



1. Nombre: **Gonzalo Acuña Leiva**
2. Carácter del vínculo: **Regular**
3. Grado máximo: **Docteur en Automatique et Productique**
4. Institución y país que otorgó el grado: **Institut National Polytechnique de Grenoble, Francia.**
5. Año de graduación: **1995**
6. Año en que se integró al programa: **1998**
7. Dedicación estimada (horas/semana promedio anual): **8 horas semanales.**
8. Área principal de investigación: **Control Automático, Diseño de Observadores en Sistemas No-Lineales, Inteligencia Computacional.**
9. Número de tesis dirigidas desde el año 2000:

Magíster:	Dirigidas: 10	En desarrollo: 2
Doctorado:	Dirigidas: 2	En desarrollo: 0
Postdoctorado:	Dirigidas: 2	En desarrollo: 0
10. Proyectos de investigación desde el año 2000 (indique título del proyecto, fuente de financiamiento, duración y año de adjudicación).

En curso

1. **DICYT-USACH 06-1219AL, “Estudio de modelos dinámicos NAR(X) y NARMA(X) elaborados mediante herramientas de Inteligencia Computacional” 2012-2015, Investigador Responsable.**

Principales Proyectos Finalizados

1. FONDECYT 1090316, “Comparative study of Support Vector Machine and Neural Networks for Nonlinear System Identification and Observer Design”, 2009-2012, *Investigador Responsable*.
2. INRIA-Conicyt (Francia-Chile), proyecto ECOLOMICRO, 2006-2009, *Co-Investigador*.
3. FONDEF D04I1084, “Exploración Minera Mediante Vehículos Aéreos Autónomos”, 2005-2008, *Investigador Alterno* (M\$ 282).
4. FONDECYT 1040208, “Identificación de parámetros variantes en el tiempo y estimación de estado en sistemas complejos utilizando modelos neuronales de caja gris”, 2004-2006, *Investigador Responsable*.
5. FONDEF D02I1077, “Sistema de control optimizante para plantas de molienda semiautógena”, 2003-2005, *Co-Investigador*.
6. FONDECYT 1010179, “Estimación de estado y de parámetros en procesos complejos mediante métodos numéricos y redes conexionistas”, 2001-2003, *Investigador Responsable*.
7. ECOS-CONICYT: “Estimación, control y supervisión de procesos biotecnológicos agroalimentarios”, 19991008FRAECOS (C99B04), 1999-2002, *Investigador Responsable*.
8. FONDECYT 1980667, “Reconciliación de datos y desarrollo de sensores virtuales en biotecnología”, 1998-2000, *Investigador Responsable*.
11. Lista de publicaciones indexadas (indique índice: ISI, Scielo, etc.) y otros productos desde el año 2000.

Publicaciones ISI

1. Acuña, G., Ramírez, C., Curilem, M., 2013, Software sensors for biomass concentration in a SSC process using Artificial Neural Networks and Support Vector Machine, *Bioprocess and Biosystems Engineering* (in press), (DOI) 10.1007/s00449-013-0925-3.
2. F. Cubillos, E. Vhymeister, G. Acuña, P. Alvarez, 2011, “Rotary Dryer Control using a Grey-Box Neural Model Scheme”, *Drying Technology*, 29(15): 1820-1827.
3. M. Chacón, M. Curilem, G. Acuña, C. Defilippi, A.M.Madrid, S. Jara, 2009, “Detection of patients with functional dyspepsia using wavelet transform applied to their electrogastrogram”, *Brazilian Journal of Medical and Biological Research*. 42(12):1203-1209.

