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1. Datos generales

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Distinción:

- SNI nivel II (2000--)
- AMC miembro regular (2008)
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Educación

- **1991, B. S en Matemática Aplicada**, Dept. of Mathematics, Faculty of Science, Northeastern University, Shenyang, P. R. China, July, 1991
- **1995, PhD en Control Automático**, Dept. of Automatic Control, Faculty of Informatics and Engineering, Northeastern University, Shenyang, P.R. China

Experiencia Profesional

- Sep. 1995 – Nov. 1997 **Assistant professor**, Research Institute of Artificial Intelligent and Robot, Northeastern University, Shenyang, P. R. China
- Jul. 1998 – Mar. 2000 **Postdoc**, Center for Applied Sciences and Technological Development, National Autonomous University of Mexico (UNAM), México city., México
- Apr. 2000 – presente **Professor**, Departamento de Computación, CINVESTAV-IPN, México, D.F., México
- Jul. - Sept. 2005, **Visiting professor**, Department of Electrical and Computer Engineering, New Jersey Institute of Technology, USA
- Sept. 2006 - July 2007, **Visiting professor**, School of Electronics, Electrical Engineering & Computer Science, Queen's University Belfast, UK (Estancia Sabática)
- May. - Oct. 2010, **Visiting professor**, Information Retrieval and Knowledge Management Lab, School of Engineering, University of California, Santa Cruz, CA,USA(Estancia Sabática)
- Sept. 2018 – Ago. 2019, Big Data Institute, **Shenzhen University**, Shenzhen, China (Estancia Sabática)

Líneas de investigación: Discrete and hybrid system, Petri Nets applications, Machine learning and Big Data, Knowledge representation and reasoning, Social network analysis, Human Machine Interface (HMI), Robot-assisted rehabilitation system, Educational robotics.

2 Productos de Investigación

2.1 Artículos originales de Investigación

2.1.a Publicados en extenso en revistas de prestigio internacional con arbitraje escrito

- 2.1.a.1 **Xiaoou Li** and Felipe Lara Rosano, "Adaptive fuzzy Petri nets for dynamic knowledge representation and inference", *Expert Systems with Applications*, Vol. 19, No. 3, pp. 235-241, 2000
- 2.1.a.2 **Xiaoou Li**, Wen Yu and Felipe Lara Rosano, "Dynamic knowledge inference and learning under adaptive fuzzy Petri net framework", *IEEE Transactions on System, Man, and Cybernetics, Part C: Applications and reviews*, vol.30, No. 4, pp. 442-450, 2000
- 2.1.a.3 Wen Yu, Marco A. Moreno and **Xiaoou Li**, "Observer-based neuro identifier", *IEE Proceedings-Control Theory and Application*, Vol. 147, No. 2, pp. 145-152, 2000
- 2.1.a.4 Wen Yu and **Xiaoou Li**, "Some stability properties of dynamic neural networks", *IEEE Transactions on Circuit and System Part I*, vol.48, No.2, pp. 256-259, 2001
- 2.1.a.5 Wen Yu and **Xiaoou Li**, "Some New Results on System Identification with Dynamic Neural Networks", *IEEE Transactions on Neural Networks*, Vol. 12, No.2, pp. 412-417, 2001
- 2.1.a.6 Wen Yu, Alexander S. Poznyak and **Xiaoou Li**, "Multilayer dynamic neural networks for non-linear system on-line identification", *International Journal of Control*, Vol.74, No.18, pp.1858-1864, 2001
- 2.1.a.7 Xianping Guo, Wen Yu and **Xiaoou Li**, "Minimax control for discrete-time time-varying stochastic systems", *Automatica*, Vol.38, No.11, pp.1991-1998, 2002.
- 2.1.a.8 **Xiaoou Li** and Wen Yu, "Dynamic system identification via recurrent multilayer perceptrons", *Information Sciences*, Vol.146, No.5, pp.45-63, 2002.
- 2.1.a.9 Wen Yu, **Xiaoou Li**, "Discrete-time neuro identification without robust modification", *IEE Proceedings - Control Theory and Applications*, vol. 150, no. 2, pp. 311-316, 2003
- 2.1.a.10 Wen Yu, **Xiaoou Li**, "Fuzzy identification using fuzzy neural networks with stable learning algorithms", *IEEE Trans. Fuzzy Systems*, Vol.12, No.3, pp. 411-420, 2004.
- 2.1.a.11 Wen Yu and **Xiaoou Li**, "PD control of robot with velocity estimation and uncertainties compensation", *International Journal of Robotics & Automation*, Vol.21, No.1, pp.1-9, 2006
- 2.1.a.12 Wen Yu, **Xiaoou Li**, "Passivity analysis of dynamic neural networks with different time-scales", *Neural Processing Letters*, Vol.25, No.2, pp. 143-155, 2007.
- 2.1.a.13 **Xiaoou Li**, Joselito Medina Marín, and Sergio V. Chapa, "Applying Petri Nets in Active Database Systems", *IEEE Transactions on Systems, Man, and Cybernetics -- part C: Applications and Reviews*, Vol. 37, No. 4, pp. 482-493, 2007
- 2.1.a.14 Wen Yu, **Xiaoou Li**, "Optimization of crude oil blending with neural networks and bias update scheme", *Engineering Intelligent Systems*, Vol.16, No. 1, pp. 28-37, 2008
- 2.1.a.15 Jair Cervantes, **Xiaoou Li**, Wen Yu, "Support vector machine classification for large data sets via minimum enclosing ball clustering", *Neurocomputing*, Volume 71, Issues 4-6, Pages 611-619 , 2008
- 2.1.a.16 Wen Yu, **Xiaoou Li**, "On-line fuzzy modeling via clustering and support vector machines", *Information Sciences*, Vol.178, pp. 4264-4279, 2008.
- 2.1.a.17 Wen Yu, **Xiaoou Li**, "Online fuzzy modeling with structure and parameter learning", *Expert Systems With Applications*, Vol. 36, pp. 7484-7492, 2009
- 2.1.a.18 Wen Yu, **Xiaoou Li**, "Automated Nonlinear System Modeling with Multiple Fuzzy Neural Networks and Kernel Smoothing", *International Journal of Neural Systems*, Vol.20, No.5, pp.429-435, 2010

