XAVIER LLORÀ, Ph.D.

Google Inc.
1600 Amphitheater Parkway, Mountain View, CA 94043
Phone: (650) 253-4994
WWW: http://www.xavierllora.net
E-mail: xavier@xavierllora.net

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1   RESEARCH INTERESTS

Genetic and evolutionary algorithms, machine learning and data mining, adaptive human-computer interaction, creativity and innovation support in collaborative design and decision-making processes, bioinformatics, data-intensive computing, semantic web technologies and storage.

2   EDUCATION

1998–2002 (February) PH.D DEGREE IN COMPUTER SCIENCE, Enginyeria i Arquitectura La Salle, Ramon Llull University, Barcelona, European Union (Catalonia, Spain). Thesis title: *"Genetics-Based Machine Learning using Fine-grained Parallelism for Data Mining."*

2000 (September) ADVANCED STUDIES DEGREE, Enginyeria i Arquitectura La Salle, Ramon Llull University, Barcelona, European Union (Catalonia, Spain).

1996–1998 COMPUTER ENGINEERING DEGREE, Enginyeria i Arquitectura La Salle, Ramon Llull University, Barcelona, European Union (Catalonia, Spain). Thesis title: *"Automatic Classification with Genetic Algorithms using the Pittsburgh approach."*

1993–1996 TECHNICAL DEGREE IN COMPUTER ENGINEERING, Enginyeria i Arquitectura La Salle, Ramon Llull University, Barcelona, European Union (Catalonia, Spain). Thesis title: *"Self-teaching tools for Genetic Algorithms on MS Windows Platforms."*

3   RESEARCH EXPERIENCE

2010–present Software Engineer. Google Inc. Mountain View, CA, USA.

2006–2010 Researcher at the *Data-Intensive Technologies and Applications* (DITA) group, National Center for Supercomputing Applications (NCSA), University of Illinois at Urbana Champaign, Urbana, IL, USA.

2005–2010 Research Assistant Professor at the *Illinois Genetic Algorithms Laboratory* (IlliGAL), Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana Champaign, Urbana, IL, USA.

2003–2010 Team leader of the DISCUS project. This project involves the development of innovative chance discovering methodologies. The project relies on data mining techniques, knowledge management tools, interactive genetic algorithms, and human-based genetic algorithms—among others.

2003–2010 Collaborator of the group of *Design, Synthesis, and Structure of Peptides and Proteins: Molecular Recognition*, Institute of Biomedical Research (IRBB), Barcelona Science Park (PCB), Barcelona, Catalonia, Spain, EU.

2003–2010 Collaborator of the *Automated Learning Group* (ALG), National Center for Supercomputing Application (NCSA), University of Illinois at Urbana Champaign, IL, USA.

2003–2005 Postdoctoral research associate at the *Illinois Genetic Algorithms Laboratory* (IlliGAL), Department of General Engineering, University of Illinois at Urbana Champaign, IL, USA.

2003–2005 Postdoctoral research associate at the *Automated Learning Group* (ALG), National Center for Supercomputing Application (NCSA), University of Illinois at Urbana Champaign, IL, USA.

2000–2002 *"Design and Implementation of Predictive Data Mining using Parallel and Distributed Evolutionary Algorithms,"* Research Group in Intelligent Systems. Enginyeria i Arquitectura La Salle, Ramon Llull University.

2000–2002 *"Design and Implementation of Machine Learning techniques for the Diagnosis of Breast Cancer."* Project: *"Breast cancer diagnosis using Computer Vision and Machine Learning techniques."* Sponsor: *Fondo de Investigación Sanitaria (Instituto Carlos III), FIS 00/0033-02* (Spanish Government). Ramon Llull University and University of Girona.

2000–2002 *"Design and Implementation of Predictive Data Mining using Parallel and Distributed Evolutionary Algorithms,"* Research Group in Intelligent Systems. Enginyeria i Arquitectura La Salle, Ramon Llull University.

1998–2002 Research assistant at the Research Group in Intelligent Systems, Enginyeria i Arquitectura La Salle, Ramon Llull University.

2000–2001 *"Design and Implementation of the Web Work-flow for the 4th Catalan Conference on Artificial Intelligence (CCIA'2001),"* Department of Computer Science, Enginyeria i Arquitectura La Salle, Ramon Llull University.