4. Curilem, M., J. Vergara, G. Fuentealba, G. Acuña, M. Chacon, 2009, "Classification of seismic signals at Villarrica Volcano (Chile) by using Neural Networks and Genetic Algorithms", *Journal of Volcanology and Geothermal Research*, 180(1): 1-8.
5. Salazar, J.L., L. Magne, G. Acuña, F. Cubillos, 2009, "Dynamic modelling and simulation of semi-autogeneous mills", *Minerals Engineering*, 22(1): 70-77.
6. F. Cubillos G. Acuña, E. Lima, 2007, "Real time process-optimization based on grey-box neural models", *Brazilian Journal of Chemical Engineering*, 24(03):433-443.
7. F. Cubillos and G. Acuña, 2006, "Simulation Studies of On-line Identification of Complex Processes with Neural Networks", Jun Wang et al. (Eds.), *Lecture Notes in Computer Science*, LNCS 3972:808-814, ISSN 0302-9743.
8. T. Valenzuela, K. Carvajal, G. Acuña, M. Chacon, L. Magne, 2005, "Neural grey box model for power estimation in semiautogenous mill", J. Wang, X. Liao, Z. Yi (Eds.), *Lecture Notes in Computer Science*, LNCS 3498:833-838, ISSN 0302-9743.
9. M. Jamett, G. Acuña, 2005, "Comparative assessment of interval and affine arithmetic in neural network state prediction", J. Wang, X. Liao, Z. Yi (Eds), *Lecture Notes in Computer Science*, LNCS 3498:448-453, ISSN 0302-9743.
10. K. Carvajal, M. Chacón, D. Mery, G. Acuña, 2004, "Neural network method for failure detection with skewed class distribution", *Insight*, 46(7):399-402, ISSN 1354-2575.
11. Valdés-González, H., J-M. Flaus, G. Acuña, 2003, "Moving horizon state estimation with global convergence using interval techniques: application to biotechnological processes", *Journal of Process Control*, 13(4):325-336.
12. K. Pouliot, J. Thibault, A. Garnier and G. Acuña, 2000, "KLa evaluation during the course of fermentation", *Bioprocess Engineering*, 23:565-573.
13. J. Thibault, G. Acuña, R. Pérez-Correa, H. Jorquera, P. Molin, E. Agosin, 2000, "A hybrid representation approach for modelling complex dynamic bioprocesses", *Bioprocess Engineering*, 22(6):547-556.
14. Peña y Lillo, M., Pérez-Correa, R., Latrille, E., Fernández, M., Acuña, G., Agosin, E., 2000, "Data processing for solid substrate cultivation bioreactors", *Bioprocess Engineering*, 22(4):291-297.

Otras Revistas Periódicas

1. Zambrano, C., Rojas, D., Carvajal, K., Acuña G., 2011, “Análisis de rendimiento académico estudiantil usando data warehouse y redes neuronales”, *Ingeniare, Revista Chilena de Ingeniería*. 19(3):369-381 (SCIELO).
2. Curilem, M., Acuña, G., Cubillos, F. and Vhymeister, E, 2011, “Neural networks and support vector machine models applied to energy consumption optimization in semiautogenous grinding”, *Chemical Engineering Transactions*, 25:761-766, DOI: 10.3303/CET1125127 (SCOPUS).
3. C. Ramírez, G. Acuña, 2011, “Forecasting cash demand in ATM using Neural Networks and Least Square Support Vector Machine”, *Lecture Notes in Computer Science* , LNCS 7042, pp. 515-522 (SCOPUS).
4. F. Cruz, G. Acuña, 2010, “Indirect training with error backpropagation in Gray-Box Neural Model: application to a chemical process”, *IEEE Proceedings of the XXIX International Conference of the Chilean Computer Science Society*, pp:265-269, 1522-4902/10 © 2010 IEEE, DOI 10.1109/SCCC.2010 (SCOPUS).
5. G. Acuña, M. Curilem, 2009, “Comparison of neural networks and support vector machine dynamic models for state estimation in semiautogeneous mills”, *Lecture Notes in Computer Science*, LNCS, (ISI-Proceeding). *Lecture Notes in Computer Science*, 5845:478-487 (SCOPUS).
6. F. Cruz, G. Acuña, F. Cubillos, V. Moreno, D. Bassi, 2007, “Indirect Training of Grey-box Models: Application to A Bioprocess”, *Lecture Notes in Computer Science*, LNCS 4492:391-397, ISSN 0302-9743 (Print) 1611-3349 (Online) (SCOPUS).
7. K. Carvajal and G. Acuña, 2007, “Estimation of State Variables in Semiautogenous Mills by Means of A Neural Moving Horizon State Estimator”, *Lecture Notes in Computer Science*, LNCS 4491:1255-1264, ISSN 0302-9743 (Print) 1611-3349 (Online), (SCOPUS).
8. F. Cubillos and G. Acuña, 2007, “Adaptive Control Using A Grey Box Neural Model: An Experimental Application”, *Lecture Notes in Computer Science*, LNCS 4491:311-318, ISSN 0302-9743 (Print) 1611-3349 (Online), (SCOPUS).
9. M. Jamett and G. Acuña, 2006, “An Interval Approach for Weight’s Initialization of Feedforward Neural Networks”, *Lecture Notes in Computer Science*, LNCS 4293: 305-315, ISSN 0302-9743, (SCOPUS).
10. G. Acuña, E. Pinto, 2006, “Development of a Matlab Toolbox for the design of grey-box neural models”, *International Journal of Computers, Communications and Control*, IJCCC, I(2):7-14 (SCOPUS).