- 2.1.a.19 **Xiaoou Li**, Wen Yu, "Synchronization of ball and beam systems with neural compensation", *International Journal of Control, Automation, and Systems*, Vol.8, No.3, pp.491-496, 2010,
- 2.1.a.20 Wen Yu, Panuncio Cruz Francisco, **Xiaoou Li**, Two-stage neural sliding mode control of magnetic levitation in minimal invasive surgery, *Neural Computing & Application*, Vol.20, No.8, pp.1141-1147, 2011
- 2.1.a.21 Wen Yu, Kang Li, **Xiaoou Li**, Automated nonlinear system modeling with multiple neural networks, *International Journal of Systems Science*, Volume 42, Issue 10, 2011
- 2.1.a.22 **Xiaoou Li** and Wen Yu, Anti-swing control for an overhead crane with fuzzy compensation, *Intelligent Automation and Soft Computing*, Vol.18, No.1, pp.1-11, 2012
- 2.1.a.23 **Xiaoou Li**, Jair Cervantes, Wen Yu, Fast Classification for Large Data Sets via Random Selection Clustering and Support Vector Machines, *Intelligent Data Analysis*, Vol.16, No.6, pp. 897-914, 2012
- 2.1.a.24 Suresh Thenozhi, Wen Yu, Asdrúbal López Chau, **Xiaoou Li**, Structural Health Monitoring of Tall Buildings with Numerical Integrator and Convex-Concave Hull Classification, *Mathematical Problems in Engineering*, Vol.2012, 2012, Article ID 212369
- 2.1.a.25 **Xiaoou Li**, Wen Yu, Xiaoli Li, On-line Modeling via Fuzzy Support Vector Machines and Neural Networks, *Journal of Intelligent and Fuzzy Systems*, Vol.24, No.3, pp. 665-675, 2013
- 2.1.a.26 Asdrúbal López Chau, **Xiaoou Li**, Wen Yu, Large Datasets Classification Using Convex-Concave Hull and Support Vector Machine, *Soft Computing*, Vol.17, pp. 793-804, 2013
- 2.1.a.27 Asdrúbal López Chau, **Xiaoou Li**, Wen Yu, Convex and Concave Hulls for Classification with Support Vector Machine, *Neurocomputing*, Vol.122, pp. 198-209, 2013
- 2.1.a.28 Wen Yu, **Xiaoou Li**, Roberto Carmona, A novel PID tuning method for robot control, *Industrial Robot*, Vol.40, No.6, pp. 578-582, 2013
- 2.1.a.29 Wen Yu , **Xiaoou Li**, Francisco Panuncio, Stable Neural PID Anti-Swing Control for an Overhead Crane, *Intelligent Automation and Soft Computing*, Vol.20, No.2, pp.145-158, 2014
- 2.1.a.30 Asdrúbal López, **Xiaoou Li**, Wen Yu, Support Vector Machine Classification for Large Data Sets Using Decision Tree and Fisher Linear Discriminant, *Future Generation Computer Systems*, Vol.36, No.1, pp.57-65, 2014
- 2.1.a.31 Jair Cervantes, **Xiaoou Li**, Wen Yu, Imbalanced Data Classification via Support Vector Machines and Genetic Algorithms, *Connection Science*, Vol. 26, No. 4, pp.335-348, 2014
- 2.1.a.32 **Xiaoou Li** and Wen Yu, Fast support vector machine classification for large data sets, *International Journal of Computational Intelligence Systems*, Vol. 7, No. 2, 2014, pp. 197-212
- 2.1.a.33 Carlos Parga, Wen Yu, **Xiaoou Li**, A low-cost ball and plate system for advanced control education, *International Journal of Electrical Engineering Education*, Vol. 52 No.4, 370-384 , 2015
- 2.1.a.34 Satyam Paul, Wen Yu, **Xiaoou Li**, Recent Advances in Bidirectional Modeling and Structural Control, *Shock and Vibration*, Volume 2016, Article ID 6275307, 17 pages, 2016
- 2.1.a.35 Wen Yu, Javier Garrido, **Xiaoou Li**, Robot Trajectory Generation Using Modified Hidden Markov Model and Lloyd's Algorithm in Joint Space, *Engineering Applications of Artificial Intelligence*, 2016, 53(2): 32-40

