IECON’98, Aachen, Germany, pp. 640-645, August 31 – September 4, 1998.

[51] **Sáez, D.**, Sanz, M., Cipriano, A. “Prediction of the Evolution of Water Chemical Properties in the Cycle of a Coal Power Plant using Artificial Neural Networks”. Proceedings of the IEEE International Joint Conference on Neural Networks, IJCNN’98, Anchorage, Alaska, USA, pp. 1981-1986, May 5-8, 1998.

[52] **Sáez, D.**, Cipriano, A. “Fuzzy Linear Quadratic Regulator Applied to the Real-time Control of an Inverted Pendulum”. Proceedings of the 5th IFAC Workshop on Algorithms and Architectures for Real-Time Control, Cancun, Mexico, pp. 185-190, April 15-17, 1998.

[53] **Sáez, D.**, Cipriano, A. “Design of Fuzzy Model based Predictive Controllers and its Application to an Inverted Pendulum”. Proceedings of the Sixth IEEE International Conference on Fuzzy Systems, FUZZ-IEEE'97, Barcelona, pp. 915-919, July 1-5, 1997.

[54] Cipriano, A., **Sáez, D**. “Fuzzy Generalized Predictive Control and its Application to an Inverted Pendulum”. Proceedings of the 22nd Annual International Conference on Industrial Electronics, Control and Instrumentation, IECON'96, Taipei, Taiwan, pp. 1966-1971, August 5-10, 1996.

[55] Cipriano, A., **Sáez, D.**, Ramos, M. “Fuzzy Control on a Laboratory Environment”, IEEE International Symposium on Industrial Electronics, ISIE'95, Athens, July 10-14, 1995.

PROJECTS

Funding programs from CONICYT Chilean National Commission for Scientific and Technological Research:

FONDECYT: National Fund for Scientific and Technological Development
FONDEF: Scientific and Technological Development Support Fund
FONDEQUIP: Scientific and Technological Equipment Program
FONDAP: Fund for Research Centers in Priority Areas

1. Principal Investigator, **FONDECYT** Project 1170683 "Robust Distributed Predictive Control Strategies for the Coordination of Hybrid AC and DC Microgrids", 2017-2020.
2. Co-Investigator, **FONDECYT** Project 1170044: "Prognostics Performance Metrics based on Bayesian Cràmer-Rao Lower Bounds", 2017-2020.
3. Co-Investigator, **FONDEQUIP** Project EQM160122 "Equipment for the Emulation and Testing of Energy Storage Systems", 2016-2017.
4. Co-Investigator, **International Cooperation** Project REDES150083 "Control Strategies and Hardware Topologies for the Operation of Energy Storage System in Microgrids", Academic link AC3E UTFSM-U. of Waterloo, 2016-2017.
5. Principal Investigator, **FONDEF** Project 14I10063 "Design and Implementation of an Experimental Prototype of Microgrid for Mapuche Communities", 2015-2018.
6. Director, Project from **Ministry of Energy**, Chile "Solar-Wind Energy Supply 'Nehuen Kurruf Ka Antu' for Community meeting place José Painecura", 2015-2016.
7. Sub-director, **FONDEF** Project VIU14E075 "Development of a Real-time Estimator for the Energy Available of Battery Banks in Volcanic Monitoring Stations", 2015-2016.
8. Principal Investigator, **FONDECYT** Project 1140775 "Design of Robust Predictive Control Strategies for the Operation of Microgrids with High Penetration of Renewable Energy", 2014-2016.
9. Principal Investigator, **FONDECYT** Project 1110047 "Hybrid Fuzzy Predictive Control for Renewable Energy Plants", 2011-2013.
10. Co-investigator, **FONDECYT** Project 1100239 "Advanced Modelling and Optimization of Dynamic Transport Systems", 2010-2013.
11. Principal Investigator, **FONDEQUIP** Project EQM130058 "Microgrid Emulator for Design and Validation of Novel Control Strategies", 2013-2014.
12. Co-Investigator, **FONDEQUIP** Project EQM120111 "Equipment for Research in Hybrid Generation Systems", 2013.
13. Principal Investigator, **International Cooperation** Project REDES130053 "Control Strategies for Micro-grids with High Penetration of Renewable Energy", U. Nottingham- Centre of Energy, U. Chile, 2013-2014.
14. Co-Investigator, **International Cooperation** Project REDES130029 "Control and Management of Energy Storage Systems for Traction and Distributed Generation", U. Waterloo – Centre of Energy, U. Chile, 2013-2014.
15. Principal Investigator, **International Cooperation** Project REDENERG-0003 "Sustainability for Intelligent Micro-grids", U. Waterloo – Centre of Energy, U. Chile, 2012-2013.
16. Co-Investigator, **International Cooperation** Project REDENERG-0002 "Efficient applications of Lithium batteries to traction, renewable energies and energy storage", U. Nottingham– Centre of Energy, U. Chile, 2012-2013.
17. Associate Investigator, **FONDAP** Solar Energy Research Center, 2013-2018.