1999–2000 *"Design and Implementation of a Distributed Object-oriented Framework for the Cooperation and Competition of Intelligent Agents,"* Research Group in Intelligent Systems. Enginyeria i Arquitectura La Salle, Ramon Llull University.

1998–2000 *"Design of Machine Learning techniques for Distance-Learning Platforms".* Project: *"Study and implementation of Artificial Intelligence tools for Distance Learning Tools and ATM networks."* Sponsor: *Consejo de Investigaciones Científicas Y Tecnológicas, TEL98-0408-C02-02* (Spanish Government). Ramon Llull University, University of Girona and The Open University of Catalonia.

4 Teaching Experience

4.1 Courses taught

Spring 2009 NCSA/SEASR Summit, *"Meandre: Semantic-Driven Data-Intensive Computing for the Cloud"* (3 hours course), National Center for Supercomputing Applications, University of Illinois at Urbana-Champaign.

Spring 2007 GE/IE 498-ECI, *"Enterprise Collaboration and Innovation Support Systems"* (1 credit course). Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign.

1998–2002 *"Introduction to Intelligent Systems"* (30 hours course), Enginyeria i Arquitectura La Salle, Ramon Llull University, Barcelona, European Union (Catalonia, Spain).

1998–1999 *"Introduction to Programming"* (two semester course, 120 hours course). Enginyeria i Arquitectura La Salle, Ramon Llull University, Barcelona, European Union (Catalonia, Spain).

1998–1999 *"Algorithms and Formal Methods"* (one semester course, 60 hours course). Enginyeria i Arquitectura La Salle, Ramon Llull University, Barcelona, European Union (Catalonia, Spain)

1997–1999 Teacher of *"Algorithms and Data Structures"* (two semester course, 120 hours course). Enginyeria i Arquitectura La Salle, Ramon Llull University, Barcelona, European Union (Catalonia, Spain).

4.2   Ph.D. Committees

Joe A. Bradley (May 2009). *"A Multi-Domain Framework for Product Development: The Mediating Links of Information Science and Network Analysis"*. Ph.D. thesis at the Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign. Under the direction of Professors Ali Yassine and the Doctoral Committee of Professors Xavier Llorà, Raymond Price, and Deborah Thurston.

Albert Orriols i Puig (December 2008). *"New Challenges in Learning Classier Systems: Mining Rarities and Evolving Fuzzy Models"*. Ph.D. thesis at the Department of Computer Science, La Salle Engineering and Architecture, Universitat Ramon Llull. Under the direction of Professors Ester Bernad-Mansilla and the Doctoral Committee of Professors Martin Butz, David E. Goldberg, Xavier Llorà, and Xavier Villasís.

Ebba Cecilia Ovesdotter Alm (May 2007). *"Affect in Text and Speech"*. Ph.D. thesis at the Department of Linguistics at University, University of Illinois at Urbana-Champaign. Under the direction of Professors Richard W. Sproat and the Doctoral Committee of Professors Corina Roxana Girju, Xavier Llorà, Dan Roth, and Chilin Shih.

4.3   Master Theses

During my teaching at the Universitat Ramon Llull, I directed/co-directed 12 master thesis. These students include Jaume Bacardit, Albert Orriols, and Lluís Formiga who had become relevant members of the genetics-based machine learning and text-to-speech communities.

4.4   Undergrad Student Advisor

While teaching *"Introduction to Intelligent Systems"* at the Universitat Ramon Llull, the course also included being the undergrad advisor for not only their course work but also their mandatory projects. Each semester I advised an average of 25 undergrad students.

5   Awards and Grants

5.1   Awards

GECCO 2008 Best paper nomination. Best paper nomination in Real World Applications track during Genetic and Evolutionary Computation Conference 2005.

GECCO-2007 Humies awards. Two entries won two bronze Humies awards at the human-competitive results competition at the 2007 Genetic and Evolutionary Computation Conference.

GECCO 2007 Best paper award. Best paper nomination in Estimation of Distribution Algorithms track during Genetic and Evolutionary Computation Conference 2007.

IECEIS 2007 Best paper award. Best paper award 2007 International Conference on Enterprise Information Systems.

GECCO 2005 Best paper nomination. Best paper nomination in Estimation of Distribution Algorithms track during Genetic and Evolutionary Computation Conference 2005.

GECCO 2004 Best paper nomination. Best paper nomination in Learning Classifier Systems track during Genetic and Evolutionary Computation Conference 2004.