- 2.1.a.36 Javier Garrido, Wen Yu, **Xiaoou Li**, Modular Design and Control of an Upper Limb Exoskeleton, *Journal of Mechanical Science and Technology*, 2016, 30(5): 2265 - 2271
- 2.1.a.37 **Xiaoou Li** , Wen Yu, Salvador Villegas, Structural Health Monitoring of Building Structures with On-line Data Mining Methods, *IEEE Systems Journal*, 2016, 10(3): 1291-1300
- 2.1.a.38 Lisbeth Rodríguez-Mazahua¹, Giner Alor-Hernández, **Xiaoou Li**, Jair Cervantes, Asdrúbal López-Chau, Active rule base development for dynamic vertical partitioning of multimedia databases, *Journal of Intelligent Information Systems*, Vol. 48(2), 421-451, 2017
- 2.1.a.39 Raheleh Jafari, Wen Yu, **Xiaoou Li**, Fuzzy Differential Equations for Nonlinear System Modeling with Bernstein Neural Networks, *IEEE Access*, Vol.4, 9428- 9436, Jan. 2017
- 2.1.a.40 Raheleh Jafari, Wen Yu, **Xiaoou Li**, Sina Razvar, Numerical solution of fuzzy differential equations with Z-numbers using Berstein neural networks, *International Journal of Computational Intelligence Systems*, Vol.10(1), 1226-1237, 2017
- 2.1.a.41 Satyam Paul, Wen Yu, **Xiaoou Li**, Bidirectional active control of structures with type-2 fuzzy PD and PID, *International Journal of Systems Science*, Vol.49(4), 766-782, 2018
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- 2.1.a.44 Edgar Estrada, Wen Yu, **Xiaoou Li**, Stability and transparency of delayed bilateral teleoperation with haptic feedback, *Int. J. Applied Mathematics and Computer Science*, Vol. 29(4), 681-692, 2019
- 2.1.a.45 J. Wang, C. Xu, Z. Yang, J. Zhang and **X. Li**, "Deformable Convolutional Networks for Efficient Mixed-Type Wafer Defect Pattern Recognition," *IEEE Transactions on Semiconductor Manufacturing*, vol. 33, no. 4, pp. 587-596, Nov. 2020, [doi: 10.1109/TSM.2020.3020985](https://doi.org/10.1109/TSM.2020.3020985).
- 2.1.a.46 A. M. E. Ramírez-Mendoza, W. Yu and **X. Li**, "A Novel Fuzzy System with Adaptive Neurons for Earthquake Modeling," *IEEE Access*, vol. 8, pp. 101369-101376, 2020, [doi: 10.1109/ACCESS.2020.2998446](https://doi.org/10.1109/ACCESS.2020.2998446).
- 2.1.a.47 Perrusquía, A., Yu, W. & **Li, X.** Multi-agent reinforcement learning for redundant robot control in task-space. *Int. J. Mach. Learn. & Cyber.* (2020). <https://doi.org/10.1007/s13042-020-01167-7>
- 2.1.a.48 Wen Yu, Jesus Gonzalez, **Xiaoou Li**, Fast training of deep LSTM networks with guaranteed stability for nonlinear system modeling, *Neurocomputing*, Volume 422, 2021, Pages: 85-94, <https://doi.org/10.1016/j.neucom.2020.09.030>
- 2.1.a.49 Chuqiao Xu, Junliang Wang, Jie Zhang, **Xiaoou Li**, Anomaly Detection of Power Consumption in Yarn Spinning using Transfer Learning, *Computers & Industrial Engineering*, Volume 152, Feb 2021, 107015, <https://doi.org/10.1016/j.cie.2020.107015>
- 2.1.a.50 Edgar Estrada, Wen Yu, **Xiaoou Li**, Stable bilateral teleoperation with phase transition and haptic feedback, *Journal of the Franklin Institute*, Volume 358, Issue 3, February 2021, Pages 1940-1956, <https://doi.org/10.1016/j.jfranklin.2020.12.02>
- 2.1.a.51 Adolfo Perrusquía, Wen Yu, **Xiaoou Li**, Multi-agent Reinforcement Learning for Redundant Robot Control in Task-space, *International Journal of Machine Learning and Cybernetics*, 12(1), 231-241, 2021, <https://doi.org/10.1007/s13042-020-01167-7>
- 2.1.a.52 Erick García, Wen Yu, **Xiaoou Li**, Optimum design of a parallel robot using neuro-genetic algorithm, *Journal of Mechanical Science and Technology*, Vol.35, No.1, 293-305, 2021, <https://doi.org/10.1007/s12206-020-1229-6>

- 2.1.a.53 Jian Pan, Congbo Li, Gina Tang, Wei Li, **Xiaoou Li**, Energy Consumption Prediction of CNC Machining Process with Incomplete Data, *IEEE/CAA Journal of Automatica Sinica*, Vol. 8, No. 5, 987-1000, May 2021, [DOI: 10.1109/JAS.2021.1003970](https://doi.org/10.1109/JAS.2021.1003970)

2.1.b Publicación en extenso en otras revistas especializadas, con arbitraje.

- 2.1.b.1 Xiaoou Li and Xinhe Xu, “Synthesis of real-time feedback control logic for discrete manufacturing systems”, *Journal of Northeastern University (natural science)* Vol. 16, pp. 51-55, 1995 (in Chinese)
- 2.1.b.2 Xiaoou Li, Xinhe Xu and Wen Yu, “Study FMS simulation based on object-oriented colored Petri nets”, *Computer Science*, Vol. 22, No. 5, pp. 61-64, 1995 (in Chinese)
- 2.1.b.3 Xiaoou Li and Xinhe Xu, “On object-oriented colored Petri Net Model for discrete event dynamic systems”, *Information & Control*, Vol. 24, pp. 407-411, 1995 (in Chinese)
- 2.1.b.4 Dong-qing Rao, Xiao-ou Li, Xin-he Xu, The Implementation of FMS Simulation Software Based on Object-Oriented Colored Petri Net, *Journal of System Simulation*, Vol.11, No.2 1999 (in Chinese)
- 2.1.b.5 Dongqing Rao, Xiaoou Li, Xinhe Xu, Object classification and modeling of FMS based on object oriented Petri nets, *Control and Decision*, Vol. 24, pp. 36-40, 1999 (in Chinese)

2.1.c Publicados en extenso en memorias de congresos internacionales con arbitraje

