

# Jaume Bacardit

Curriculum Vitae  
February 15, 2011

## Personal information

*Full name:* Jaume Bacardit i Peñarroya  
*Nationality:* Spanish  
*Year of birth:* 1976  
*Email:* jaume.bacardit@nottingham.ac.uk  
*Home page:* <http://www.cs.nott.ac.uk/~jqb>  
*Phone:* +44 115 846 7044  
*Fax:* +44 115 951 4254  
*Current affiliation:* School of Computer Science & School of Biosciences  
University of Nottingham  
Jubilee Campus, Wollaton Road  
Nottingham, NG8 1BB, UK

## Education

- 2001-2004** PhD Degree in Computer Science. Enginyeria i Arquitectura La Salle. Ramon Llull University, Barcelona, Spain. Thesis title: “Pittsburgh Genetics-Based Machine Learning in the Data Mining Era: Representations, generalization, and run-time”. Grade: Summa Cum Laude. Citations in Google Scholar: 56.
- 1998-2000** Computer Engineering Degree (M.Eng. equivalent). Enginyeria i Arquitectura La Salle. Ramon Llull University, Barcelona, Spain. Final year dissertation: “Development of a digital assistant for the academical failure prediction using evolutionary computation”.
- 1994-1998** Technical Degree in Computer Engineering (B.Eng. equivalent). Enginyeria i Arquitectura La Salle. Ramon Llull University, Barcelona, Spain. Final year dissertation: “Development of an Evolutionary Computation Educational Environment with Visual C++”.

## Academic experience

### Teaching experience

- Spring 2011-Current date** Module convenor and lecturer in the G54DMT (Data Mining Techniques and Applications) module at the University of Nottingham
- Spring 2010-Current date** Module convenor and lecturer in the G53BIO (Bioinformatics) module at the University of Nottingham
- Spring 2010** Lecturer in the D224E1 (Computing Techniques) module at the University of Nottingham
- Autumn 2009** Module convenor and lecturer in the G51CSA (Computer Systems and Architecture) module at the University of Nottingham

**Spring 2009** Module convenor and lecturer in the G53DDB (Developments in Digital Business) module at the University of Nottingham

**Spring 2009-Current date** Lecturer in the D2DBT9 (Genetic Analysis and Bioinformatics) module at the University of Nottingham

**Autumn 2008** Lecturer in the C12360 (Investigating and Writing about Biology) module at the University of Nottingham

**Autumn 2008** Lecturer in the C123E4 (Environmental Information Technology) module at the University of Nottingham

**Spring 2008** Lecturer in the G53OPS (Operating Systems) module at the University of Nottingham

**January 2008-Current date** Lecturer in Bioinformatics in the University of Nottingham, jointly appointed by the Schools of Computer Science and Biosciences

**2005-2006** Teaching assistant for the G6DHLL (High Level Languages) and G53BIO (Bioinformatics) modules at the University of Nottingham.

**2005-2006** Invited lecturer for the G53BIO (Bioinformatics) module at the University of Nottingham.

**2001-2004** Supervision of the final year dissertation of four B.Eng. Students at Enginyeria i Arquitectura La Salle, Ramon Llull University.

**2001-2004** Lecturer and module coordinator for the “Introduction to Intelligent Systems” module (30 hours course) at Enginyeria i Arquitectura La Salle, Ramon Llull University.

**1998-2000** Teaching assistant for the “Introduction to Programming” module at Enginyeria i Arquitectura La Salle, Ramon Llull University.

## Funded research

1. Paving the Way for Future Emerging DNA based Technologies: Computer-Aided DNA Processing Utilizing DNA Reuse (CADMAD)
  - Funding body: European Union FP7
  - Amount awarded to Nottingham: 378231GBP
  - Principal Investigator: Prof. N. Krasnogor
  - Co-Investigators: Prof. M. Camara, Dr. J. Bacardit and Dr. S. Heeb
  - Awarded: 6/7/2010
  - Start date: 1/2/2011
  - End date: 31/1/2014
2. Principled Application of Learning Classifier Systems to Large-Scale Challenging Datasets (LCSxLCD)
  - Funding body: EPSRC
  - Amount Awarded: 101458GBP

- Principal Investigator: Dr. J. Bacardit
  - Awarded: 2/9/2009
  - Start date: 1/1/2010
  - End date: 31/3/2011
3. Development of novel tools for characterisation of unique cell phenotypes using data mining and statistical analysis
- Funding body: Feasibility award granted by the EPSRC's Bridging the Gaps project awarded to the University of Nottingham
  - Amount Awarded: 9379GBP
  - Principal Investigator: Dr. J. Bacardit
  - Co-Investigators: Dr. A. Mobasher and Prof. A. Wood
  - Awarded: 1/5/2009
  - Start date: 1/9/2009
  - End date: 15/12/2009
4. Bioinformatics, Systems and Synthetic Biology Plant Science Summer School (ESF-2482)
- Funding Body: European Science Foundation
  - Amount Awarded: 60435EUR
  - Principal Investigator: Dr. N.Krasnogor
  - Co-Investigators: Dr. J. Bacardit and Prof. M. Bennett
  - Awarded: 18-3-2009
  - Start Date: 18-3-2009
  - End Date: 31-9-2009