1999–2002 FI Fellowship (grant-no FI1999-00719). Sponsor: *Departament d'Univeristats, Recerca i Societat de la Informació, Generalitat de Catalunya* (Catalan Government).

1993-1996 Becas del Ministerio de Educación. Sponsor: *Ministerio de Educación y Ciencia*, Spanish Government.

5.2 Grants

2005–2008 Co-PI in *"Enhancing Command Communication and Innovation with SAINT: Semantics Adaptation, and Influence in Networked Teams"* project, Air Force Office of Scientific Research. Grant Number FA9550-06-1-0370. Principal Investigator Prof. David E. Goldberg.

2004–2005 Co-PI in *"Tracking Conceptual Influence Through a Temporally Sequenced Set of Documents"* project, National Center for Advance Secure Systems Research under Office of Naval Research Grant Number N00014-01-1-0175. Principal Investigator Prof. David E. Goldberg.

2004–2005 Co-PI in *"DISCUS : Distributed Innovation and Scalable Collaboration in Uncertain Settings"* project, Technology Research, Education, and Commercialization Center (TRECC) under Office of Naval Research Grant Number N00014-01-1-0175. Principal Investigator Prof. David E. Goldberg.

2004–2005 Co-PI in *"Evolutionary algorithms for de novo peptide design"* project, Fundación Banco Bilbao Vizcaya Argentaria (BBVA). Leaded by the Institute of Biomedical Research of Barcelona (IRBB), Parc Científic de Barcelona. Amount 75,126 EUR.

6 Patents

6.1 Granted

- **7,904,512 B2:** *Methods and Systems for Computer Based Collaboration.* Date of Patent: March 8, 2011. Inventors: David E. Goldberg, Michael E. Welge and Xavier F. Llorà.

6.2 Undre revision

- *Optionally Tailored Raman Spectroscopic Probes for Ultrasensitive and highly Multiplexed Assays.* Submitted on 2010. Inverntors: Anil K. Kodali, Xavier F. Llorà and Rohit Bhargava.

- *Methods and Systems for Interactive Computing.* US utility patent pending submitted on 2007. Inventors: Xavier F. Llorà, Kumara Sastry and David E. Goldberg.

7 Professional Activities

7.1 Editorial Activities

- *Evolutionary Intelligence* published by Springer. Editorial Board member. 2007–present.

- *"Large Scale Data Mining using Metaheuristic Techniques"*, a special issue of the *Memetic Computing Journal.* Fall 2009.

7.2   Conference Organization

- Publicity track chair. Genetic and Evolutionary Computation Conference (GECCO 2011).

- Philosophy, Engineering & Technology (fPET-2010), Web & Technology Chair.

- The Software Environment for the Advance of Scholarly Research Summit (SEASR 2009).

- NCSA/iliGAL Gathering on Evolutionary Learning (NIGEL'2006).

- International Workshop on Learning Classifier Systems Organizer (IWLCS'2006).

- International Workshop on Learning Classifier Systems Organizer (IWLCS'2005).

- Learning Classifier Systems and Other Genetics-Based Machine Learning Track Chair, Genetic and Evolutionary Computation Conference (GECCO'2005).

- Electronic Work-flow Chair, 4th Catalan Conference on Artificial Intelligence (CCIA'2001).

7.3   Conference Program Committees and Other Activities

- World Congress on Computational Intelligence (WCCI'2010).

- Genetic and Evolutionary Computation Conference (GECCO'2010).

- 13th International Workshop on Learning Classifier Systems (IWLCS2010).

- Genetic and Evolutionary Computation Conference (GECCO'2009).

- 12th International Workshop on Learning Classifier Systems (IWLCS2009).

- Genetic and Evolutionary Computation Conference (GECCO'2008).

- 11th International Workshop on Learning Classifier Systems (IWLCS2008).

- Genetic and Evolutionary Computation Conference (GECCO'2007).

- 10th International Workshop on Learning Classifier Systems (IWLCS2007).

- Genetic and Evolutionary Computation Conference (GECCO'2006).

- 9th International Workshop on Learning Classifier Systems (IWLCS2006).

- Special issue on Learning Classifier Systems of the *Natural Computing* Journal, Springer, (reviewer).

- Special issue on Intelligent Data Mining of the *Data & Knowledge Engineering* Journal, Elsevier, (reviewer).