- 2.1.c.1 *Conference on Automation, Robotics and Computer Vision (ICARCV'94)*, Singapore, 1994
- 2.1.c.2 Xiaoou Li and Xinhe Xu, “Object-oriented Petri net modeling and simulating”, *1st International Symposium on Advances in Intelligent Computer Integrated Manufacturing System, (ISICIMS'94)*, Seoul, Korea,1994
- 2.1.c.3 Xiaoou Li and Xinhe Xu, “Modeling DES using modified colored Petri nets”, *1995 American Control Conference (ACC'95)*, Washington, USA, 1995
- 2.1.c.4 Xiaoou Li and Xinhe Xu, “OOC PN: object oriented colored Petri nets for discrete event system modeling”, *IFAC Symposium on Large Scale Systems: Theory and Applications (LSS'95)*, London, UK, 1995
- 2.1.c.5 Xiaoou Li and Xinhe Xu, “Synthesizing discrete manufacturing system controller using object oriented colored Petri nets”, *Zhaoxia Lu and Xiaoou Li, “A design methodology of knowledge-based and object oriented for CIMS information model”, Computer, Communication, Control and Power Engineering. Proceedings. TENCON '93., 1993 IEEE Region 10 Conference on Part: 40000*, vol.4, 1993, Page(s): 60 -63
- 2.1.c.6 Xiaoou Li and Xinhe Xu, “A new framework for real-time discrete event control”, *3rd International Conference on Systems, Man and Cybernetics (SMC'95)*, Vancouver, Canada,1995
- 2.1.c.7 Xiaoou Li and Xinhe Xu, “Designing discrete manufacturing system controller using object oriented colored Petri nets”, *IMACS Multiconference on Computational Engineering in Systems Applications*, Lille, France, 1996
- 2.1.c.8 Felipe Lara-Rosano and Xiaoou Li, “Petri nets model for dynamic fuzzy caused and anticipatory systems”, *the 3rd International Conference on Computing Anticipatory Systems (CASYS'99)*, Liège, Belgium, 1999 (the Best Paper Award)
- 2.1.c.9 Xiaoou Li and Felipe Lara Rosano, “A new fuzzy Petri net model for knowledge representation and reasoning”, *the IASTED International Conference on Modeling and Simulation (MS'99)*, Philadelphia, USA, pp. 322-325, May 5-8, 1999

- 2.1.c.10 Xiaou Li and Felipe Lara Rosano, “Fuzzy knowledge representation, reasoning and learning using fuzzy Petri nets with adaptive weights”, *the 7th IEEE Mediterranean Conference on Control and Automation (MED'99)*, Haifa, Israel, 1999
- 2.1.c.11 Xiaou Li and Felipe Lara Rosano, “A weighted fuzzy Petri net model for knowledge learning and reasoning”, *1999 International Joint Conference on Neural Network (IJCNN'99)*, Washington, D.C., USA, July 10-16, 1999, pp. 2368-2372, vol. 4
- 2.1.c.12 Xiaou Li and Felipe Lara Rosano, “Modeling an electronic component manufacturing system using object oriented colored Petri nets”, *the 6th IEEE International Conference on Electronics, Circuits and Systems (ICECS'99)*, Pafos, Cyprus, 1999
- 2.1.c.13 Wen Yu and Xiaou Li, “Passive Properties of dynamic neural networks”, *2000 American Control Conference, Chicago, USA*, 28-30 June 2000, pp. 1445-1449, vol. 2
- 2.1.c.14 Wen Yu and Xiaou Li, “Passivity Properties of Neuro Identifier”, *39th IEEE Int. Conf. on Decision and Control*, Sydney, Australia, December, 12-16, 2000, pp. 3848-3853, vol. 4
- 2.1.c.15 Wen Yu and Xiaou Li, “Neuro-control of Two-Link Manipulator with Sliding Mode Compensation”, *the 6th International Conference on Control, Automation, Robotics and Vision (ICARCV2000)*, Singapore, December, 5-8, 2000
- 2.1.c.16 Felipe Lara Rosano and Xiaou Li, “Petri Nets Modeling for Fuzzy Conceptual Models”, *International Conference on Systems, Informatics and Cybernetics*, Baden-Baden, Germany, August, 2000
- 2.1.c.17 Xiaou Li, “Modeling Manufacturing Systems with Hybrid Petri Net and Object-Orientated Technique”, *International Symposium, on Robotics and Automation*, Monterrey, Mexico, pp. 635-640, November 10-12, 2000
- 2.1.c.18 Xiaou Li and Wen Yu, “Robust Black-Box Identification via Dynamic Neural Networks”, *International Symposium, on Robotics and Automation*, Monterrey, Mexico, pp. 449-454, November 10-12, 2000
- 2.1.c.19 Wen Yu and Xiaou Li, “Passive Properties of Dynamic Neural Networks”, *19th American Control Conferences, ACC 2000*, Chicago USA, pp. 1445-1449, 2000
- 2.1.c.20 Xiaou Li, “The Combination of Petri Net and Neural Networks for Knowledge Learning”, *Workshop on Advances in Artificial Perception and Robotics*, Guanajuato, México, pp. 55-62, October 23-25, 2000
- 2.1.c.21 Wen Yu and Xiaou Li, “PD Control of Robot with Velocity Estimation and Uncertainties Compensation”, *the 40th Conference on Decision and Control (CDC01)*, Orlando, USA, December, 4-9, 2001, pp. 1162-1167, vol. 2
- 2.1.c.22 Xiaou Li and Wen Yu, “Object oriented fuzzy Petri net for complex knowledge system modeling”, *the 2001 IEEE International Conference on Control Applications*, Mexico City, Mexico, September 5-7, 2001, pp.476-481
- 2.1.c.23 Xiaou Li and Wen Yu, “Neuro Control of Robot Manipulator with Sliding Mode Compensation”, *the IASTED International Conference on Robotics and Manufacturing (RM2001)*, Cancun, Mexico, May 21-24, 2001,
- 2.1.c.24 Xiaou Li and Sergio V. Chapa, “Optimization of Deductive Database System by Adaptive Fuzzy Petri Net Approach”, *IASTED International Conference on Artificial Intelligence and Soft Computing (ASC2001)*, Cancun, Mexico, May 21-24, 2001, pp.
- 2.1.c.25 Joselito Medina Marín, Xiaou Li, and Sergio V. Chapa, “An Active Behavior Simulator for Active Database”, *IASTED International Conference on Artificial and Computational Intelligence (ACI 2002)*, Tokyo, Japan Sept. 25-27, 2002
- 2.1.c.26 Xiaou Li, Wen Yu, Sergio Perez, “Adaptive fuzzy Petri nets for supervisory hybrid system modeling”, *15th IFAC World Congress*, Barcelona, Spain, July, 21-26, 2002
- 2.1.c.27 Wen Yu and Xiaou Li, “Adaptive control with multiple neural networks”, *21st American Control Conference (ACC'02)*, Anchorage, Alaska, USA, May 8-10, 2002, pp. 1543-1548, vol. 2