11. Cubillos F, Acuña G & Lima E (2004), "A Real-time optimization scheme based on grey box neural model and genetic algorithms", *Chemical Engineering & Technology*. On-line publication: <http://www.wiley-vch.de/publish/en/journals/alphabeticIndex/2044>
12. C. Ramírez, G. Acuña, 2011, "Forecasting cash demand in ATM using Neural Networks and Least Square Support Vector Machine", *Lecture Notes in Computer Science* (ISI Proceedings), LNCS 7042, pp. 515-522.
13. G. Acuña, M. Curilem, 2009, "Comparison of neural networks and support vector machine dynamic models for state estimation in semiautogeneous mills", *Lecture Notes in Computer Science*, LNCS, (ISI-Proceeding). *Lecture Notes in Computer Science*, 5845:478-487, 2009.
14. F. Cruz, G. Acuña, F. Cubillos, V. Moreno, D. Bassi, 2007, "Indirect Training of Grey-box Models: Application to A Bioprocess", *Lecture Notes in Computer Science*, LNCS 4492:391-397, ISSN 0302-9743 (Print) 1611-3349 (Online) (ISI-Proceeding). (ISSN 2007).
15. K. Carvajal and G. Acuña, 2007, "Estimation of State Variables in Semiautogenous Mills by Means of A Neural Moving Horizon State Estimator", *Lecture Notes in Computer Science*, LNCS 4491:1255-1264, ISSN 0302-9743 (Print) 1611-3349 (Online).
16. F. Cubillos and G. Acuña, 2007, "Adaptive Control Using A Grey Box Neural Model: An Experimental Application", *Lecture Notes in Computer Science*, LNCS 4491:311-318, ISSN 0302-9743 (Print) 1611-3349 (Online).
17. M. Jamett and G. Acuña, 2006, "An Interval Approach for Weight's Initialization of Feedforward Neural Networks", *Lecture Notes in Computer Science*, LNCS 4293: 305-315, ISSN 0302-9743.
18. G. Acuña, E. Pinto, 2006, "Development of a Matlab Toolbox for the design of grey-box neural models", *International Journal of Computers, Communications and Control*, IJCCC, I(2):7-14 (SCOPUS).
19. Cubillos F., Acuña G., & Lima E. (2004), "A Real-time optimization scheme based on grey box neural model and genetic algorithms" , *Chemical Engineering & Technology*. On-line publication: <http://www.wiley-vch.de/publish/en/journals/alphabeticIndex/2044>

Capítulos de Libros

1. Jorquera H., R. Pérez-Correa, A. Cipriano and G. Acuña, 2004, "Short term forecasting of air pollution episodes", Chapter 3 of *Environmental Sciences and Environmental Computing Vol II* (P. Zanetti, Editor), Published by The Envirocomp Institute.

Solicitudes de Patente

- 1. Acuña Gonzalo, Solicitud Chilena de Patente de Invención Exp. No. 00267-2010, S/ref.: SCIA, N/ref.: 68249, 2011, “Un sistema y método de control inteligente para ser instalado en vehiculo aéreo no tripulado”.**

Reuniones Científicas Internacionales: 33

Reuniones Científicas Nacionales: 24