- *IEEE Transaction on Evolutionary Computation*, (reviewer).

- Second Australian Conference on Artificial Life (ACAL'2005).

- Genetic and Evolutionary Computation Conference (GECCO'2005).

- 8th International Workshop on Learning Classifier Systems (IWLCS2005).

- Parallel Problem Solving from Nature (PPSN'2004).

- *IEEE Systems, Man and Cybernetics Part-B* (reviewer).

- Genetic and Evolutionary Computation Conference (GECCO'2004).

- 7th International Workshop on Learning Classifier Systems (IWLCS2004).

- Special Issue on Knowledge Extraction and Incorporation in Evolutionary Computation of the *IEEE Transactions on Systems, Man, and Cybernetics*, (reviewer).

- Genetic and Evolutionary Computation Conference (GECCO'2003).

- 6th International Workshop on Learning Classifier Systems (IWLCS2003).

- Special Issue on Learning Classifier Systems of the *Journal of Evolutionary Computation*, MIT press, (reviewer).

- Special Issue on Data Mining of the *Transaction on Evolutionary Computational*, IEEE, (reviewer).

- Workshop on Real-Time Decision Support and Diagnosis Systems (RTDSDS2002).

- 5th International Workshop on Learning Classifier Systems (IWLCS2002).

7.4 Memberships

2005–present Member of ACM SIGEVO.

2004–present Member of the United States Fencing Association, Illinois Division. Ranked foil fencer (D05, E006).

2001-2005 Member of the International Society of Genetic and Evolutionary Computation.

7.5 Major Consulting

2004–2005 Nextumi Inc., Genetic algorithms in social networking & search web sites, Cincinnati, Ohio. (Now ShareThis)

8 Invited Talks and Seminars

8.1 Keynote Speaker

2006, December. *"Information Technologies for Supporting Human Innovation and Creativity"*, Institute of People-Centered Computation (IPCC), Bristol, UK.

2005, June. *"Innovation and Creativity Support: Fusing Human and Computer Efforts using Genetic Algorithms"*, Keynote Speaker, Mexican Conference on Evolutionary Computation (COMCEV'2005).

8.2 Lectures

2009, March. *"Meandre"*, Cloud Computing Seminar, Department of Computer Science, University of Illinois at Urbana-Champaign.

2006, September. *"Combating user fatigue and contradictions in subjective-based optimization schemes"*, Artificial Intelligence - Machine Learning Seminars, Department of Computer Science, University of Illinois at Urbana-Champaign.

2004, March. *"Enhanced Innovation: A fusion of Chance Discovery and Evolutionary Computation to foster Creative Processes and Decision Making"*, Artificial Intelligence - Machine Learning Seminars,Department of Computer Science, University of Illinois at Urbana-Champaign.

2003, September. *"Machine Learning for Evolutionary Computation - Evolutionary Computation for Machine Learning"*, Artificial Intelligence - Machine Learning Seminars, Department of Computer Science, University of Illinois at Urbana-Champaign.

8.3 Invited talks

2010, March *"Soaring the Clouds with Meandre"*, Data-Intensive Research, e-Science Institute, Edinburgh, UK.

2009, September *"From Galapagos to Twitter: Reaching Across Centuries Thanks to Darwin's Artificial Evolutionary Modeling"*, Monmouth College.

2008, October *"SEASR - Software Environment for the Advancement of Scholarly Research"*, Internet 2 Fall 2008 partners meeting, New Orleans.

2007, December *"Powered by Meandre: Semantic-web-driven Data Flow Infrastructure for SEASR"* , Service-Oriented Computing for Humanities, King's College, London.

2007, March. *"Evolution and Information Technologies to Support Innovation and Creativity"*, Cubes for Innovation: Information Systems for Design and Marketing, Tokyo, Japan.

2007, March. *"Innovation and Creativity Support for Real-World Online Marketing"*, Boeing Corporation, Seattle.

2006, October. *"Combating User Fatigue and Contradictions in Subjective-based Optimization Schemes"*, University of Nottingham, UK.

2006, September. *"Evolutionary Tools for Human-Innovation and Creativity"*, DTM-2006 Synthesis and Innovation, Philadelphia.

2003, July. *"Data Mining with Learning Classifier Systems"*, Invited talk, Genetic and Evolutionary Computation Conference (GECCO'2003), Chicago.