- 2.1.c.28 Wen Yu and Xiaoou Li, “Stable fuzzy identification using recurrent fuzzy neural networks”, *IASTED International Conference on Neural Networks and Computational Intelligence, (CNI 2003)*, Cancún, México, May 19-21, 2003
- 2.1.c.29 Wen Yu and Xiaoou Li, “Fuzzy neural modeling using stable learning algorithm”, *2003 American Control Conferences, ACC'03*, Denver, Colorado, USA, June 4-6, 2003, pp. 4542-4548
- 2.1.c.30 Wen Yu and Xiaoou Li, “Discrete-time nonlinear system identification using recurrent neural networks”, *42nd IEEE Conference on Decision and Control, CDC'03*, Maui, Hawaii, USA, Dec. 9-12, 2003
- 2.1.c.31 Xiaoou Li, Sergio Chapa, Joselito Medina Marín, and Jovita Martínez, “An Application of Conditional Colored Petri Nets: Active Database System”, *2004 IEEE Int. Conf. on Systems, Man & Cybernetics (SMC2004)*, 4885-4890, The Hague, Neitherland, 10-13, oct, 2004
- 2.1.c.32 Xiaoou Li, Joselito Medina Marín, “Composite Event Specification in Active Database Systems: A Petri Nets Approach”, *the Fifth Workshop and Tutorial on Practical Use of Coloured Petri Nets and the CPN Tools*, 97-116, Aarhus, Denmark, October 8-11, 2004
- 2.1.c.33 Lorena Chavarría Báez, Xiaoou Li, “Measuring triggering-interactions complexity on active databases based on conditional colored Petri net model”, *International Conference on Electrical and Electronics Engineering and X conference on Electrical Engineering (ICEEE/CIE)*, Acapulco, México, Sept. 8-10, 2004
- 2.1.c.34 Joselito Medina Marín, Xiaoou Li, “Termination Analysis in Active Databases: a Petri Net Approach”, *2004 International Symposium on Robotics and Automation (ISRA2004)*, July, 2004, Querétaro, Mexico, pp. 677-684
- 2.1.c.35 Lorena Chavarría-Báez, Joselito Medina-Marín, Xiaoou Li, Sergio V. Chapa, “Análisis de la complejidad de las interacciones de los disparos en bases de datos activas vía Red de Petri Coloreada Condicional”, *2do Congreso Internacional sobre Innovación Desarrollo Tecnología (CIINDET'04)*, noviembre, 15-19, 2004, Cuernavaca, Morelos, México
- 2.1.c.36 Wen Yu and Xiaoou Li, “Visual Servoing with Velocity Observer and Neural Compensation”, *2004 IEEE International Symposium on Intelligent Control*, Taipei, Taiwan, 454-459, 2004.
- 2.1.c.37 Wen Yu, José de Jesús Rubio, Xiaoou Li, “Recurrent Neural Networks Training with Stable Risk-Sensitive Kalman Filter Algorithm”, *Internal Joint Conference on Neural Networks, IJCNN'05*, Montreal, Canada, pp.700-705, 2005
- 2.1.c.38 Wen Yu and Xiaoou Li, “Continuous-time recurrent multilayer perceptrons for nonlinear system identification”, *IEEE Conference on Control Applications (CCA05)*, Toronto, Canada, pp.1636-1641, 2005
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- 2.1.c.40 Joselito Medina Marín and Xiaoou Li, “ECA rule development via Conditional Colored Petri Net”, *Second International Workshop on Applications of Petri Nets to Coordination, Workflow and Business Process Management,, PNCWB 2005*, Miami, Florida, USA, Jun 20- 25, 2005.
- 2.1.c.41 Samuel Garrido-Daniel, Xiaoou Li, Joselito Medina-Marín, “Modelado de workflows utilizando redes de Petri coloreadas condicionales”, *12th. International Congress on Computer Science Research (CIICC'05)*, Monterrey, Mexico, 15-17 de noviembre de 2005
- 2.1.c.42 Samuel Garrido-Daniel, Xiaoou Li, Joselito Medina-Marín, “Modelación y simulación de procesos workflow utilizando redes de Petri”, *I Congreso sobre ingeniería e*