## Research experience

**March 2005-December 2007** *Robust Prediction with Explanatory Power for Protein Structure and Related Prediction Problems*. Sponsor: Engineering and Physical Sciences Research Council of UK (grant GR/T07534/01). Joint project between the School of Computer Science and IT and the School of Chemistry of the University of Nottingham (Output: 15 publications).

**March 2005-Current date** External collaborator of *KEEL: Knowledge Extraction based on Evolutionary Learning* and its followup projects, KEEL2 (grant TIN2005-08386-C05) and KEEL3 (grant TIN2008-06681-C06)

**2003-February 2005** *KEEL: Knowledge Extraction based on Evolutionary Learning*. Sponsor: Spanish Research Agency (grant TIC2002-04036-C05). Project involving the Universities of Granada, Cordoba, Jaen, Oviedo and Ramon Llull University, in Spain. Software development coordinator of the subproject *Integration and Development of Michigan and Pittsburgh Rule Learning Evolutionary Models, Reasoning Based on Cases and Data Mining in the KEEL Environment* (Ramon Llull University, TIC2002-04036-C05-03)

- 2003-2004** *Content analysis-based mammography images retrieval tool for breast-cancer diagnosis advising*, Sponsor: Spanish Research Agency (grant TIC2002-04160-C02). Project involving the University of Girona, Josep Trueta Medical Center and Ramon Llull University.
- 2003-2004** *Design and Implementation of a Distributed Object-oriented Framework for the Cooperation and Competition of Intelligent Agents*, Intelligent Systems Research Group. Enginyeria i Arquitectura La Salle, Ramon Llull University. Project coordinator.
- 2001-2004** *Analysis and design of reliability-enhancement techniques for automatic classification using Pittsburgh Genetic-Based Machine Learning*. Intelligent Systems Research Group, Enginyeria i Arquitectura La Salle, Ramon Llull University.
- 2001-2004** Research assistant at the Intelligent Systems Research Group, Enginyeria i Arquitectura La Salle, Ramon Llull University.
- 2001-2002** *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.
- 2000-2001** *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** *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.

### Administrative experience

- September 2010 - Present date** Library liaison at the School of Computer Science, University of Nottingham
- Autumn 2008 - August 2010** Industrial placement officer at the School of Computer Science, University of Nottingham
- Autumn 2008 - August 2010** Careers officer at the School of Computer Science, University of Nottingham

### Research placements

- May 2010** Visit to the Doron Lancet group, Weizmann Institute of Science, Israel.
- April 2009** Visit to the SCI2S research group, University of Granada, Spain.
- December 2007** Visit to the Intelligent Computing Group, University of La Laguna, Tenerife, Spain.
- December 2006** Visit to the structural computational biology group of the Spain National Center for Oncology Research - CNIO, Madrid, Spain.
- May 2006** Visit to the Illinois Genetic Algorithms Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, USA.

**February 2004** Visit to the Illinois Genetic Algorithms Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, USA.

## Publications

Note: All citation counts are based on Google Scholar (<http://scholar.google.com>).

### Edited Books

**Bacardit, J.**, Bernadó-Mansilla, E. and Butz, M.V. eds., Learning Classifier Systems: Revised Selected Papers of the International Workshop on Learning Classifier Systems 2006-2007, Lecture Notes in Artificial Intelligence 4998, 2008, Springer

### Journal Articles

Smith, R.E., Jiang, M.K., **Bacardit, J.**, Stout, M., Krasnogor, N. and Hirst, J.D. A learning classifier system with mutual-information-based fitness. *Evolutionary Intelligence*, 3(1):31-50

**Bacardit, J.**, Stout, M., Hirst, J.D., Valencia, A., Smith, R.E. and Krasnogor, N., Automated Alphabet Reduction for Protein Datasets, *BMC Bioinformatics* 10:6, 2009

**Bacardit, J.**, Burke, E.K. and Krasnogor, N., Improving the scalability of rule-based evolutionary learning, *Memetic Computing Journal*, 1(1):55-67, 2009

**Bacardit, J.** and Krasnogor, N., Performance and Efficiency of Memetic Pittsburgh Learning Classifier Systems, *Evolutionary Computation Journal*, 17(3):307-342, 2009.

Stout, M., **Bacardit, J.**, Hirst, J.D., Smith, R.E. and Krasnogor, N., Prediction of Topological Contacts in Proteins Using Learning Classifier Systems, Special Issue on Evolutionary and Metaheuristic-based Data Mining, *Soft Computing Journal*, 13(3):245-258, 2009.