8.4 Tutorials

2010, July. *Large scale data mining using Genetics-Based Machine Learning*, IEEE Conference on Evolutionary Computation (CEC 2010), Barcelona, Spain.

2009, July. *Large scale data mining using Genetics-Based Machine Learning*, Genetic and Evolutionary Computation Conference (GECCO 2009), Montreal, Canada.

9 Software

9.1 Genetic Algorithms

- **AgExp**: Self-teaching tools for genetic algorithms on MS Windows platforms.

- **E2K**: Competent genetic algorithms for D2K.

9.2 Genetics-Based Machine Learning

- **CCS**: Genetics-based machine learning platform based on estimation of distribution algorithms.

- **DAISY**: Efficient evolutionary computing in Python.

- **E2K**: Competent genetics-based machine learning for D2K.

- **Genifer**: Automatic classification environment with genetic algorithms using the Pittsburgh approach.

- **GALE**: Genetics-based machine learning platform using fine-grained parallelism for data mining.

- **NAX**: Efficient parallel genetics-based machine learning package.

- **MOLCS**: Genetics-based machine learning platform based on multi-objective optimization for data mining.

9.3 Innovation and Creativity Collaboration Support

- **aiGA**: Active interactive genetic algorithms for web applications.

- **DISCUS**: Web portal for distributed innovation and scallable collaboration in uncertain settings. Portal includes:

  - Homogeneous platform for on-line collaboration.
  - Integrated collaboration tools (message boards, chat rooms, file sharing, etc.).
  - Chance discovery using KeyGraph analysis of on-line collaboration.
  - Influence diffusion models for on-line collaboration.
  - Innovation and creativity support by means of human-based genetic algorithms.
  - Fully integrated data analysis and model simulation using D2K web services.
  - Fully integrated document archiving, crawling, and retrieval using ThemeWeaver.

- **OpenDISCUS**: Advanced toolkit for collaboration analysis. It includes analysis of web content, RSS feeds, blogs, wikis, and email—among others.

- **XDA storage**: the *extensible discus architecture* storage is a xml driven storage facility to support the storage needs of the DISCUS portal.

9.4 Data-intensive Flow Architecture

- **Meandre**: Semantic-web-driven data-intensive flow architecture. Defined the component and flow ontologies and overall architecture. Develop the execution and storage engines, web interfaces and components (machine learning, evolutionary computation, text mining and semantic-storage).

10 Publications

10.1 Edited Books

Bacardit, J., Bernardó-Mansilla, E., Butz, M., Kovacs, T., Llorà, X., Takadama, (2008). *Learning Classifier Systems: International Workshops, IWLCS 2006-2007, Revised Selected Papers* Lecture Notes in Computer Science. Springer.

Kovacs, T., Llorà, X., Takadama, K., Lanzi, P.L., Stolzman, W., Wilson, S.W. (2007). *Learning Classifier Systems: International Workshops, IWLCS 2003-2005, Revised Selected Papers* Lecture Notes in Computer Science. Springer.

Beyer, H.G, O'Reilly, U.M, Arnold, D.V., Banzahaf, W., Blum, C., Bonabeau, E.W, Cantú-Paz, E., Dasgupta, D., Deb, K. Foster, J.A., de Jong, E. Lipson, H, Llorà X., Macoridis, S., Pelikan, M., Raidl, G.R., Sould, T., Tyrell, A.M., Watson, J.P., Zitzler, E. (2005). *Proceedings of the 2005 conference on Genetic and evolutionary computation*, ACM Press.

10.2   JOURNAL ARTICLES

Moreno-Torres, J.G, Llorà, X., Goldberg, D.E., and Barghava, R. (2011 in press) Repairing Fractures between Data using Genetic Programming-based Feature Extraction: A Case Study in Cancer Diagnosis, *Journal of Information Sciences.*

Kodali, A., Schulmerich, V., Palekar, R., Llorà, X. Bhargava, R. (2010). Optimized Nanospherical Layered Alternating Metal-Dielectric Probes for Optical Sensing. *Optics Express* 18:22, pp. 23302–23313.

Kodali, A., Llorà, X. Bhargava, R. (2010). Optimally Designed Nanolayered Metal-Dielectric Particles as Probes for Massively Multiplexed and Ultrasensitive Molecular assay. *Proceedings of the National Academy of Sciences of the United States of America.* doi: 10.1073/pnas.1003926107

Llorà, X., Goldberg, D. E. (2009). The innovation pump: Supporting creative processes in collaborative engineering, *International Journal of Collaborative Engineering*, 1(1/2):75–97, Inderscience Publisher.