Investigación Científica (CONIC 2005), Lima- PERÚ, 19 - 22 de Octubre

- 2.1.c.43 Jose de Jesús Rubio, Wen Yu, and Xiaoou Li, “Time-delay nonlinear system modelling via delayed neural networks”, *The 6th World Congress on Intelligent Control and Automation*, Dalian, China, June 21-23,2006, pp. 119-123
- 2.1.c.44 Rigoberto Toxqui , Wen Yu, and Xiaoou Li, “PD control of overhead crane with velocity estimation and uncertainties compensation”, *The 6th World Congress on Intelligent Control and Automation*, Dalian, China, June 21-23, 2006, pp. 139-143
- 2.1.c.45 Jair Cervantes Canales, Xiaoou Li, and Wen Yu, “Fuzzy knowledge learning via adaptive fuzzy Petri net with triangular function model”, *The 6th World Congress on Intelligent Control and Automation*, Dalian, China, June 21-23, 2006, pp. 4249-4253
- 2.1.c.46 Wen Yu, Xiaoou Li, “Fuzzy neural identification by online clustering with application on crude oil blending”, *2006 IEEE International Conference on Fuzzy Systems*, Vancouver, Canada, 865-872, 2006
- 2.1.c.47 Alejandro Cruz Sandoval, Wen Yu, Xiaoou Li, “Some stability properties of dynamic neural networks with different time-scales”, *2006 International Joint Conference on Neural Networks, IJCNN'06*, Vancouver, Canada, 2006, pp.4218-4224
- 2.1.c.48 Roberto Toxqui, Wen Yu, Xiaoou Li, “Anti-swing control for overhead crane with neural compensation”, *2006 International Joint Conference on Neural Networks, IJCNN'06*, Vancouver, Canada, 2006, pp. 4697-4703
- 2.1.c.49 Juan Angel Resendiz-Trejo, Wen Yu, Xiaoou Li, “Support Vector Machine for Nonlinear System On-line Identification”, *the 3rd International Conference on Electrical and Electronics*, Veracruz, Mexico, 227-230, 2006
- 2.1.c.50 Lorena Chavarría Baez, Xiaoou Li, “Static Verification of Active Rule-Based System”, *the 10th IASTED International Conference on Software Engineering and Applications, (SEA 2006)*, Dallas, Texas, USA, 514-084, November 13 – 15, 2006
- 2.1.c.51 Lorena Chavarría Báez, Xiaoou Li, Structural Error Verification in Active Rule-Based Systems using Petri Nets, *Fifth Mexican International Conference on Artificial Intelligence (MICA I 2006)* , pp. 12-21
- 2.1.c.52 Edna Hernandez, Xiaoou Li, Luis E. Rocha, “Entropy-based algorithm for discovering groups with mixed type attributes”, *the 3rd International Conference on Electrical and Electronics Engineering and XII Conference on Electrical Engineering*, Veracruz, Mexico, Sept. 6-8, 2006
- 2.1.c.53 Francisco Palacios, Xiaoou Li, Luis E. Rocha, “Data Mining based CMAC Neural Network”, *3rd International Conference on Electrical and Electronics Engineering and XII Conference on Electrical Engineering*, Veracruz, Mexico, Sept. 6-8, 2006
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Fourth International Symposium on Neural Networks, Nanjing, China, June 3-7, 2007, Springer-Verlag, *Lecture Notes in Computer Science*, vol. 4492, 2007 , pp.483-492

- 2.3.12 Julio César Tovar, Wen Yu, Xiaoou Li, “Fuzzy Modeling via On-line Clustering and Support Vector Machine”, *Advanced Intelligent Computing Theories and Applications. With Aspects of Contemporary Intelligent Computing Techniques: Third International Conference on Intelligent Computing (ICIC 2007), Qingdao, China, August 21-24, 2007*. Springer-Verlag, *Communications in Computer and Information Science(CCIS)*, vol. 2, 2007, pp. 294-303
- 2.3.13 Lisbeth Rodriguez and Xiaoou Li , A Vertical Partitioning Algorithm for Distributed Multimedia Databases, Abdelkader Hameurlain, Stephen W. Liddle, Klaus-Dieter Schewe, Xiaofang Zhou (Eds.): *DEXA 2011, Part II, Lecture notes in Computer Science*, Vol. 6861, 2011, pp. 544–558.
- 2.3.14 Lisbeth Rodriguez, Xiaoou Li and Pedro Mejía Alvarez, An Active System for Dynamic Vertical Partitioning of Relational Databases, *Advances in Soft Computing: Lecture Notes in Computer Science*, Volume 7095, 2011, pp 273-284. Asdrúbal López Chau, Xiaoou Li, Wen Yu, and Jair Cervantes Canales, Border samples detection for data mining applications using non convex hulls, *Advances in Soft Computing: Lecture Notes in Computer Science*, Volume 7095, 2011, pp 261-272.
- 2.3.15 Asdrúbal López Chau, Xiaoou Li, Wen Yu, and Jair Cervantes Canales, Border samples detection for data mining applications using non convex hulls, *Advances in Soft Computing: Lecture Notes in Computer Science*, Volume 7095, 2011, pp 261-272
- 2.3.16 Lisbeth Rodriguez and Xiaoou Li, Dynamic Vertical Partitioning of Multimedia Databases Using Active Rules, *Database and Expert Systems Applications: Lecture Notes in Computer Science*, Volume 7447, 2012, pp 191-198
- 2.3.17 Jair Cervantes, De-Shuang Huang, Xiaoou Li, Wen Yu, A New Approach to Detect Splice-Sites Based on Support Vector Machines and a Genetic Algorithm, *Progress in Pattern Recognition, Image Analysis, Computer Vision, and Applications, Lecture Notes in Computer Science*, Volume 8259, 2013, pp 342-349.
- 2.3.18 Lorena Chavarría-Báez, Xiaoou Li, Rosaura Palma-Orozco, Estimating the Number of Test Cases for Active Rule Validation, *Advances in Artificial Intelligence and Its Applications, Lecture Notes in Computer Science*, Volume 8265, 2013, pp 120-131.
- 2.3.19 J. Wang, B. Tepfenhart, and X. Li, Analysis of minimum workflow resource requirements, in J. Cao, X. Li, K. Ren (Eds.) *Process-Aware Systems*, Volume 602 of the book series *Communications in Computer and Information Science (CCIS)*, pp. 53-66, Springer 2016. ISBN 978-981-10-1018-7