18. Young Researcher, Complex Engineering Systems Institute, **Millennium Science Initiative** ICM: P-05-004-F, **CONICYT**: FBO16, 2011-date.
19. Associate Investigator, Anillo-Bicentenario Project ACT32. **CONICYT** "Intelligent Real-Time Control for Integrated Transit Systems". 2006-2010.
20. Principal Investigator, **FONDECYT** Project 1061156 "Design of Predictive Control Strategies Based on Fuzzy Hybrid Modeling", 2006-2008.
21. Principal Investigator, **International Cooperation FONDECYT** Project 7070293 "Design of Predictive Control Strategies Based on Fuzzy Hybrid Modeling", 2006.
22. Principal Investigator, **FONDECYT** Project 1040698 "Hybrid Predictive Control Systems with Continuous and Discrete Variables", 2004 -2006.
23. Principal Investigator, **International Cooperation FONDECYT** Project 7040146 "Hybrid Predictive Control Systems with Continuous and Discrete Variables". 2005.
24. Investigator. **EPSRC Engineering and Physical Sciences Research Council** Project "Towards Multiple-model Based Learning Control Paradigms for Complex Systems", 2003 – 2004.
25. Principal Investigator, DI NºI2-03/14-2 Project, **University of Chile**, "Design of Supervisory Control Strategies for Non-linear Multivariate Systems and their Application to Thermal Power Plants". 2004 – 2006.
26. Principal Investigator, FCFM Project, **University of Chile** "Design of Optimal Supervisory Control Strategies for Multivariate Nonlinear Systems", 2003.
27. Principal Investigator, **FONDECYT** Project 4000026 "Stability of Optimized Supervisory Control Systems considering a Fixed Regulatory Level". 2000-2002.
28. Principal Investigator, **FONDECYT** Project 2980029 "Design of Predictive Control Strategies based on Nonlinear Models and their Application to the Control of Thermal Power Plants", 1998 – 2000.

STUDENTS

- **PhD. THESIS ADVISOR**
  1. Claudio Burgos, "Design and Evaluation of Cooperative Methodologies for Improving Power Quality in Unbalanced Microgrids" (2014-Date). Student of Double degree Ph. D Programme in Electrical Engineering, U. Chile – U. Nottingham.
  2. Juan Sebastián Gómez, "Distributed Predictive Secondary Control Strategies for Microgrids" (2014-Date).
  3. Jacqueline Llanos, "Design of Control Strategies for Microgrids including Congestion" (2014-Date).
  4. Luis Marín, "Design and Implementation of Robust Control Strategies for Microgrids" (2013-Date).
  5. Carolina Ponce, "Design of Fuzzy Predictive Control Strategies for Combined Cycle Power Plants with Integrated Solar Collectors". Graduated in 2014.
  6. Freddy Milla, "Design of Non-linear Predictive Control Strategies for the Operation of Dynamic Public Transport Systems". Graduated in 2012.
  7. Alfredo Núñez, "Design of Hybrid Predictive Control Strategies for Optimization of Operational Processes in Dynamic Transport Systems". Graduated in 2009.

- **MASTER THESIS ADVISOR**
  - 20 graduate students in the period 2005-2017 (2017: 2, 2016: 4, 2013: 3, 2012: 2, 2011: 2, 2010: 2, 2009: 1, 2007: 3, 2005: 1).

- **UNDERGRADUATE FINAL PROJECT ADVISOR**
  - 32 undergraduate students in the period 2003-2017 (2017: 2, 2016: 5, 2015: 2, 2013: 5, 2012: 1, 2011: 2, 2010: 2, 2009: 1, 2007: 4, 2006: 2, 2005: 2, 2004: 3, 2003: 1).

TEACHING

Below is the list of courses that I have taught since 2001:

- EL4004 Principles of System Control (undergraduate course).
- EL4105 Advanced Control of Systems (undergraduate course).
- EL5205 Advanced Control Laboratory (undergraduate course).
- EL7001 Intelligent Control (graduate course).
- EL7025 Intelligent Control for Transport Dynamic Systems (graduate course).
- EL7027 Seminar on Automatic Control (graduate course).