Tang-Yinjie J, Garcia Martin, H., Paramvir D. S., Adam, A., Llorà, X., Meadows, A., Arkin, A., Keasling, J. D. (2009). Metabolic flux analysis of Shewanella spp. reveals evolutionary robustness in central carbon metabolism. *Biotechnology and bioengineering Journal*, 102(4):1161–1169.

Llorà, X., Priya, A., Bhargava , R. (2009), Observer-Invariant Histopathology using Genetics-Based Machine Learning. Natural Computing, 8, 101-120.

Tang-Yinjie J, Garcia Martin, H., Deutschbauer, A., Feng, X., Huang, R., Llorà, X., Arkin, A., Keasling, J. D. (2009). Invariability of central metabolic flux distribution in Shewanella oneidensis MR-1 under environmental or genetic perturbations. *Biotechnology Progress*, 25(5):1254–1259.

Ball, N.B., Brunner, R.J., Myers, A.D., Strand, N.E., Alberts, S.L., Tcheng, D., Llorà, X. (2007), Robust Machine Learning Applied to Astronomical Data Sets. II. Quantifying Photometric Redshifts for Quasars Using Instance-based Learning *The Astrophysical Journal* , 12(3), 27–29.

Goldberg, D. E., Sastry, K. and Llorà, X. (2007), Toward routine billion-variable optimization using genetic algorithms. *Complexity*, 12(3), 27–29.

Matsumura, N., Goldberg, D.E., and Llorà, X. (2007). Communication gap management for fertile community, *Journal of Soft Computing*, Volume 11 , Issue 8, pp. 791–798, Springer.

Llorà, X., Goldberg, D. E., Ohsawa, Y., Matsumura, N. Washida, W., Tamura, H., Yoshikawa, M., Welge, M., Auvil, L. Searshmith, D., Ohnishi, K. and Chao, C.-J., (2006), Innovation and Creativity Support via Chance Discovery, Genetic Algorithms, and Data Mining. *New Mathematics and Natural Computation*, 2(1), 85–100.

Llorà, X. (2006), Evolution to Knowledge, *ACM SIGEvolution Newsletter*, Volume 1 , Issue 3, pp. 10-17.

Butz, M.V., Pelikan, M., Llorà, X., and Goldberg, D. E. (2006), Automated Global Structure Extraction For Effective Local Building Block Processing in XCS. *Evolutionary Computation*. 14(3), 345–380.

Belda, I., Llorà, X., and Giralt, E. (2006). "Evolutionary algorithms and *de novo* peptide design," to *Special Issue on Soft Computing for Bioinformatics, Soft Computing Journal*, Volume 10, Issue 4, 295–304.

Belda, I., Madurgaa, S., Llorà, X., Martinella, M., Tarragó, T., Piqueras, M.G., Nicolá, E., Giralt, E. (2005) "ENPDA: an evolutionary structure-based *de novo* peptide design algorithm", *Journal of Computer-Aided Molecular Design*, 19:585601.

Teixidó, M., Belda, I., Roselló, X., Gonzàlez, S., Fabre, M., Llorà, X., Bacardit, J., Garrell, J. M., Vilaró, S., Albericio, F., and Giralt, E. (2003). "Development of a Genetic Algorithm to Design and Identify Peptides that can Cross the Blood-Brain Barrier: Design and validation in silico," *Journal of QSAR and Combinatorial Science*, 22(7):745–753, Wiley-VCH.

Llorà, X., and Goldberg, D.E. (2003). "Bounding the effect of noise in Multiobjective Learning Classifier Systems," *Journal of Evolutionary Computation*, Vol. 11 (3), pp. 279–298, MIT Press.

Llorà, X., and Garrell, J.M. (2003). "Prototype Induction and Attribute Selection via Evolutionary Algorithms," *Journal of Intelligent Data Analysis*, Vol. 7 (3), pp. 193–208, IOS Press.