2.4 Libros especializados que cubra el trabajo del investigador

- 2.4.1 Xiaoou Li, Sergio V. Chapa, “FMS Analysis and Simulation with OOC PN”, *Advances in the Dynamics, Instrumentation and Control: Proceedings of the 2004 International Conference on Dynamics, Instrumentation and Control, Nanjing, China, August 18-20, 2004, (CDIC’04)*, Chun-Yi Su, Subhash Rakheja, Enrong Wang & Rama B Bhat (Eds.), **World Scientific Press**, ISBN: 978-9812560865
- 2.4.2 Wen Yu, Xiaoou Li and George W. Irwin , “Stable Anti-Swing Control for an Overhead Crane with Velocity Estimation and Fuzzy Compensation”, *Foundations of Generic*

Optimization, Vol 2: Applications of Fuzzy Control, Genetic Algorithms and Neural Networks, Springer, R.Lowen and A.Verschoren, (Eds), 2008, pp. 223-240

- 2.4.3 Jair Cervantes, Farid García, Xiaoou Li, and Wen Yu, “A data reduction algorithm based on SVM”, *Research in Computing Science: Advances in Intelligent and Information Technologies*, Vol, 38, 2008, Edited by M.G. Medina Barrera, J.F. Ramirez Cruz, J.H. Sossa Azuela, ISSN: 1870-4069, pp. 201-211
- 2.4.4 Wen Yu, Xiaoou Li, “Stable Adaptive Compensation with FCMAC for Overhead Cranes”, *Recent Advances in Intelligent Control Systems*, Springer, Wen Yu (Ed.), 2009, pp. 67-85
- 2.4.5 Wen Yu, Xiaoou Li, Modeling of Crude Oil Blending via Discrete-Time Neural Networks, *Applications of Neural Networks in High Assurance Systems: Studies in Computational Intelligence*, Vol. 268, Springer, J. Schumann, Y. Liu (Eds.), 2010, pp 205-220.

3. Formación de Recursos Humanos

3.1 Cursos teóricos y/o prácticos

3.1.a En programas de posgrado del CINVESTAV

- 3.1.a.1 *Redes de Petri*, 60 horas, 2002, 2003
- 3.1.a.2 *Modelación y simulación de sistemas*, 60 horas, 2000, 2001, 2004, 2005
- 3.1.a.3 *Seminario de Investigación I*, 60 horas, 2005, 2008, 2011, 2012, 2014, 2016
- 3.1.a.4 *Seminario de Investigación III*, 60 horas, 2009, 2011, 2013, 2015, 2020
- 3.1.a.5 *Tópicos Selectos: Minería de Datos Avanzada*, 60 horas, 2009, 2014
- 3.1.a.6 *Teoría de Computación*, 60 horas, 2002, 2017
- 3.1.a.7 *Minería de Datos*, 60 horas, 2007- 2016, 2020, 2021
- 3.1.a.8 *Tópicos selectos: Aprendizaje Automático*, 60 horas, 2021
- 3.1.a.9 *Tópicos selectos: Aprendizaje Profundo*, 60 horas, 2021

3.2 Dirección de tesis en programa de posgrado del CINVESTAV (32)

3.2.a Doctorado

3.2.a.1 *Desarrollo de reglas ECA en bases de datos activas: un enfoque de red de Petri*
Medina Marín Joselito, Opción Computación, Postgrado de Ingeniería Eléctrica, CINVESTAV-IPN, Oct.14, 2002-Oct. 17, 2005

3.2.a.2 *Verificación y Análisis de Bases de Reglas Activas*
Chavaría Báez Lorena, posgrado de Ciencias en Computación, CINVESTAV-IPN, Dic. 17, 2008

3.2.a.3 *Clasificación de grandes conjuntos de datos vía Máquinas de Vectores Soporte y aplicaciones en sistemas biológicos*
Cervantes Canales Jair, posgrado de Ciencias en Computación, CINVESTAV-IPN, Ago. 18, 2009

Codirector: Wen Yu

3.2.a.4 *Fragmentación vertical dinámica de bases de datos multimedia utilizando reglas activas*
Rodríguez Mazahua Lisbeth, posgrado de Ciencias en Computación, CINVESTAV-IPN, Dec. 03, 2012

3.2.a.5 *Métodos de reducción de datos para clasificación con máquinas de soporte vectorial*

López Chau Asdrúbal, posgrado de Ciencias en Computación, CINVESTAV-IPN, 6 de Sept. de 2013

Codirector: Wen Yu

3.2.a.6 *Uso de Atributos para Detectar Comunidades de Calidad en Redes Sociales*

Bella Martínez Seis, posgrado de Ciencias en Computación, CINVESTAV-IPN, 23 de marzo de 2018

3.2.b Mestría

3.2.b.1 *Modelado y control de sistemas híbridos con redes de Petri difusas y redes neuronales*

Perez Moo Sergio Antonio, Postgrado de Control Automático, CINVESTAV-IPN, 12 Junio 2002

Codirector: Wen Yu

3.2.b.2 *Redes de Petri coloreadas condicionales y sus aplicaciones en base de datos activas*

Medina Marín Joselito, Opción Computación, Postgrado de Ingeniería Eléctrica, CINVESTAV-IPN, 19 Sep. 2002

3.2.b.3 *Modelado difuso neuronal con algoritmo de aprendizaje estable*

Villaseñor Lozano Carlos Alejandro, Postgrado de Control Automático, CINVESTAV-IPN, 11 de Abril del año 2003

Codirector: Wen Yu

3.2.b.4 *Detección de Candados Mortales en Base de Datos utilizando Redes de Petri*

Trujillo Ferrara José de Jesús, Opción Computación, Postgrado de Ingeniería Eléctrica, CINVESTAV-IPN, May 2003

3.2.b.5 *Medición de la Complejidad de la Interacción de las reglas ECA en BDA vía CCPN*