Alías, F., Llorà, X., Iriondo, I., and Formiga, L. (2003). "Subjective Weight Tuning for Unit Selection by means of Interactive Genetic Algorithms", in *Procesamiento del Lenguaje Natural*, n 31 (ISSN:1135-5948), pp. 75-82, SEPLN press. (in Spanish)

Golobardes, E., Llorà, X., Salamó, M., and Martí, J. (2002). "Computer aided diagnosis with case-based reasoning and genetic algorithms," *Journal of Knowledge-based Systems*, Vol. 15 (1–2), pp. 45–52, Elsevier Science.

Garrell, J. M., Golobardes, E., Bernadó, E., and Llorà, X. (1999). "Automatic Diagnosis with Genetic Algorithms and Case-based Reasoning," in *Journal of Artificial Intelligence in Engineering*, Vol. 13, pp. 367–372, Elsevier Science.

10.3   BOOK CHAPTERS

Moreno-Torres, J.G., Llorà, X., Goldberg, D.E., Bhargava, R. (2011). *On the Homogenization of Data from Two Laboratories using a Genetic Programming based method: Diagnosing Prostate Cancer*. in Advances in Learning Classifier Systems (Proceedings of the 11th & 12th International Workshop, IWLCS 2009, 20010, Montréal, Canada. and Portland, OR) 185–198.

Llorà, X., Verma, A., Campbell, R., Goldberg, D.E. (2010) *"When Huge is Routine: Scaling Genetic Algorithms and Estimation of Distribution Algorithms via Data-Intensive Computing"* in Parallel and Distributed Computational Intelligence (F. Fernndez de Vega, E.Cant-Paz Eds.) SCI 269, pp. 1141. Springer-Verlag Berlin, Heidelberg.

Yasui, N.I., Llorà, X., Goldberg, D.E.(2009). *"Discourse Analysis and Creativity Support for Concept Product Design"*, in Data Mining for Design and Marketing (Y. Ohsawa, K. Yada Eds.) 107–119, Chapman & Hall/CRC, Boca Raton, Florida.

Llorà, X., Sastry, K., Lima, C., Lobo, F.G., Goldberg, D.E. (2008). *"Linkage Learning, Rule Representation, and the χ-ary Extended Compact Classifier System,"* in Advances in Learning Classifier Systems (11th International Workshop, IWLCS 2007), London, USA, LNAI, 189–205, Springer.

Llorà, X., Sastry, K. and Goldberg, D. E. (2007), *"Binary Rule Encoding Schemes: A Study Using the Compact Classifier System."* In Advances in Learning Classifier Systems (International Workshops, IWLCS 2003-2005, Revised Selected Papers), Seattle, USA, LNAI, 40–58, Springer.

Butz, M., Pelikan, M., Llorà, X., Goldberg, D.E. (2006), *"Effective and Reliable Online Classification Combining XCS with EDA Mechanisms"* In Scalable Optimization via Probabilistic Modeling, 249–274, Springer-Verlag Berlin.

Bernadó, E., Llorà, X., and Traus, I. (2005). *"Multiobjective Learning Classifier Systems: An Overview,"* in Jin, Y. (Ed.) Multiobjective Machine Learning, Springer.

Barry, A., Holmes, J., and Llorà, X. (2004). *"Data Mining using Learning Classifier Systems,"* in Bull, L. (Ed.) Applications of Learning Classifier Systems. LNCS Studies in Fuzziness and Soft Computing, pp. 15–67, Springer (Berlin).

Llorà, X., Goldberg, D.E., Traus, I., and Bernadó, E. (2003). *"Accuracy, Parsimony, and Generality in Evolutionary Learning Systems via Multiobjective Selection,"* in Lanzi, P.L., Stolzman, W., and Wilson, S.W. (Eds.) Advances in Learning Classifier Systems (5th International Workshop, IWLCS 2002), pp. 118–142, Granada, Spain, LNAI, Springer.

Bernadó, E., Llorà, X., and Garrell, J. M. (2002). *"XCS and GALE: A Comparative Study of Two Learning Classifier Systems on Data Mining,"* in Lanzi, P.L., Stolzman, W., and Wilson, S.W. Advances in Learning Classifier Systems (4th International Workshop, IWLCS 2001), San Francisco, CA, USA, July 7-8, 2001. Revised Papers, LNAI 2321, pp. 115–133, Springer.