Chavaría Báez Lorena, Opción Computación, Postgrado de Ingeniería Eléctrica, CINVESTAV-IPN, Octubre, 2004

3.2.b.6 *Modelado de workflow con redes de Petri coloreadas condicionales*

Garrido Daniel Samuel, Opción Computación, Postgrado de Ingeniería Eléctrica, CINVESTAV-IPN, Nov. , 2005

3.2.b.7 *Algoritmo de Clustering basado en Entropía para Descubrir Grupos en Atributos de Tipo Mixto*

Hernández Valadez Edna, Opción Computación, Postgrado de Ingeniería Eléctrica, CINVESTAV-IPN, Agosto, 2006

Codirector: Luis Rocha Mier

3.2.b.8 *Redes Neuronales CMAC como Modelo de Clasificación en Minería de Datos*

Palacios Hernández Francisco, Sección de Computación, Departamento de Ingeniería Eléctrica, CINVESTAV-IPN, Agosto, 2006

Codirector: Luis Rocha Mier

3.2.b.9 *Predicción de Tráfico en Redes de Telecomunicaciones basado en Técnicas de Inteligencia Analítica*

Millan Alonso Gildardo, Opción Computación, Postgrado de Ingeniería Eléctrica, CINVESTAV-IPN, Agosto, 2006

Codirector: Luis Rocha Mier

3.2.b.10 *Toma de Decisiones automatizada mediante reglas ECA Fuzzy sobre un DWH activo*

Vázquez Tzompantzi Marisol, Opción Computación, Postgrado de Ingeniería Eléctrica, CINVESTAV-IPN, 3 de Mayo, 2007

Codirector: José Matías Alvarado Mentado

3.2.b.11 *Sistema de Control de Acceso con RFID*

Alvarado Sánchez Jorge Alberto, Opción Computación, Postgrado de Ingeniería Eléctrica, 30 de Ene, 2008

Codirector: Aldo Orozco Lugo

3.2.b.12 *Diseño de un modelo para la predicción de vínculos en redes sociales*

Limeta Cabañas Alberto, posgrado de Ciencias en Computación, CINVESTAV-IPN, Feb. 5, 2010

3.2.b.13 *Análisis de Redes Sociales a Gran Escala*

Mejía Olivares Cristian Paolo, posgrado de Ciencias en Computación, CINVESTAV-IPN, Feb. 26, 2010

3.2.b.14 *Marco de trabajo basado en ontologías para la adecuada gestión del conocimiento en el proceso de Inteligencia de Negocios*

Villanueva Chávez Joel, posgrado de Ciencias en Computación, CINVESTAV-IPN, Dic. 5, 2011

3.2.b.15 *OPCOLAPH: Optimizador de Consultas OLAP para Cluster de Bases de Datos basado en Histogramas*

Pérez Rivas Eduardo, posgrado de Ciencias en Computación, CINVESTAV-IPN, 14 de Dic. de 2012

3.2.b.16 *Diseño e implementación de un sistema de control para un cuadricóptero*

Pico Villalpando Antonio, posgrado de Ciencias en Computación, CINVESTAV-IPN, Dic. 14, 2012

3.2.b.17 *Un enfoque evolutivo para el aprendizaje de conocimiento con redes de Petri difusas*

Sánchez Barreto Christian Onassis, posgrado de Ciencias en Computación, CINVESTAV-IPN, 30 de sept. de 2013

3.2.b.18 *Desarrollo de una interfaz hombre-máquina usando smartphone con aplicación a brazo manipulador*

Parga Villalpando Carlos, posgrado de Ciencias en Computación, CINVESTAV-IPN, 28 de Oct. de 2013

Codirector: Wen Yu

3.2.b.19 *Detección de daños en edificios provocados por vibraciones mediante técnicas de minería de datos*

Villegas Solís Salvador Abdelaziz, posgrado de Ciencias en Computación, CINVESTAV-IPN, 26 de noviembre de 2014

Codirector: Wen Yu

3.2.b.20 *Análisis de sentimientos de textos en español basado en aproximaciones semánticas*

Hernández Petlachi Roberto Francisco, posgrado de Ciencias en Computación, CINVESTAV-IPN, 17 de diciembre de 2014

3.2.b.21 *Generación de caminata robótica bípeda mediante análisis de datos de la marcha humana*

Pantoja Laces Williams Antonio, posgrado de Ciencias en Computación, 03 de diciembre de 2015

3.2.b.22 *Sistema de rehabilitación 3D usando dispositivo háptico*

Rodríguez Molina Alejandro, posgrado de Ciencias en Computación, CINVESTAV-IPN, 15 de diciembre de 2015

3.2.b.23 *Herramienta para el preprocesamiento de tweets con base en búsqueda por tópico*

Andrade Jiménez Yareli Licet, posgrado de Ciencias en Computación, CINVESTAV-IPN, 23 de Marzo de 2015

3.2.b.24 *Diseño y desarrollo de un sistema de reconocimiento de gestos manuales para el control de un VANT*

Rosal Dulce Adriana, posgrado de Ciencias en Computación, CINVESTAV-IPN, 12 de septiembre de 2016

3.2.b.25 *Desarrollo de un sistema de rehabilitación bilateral asistido por robots para miembro superior de pacientes de enfermedad vascular cerebral (EVC)*

Erick García López, postgrado de Control Automático, CINVESTAV-IPN, Aug. 25, 2017

Codirector: Wen Yu

3.2.b.26 *Implementación de algoritmo de aprendizaje profundo CNN para la identificación de plantas invasivas utilizando conjuntos de datos pequeños*

Oscar Ramírez Ayala, posgrado de SANAS, CINVESTAV-IPN Feb. 28, 2019,

Codirector: Antonio Osorio Cordero