10.4   REFEREED CONFERENCES

Verma, A. Llorà, X., Venkataram, S., Goldberg, D.E., Campbell, R. (2010, in press), Scaling eCGA Model Building via Data-Intensive Computing, *Proceedings of the International Conference on Evolutionary Computation.*

Formiga, L., Alías, F., Llorà, X. (2010, in press), Evolutionary process indicators for active IGAs applied to Weight Tuning in Unit Selection TTS synthesis, *Proceedings of the International Conference on Evolutionary Computation.*

Verma, A. Llorà, X., Campbell, R., Goldberg, D.E. (2009), Scaling Genetic Algorithms using MapReduce, *Proceedings of the 9th International Conference on Intelligent Systems Design and Applications*, 13–18.

Llorà, X. (2009) Data-Intensive Computing for Competent Gentic Algorithms: A Pilot Study Using Meandre, *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO-2009)*, 1387–1394.

Stalph, P.O, Butz, M.V., Goldberg, D.E.,Llorà, X. (2009) On the Scalability of XCS(F), *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO-2009)*, 1315–1322.

Moreno-Torres, J.M, Llorà, X., Goldberg, D.E. (2009) Binary representation in gene expression programming: towards a better scalability *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO-2009)*, 1911–1912.

Llorà, X., Ács, B., Auvil, L., Capitanu, B., Welge, M., Goldberg, D. E. (2008). Meandre: Semantic-Driven Data-Intensive Flows in the Clouds. *Proceedings of the 4th IEEE International Conference on e-Science*, 238–245.

Bhargava, R., Pounder, F., Reddy, R., Llorà, X. (2008), Enhancing the Tissue Segmentation Capability of Fast Infrared Spectroscopic Imaging via Chemometric Methods, *35th Conference of the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS 2008).*

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10.5   Teaching Methodology Related Publications

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Llorà, X., and Goldberg, D. E. (2002a). *"Minimal Achievable Error in the LED problem,"* Illinois Genetic Algorithms Laboratory, Technical report 2002015. University of Illinois at Urbana-Champaign, IL, USA.

Llorà, X. (2000b). *"Genetic Artificial Life Environment: mixing cellular genetic algorithms and artificial life ideas."* Technical report Number ISRG-EALS-2000002, Enginyeria i Arquitectura La Salle, Ramon Llull University, Barcelona, Catalonia, Spain, European Union.

Llorà, X. (2000a). *"Genetic Artificial Life Environment: solving classification problems using cooperative agents."* Technical report Number ISRG-EALS-2000001, Enginyeria i Arquitectura La Salle, Ramon Llull University, Barcelona, Catalonia, Spain, European Union.

11   OTHER ACTIVITIES AND NON-SCIENTIFIC PUBLICATIONS

2003–2006 Graphic designer assistant of the *"El Informador de Urbana-Champaign"* newspaper.

2003–2006 Columnist of the *"El Informador de Urbana-Champaign"* newspaper. Regular "Caracol Acróbata" columns articles published:

- *"Varas de medir inútiles"*, May 2006.
- *"Hojas de te"*, April 2006.
- *"Y ya nadie recuerda la verdad"*, February 2006.
- *"En un mundo de etiquetas"*, November 2005.
- *"Nunca había estado en la Mancha"*, October 2005.
- *"Ese cálido hogar"*, December 2004.
- *"Zapatos blancos, topos negros"*, November 2004.
- *"Tomando decisiones sin tomarlas"*, October 2004.
- *"De este agua no beberé"*, September 2004.
- *"Perdidos en alguna parte"*, August 2004.
- *"Destellos de vida"*, July 2004.
- *"De paso, una vida"*, June 2004.
- *"Opciones desaprovechadas"*, May 2004.
- *"Reflexionando a ciegas"*, April 2004.
- *"Navegantes solitarios"*, March 2004.
- *"El efecto mariposa"*, February 2004.
- *"Rebelión"*, December 2003.
- *"Venimos de parte de Pepe Carvalho"*, November 2003.
- *"Arde Europa"*, October 2003.

2003–present Member of *The Point Fencing Club*, Champaign, Illinois.

12   SKILLS AND OTHER INTERESTS

- Distributed and Web systems.
- C, C++, Java, Perl, PHP, Python, Javascript.
- Semantic-web (ontologies and storage media).
- Languages for data-intensive computing (PIG, ZigZag).
- XML, XSL, XSLT, XSP, CGI, Java networking (RMI, CORBA, JDBC).
- Database administration and programing (MySQL, Oracle).
- Linux, Solaris, Windows, and Mac OS X platforms.
- Languages: English, Spanish, and Catalan.