Alcalá-Fdez, J., Sánchez, L., García, S., del Jesus, M.J., Ventura, S., Garrell, J.M., Otera, J., Romero, C., **Bacardit, J.**, Rivas, V.M., Fernández, J.C., and Herrera, F., KEEL: A Software Tool to Assess Evolutionary Algorithms for Data Mining Problems, Special Issue on Evolutionary and Metaheuristic-based Data Mining, *Soft Computing Journal*, 13(3):307-318, 2009.

Stout, M., **Bacardit, J.**, Hirst, J.D. and Krasnogor, N., Prediction of Recursive Convex Hull Class Assignments for Protein Residues Using Learning Classifier Systems, *Bioinformatics*, 24(7):916-923, 2008.

Teixidó, M., Belda, I., Roselló, X., González, 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 (formerly Journal of Quantitative Structure-Activity Relationships)*. Vol. 22, No. 7, pp. 745-753, Wiley-VCH.

## Refereed book chapters

- Bacardit, J.**, Bernadó-Mansilla, E. and Butz M.V., Learning Classifier Systems: Looking Back and Glimsing Ahead, in *Learning Classifier Systems, Revised Selected Papers of the International Workshop on Learning Classifier Systems 2006-2007*, LNAI 4998, pp. 1-21, 2008, Springer.
- Bacardit, J.** and N. Krasnogor, Empirical evaluation of ensemble techniques for a Pittsburgh Learning Classifier System, in *Learning Classifier Systems, Revised Selected Papers of the International Workshop on Learning Classifier Systems 2006-2007*, LNAI 4998, pp. 255-268, 2008, Springer.
- Bacardit, J.**, Stout, M., Hirst, J.D. and Krasnogor, N., Data Mining in Proteomics with Learning Classifier Systems, in *Learning Classifier Systems in Data Mining, Bull, L., Bernado Mansilla, E. and Holmes, J. (eds)*, 2008, Springer.
- Bacardit, J.** and Butz, M.V., Data Mining in Learning Classifier Systems: Comparing XCS with GAssist, in *Learning Classifier Systems, Revised Selected Papers of the International Workshop on Learning Classifier Systems 2003-2005, Lecture Notes in Computer Science 4399*, pp. 282-290, 2007, Springer.
- Bacardit, J.**, Goldberg D.E. and Butz, M.V., Improving the Performance of a Pittsburgh Learning Classifier System Using a Default Rule, in *Learning Classifier Systems, Revised Selected Papers of the International Workshop on Learning Classifier Systems 2003-2005, Lecture Notes in Computer Science 4399*, pp. 291-307, 2007, Springer.
- Bacardit, J.** and Garrell, J.M., Bloat control and generalization pressure using the minimum description length principle for a Pittsburgh approach Learning Classifier System in *Learning Classifier Systems, Revised Selected Papers of the International Workshop on Learning Classifier Systems 2003-2005, Lecture Notes in Computer Science 4399*, pp. 59-79, 2007, Springer.

## Refereed conferences papers

- Widera, P., **Bacardit, J.**, Krasnogor, N., Garcia-Martinez, C., and Lozano, M. Evolutionary symbolic discovery for bioinformatics, systems and synthetic biology. In GECCO '10: Proceedings of the 12th annual conference comp on Genetic and evolutionary computation, pages 1991-1998. ACM, 2010
- Franco, M., Krasnogor, N. and **Bacardit, J.** Analysing BioHEL Using Challenging Boolean Functions. 13th International Workshop on Learning Classifier Systems - IWLCS 2010, In GECCO '10: Proceedings of the 12th annual conference comp on Genetic and evolutionary computation, pages 1855-1862. ACM, 2010
- Franco, M., Krasnogor, N. and **Bacardit, J.** Speeding Up the Evaluation of Evolutionary Learning Systems using GPGPUs. In Proceedings of the 12th Annual Conference on Genetic and Evolutionary Computation (GECCO2010), 1039-1046, ACM Press, 2010. **Best paper award of the GBML track of the conference.**
- Bacardit, J.** and Krasnogor, N. A Mixed Discrete-Continuous Attribute List Representation for Large Scale Classification Domains. In Proceedings of the 11th Annual Conference on Genetic and Evolutionary Computation (GECCO2009), pp. 1155-1162, ACM Press, 2009

- Tabacman, M., Krasnogor, N., **Bacardit, J.** and Loiseau, I., Learning classifier systems for optimization problems: A case study on the fractal travelling salesman problem in *Eleventh International Workshop on Learning Classifier Systems, IWLCS2008*
- Bacardit, J.** and N. Krasnogor, Fast Rule Representation for Continuous Attributes in. Genetics-Based Machine Learning, in *Proceedings of the 10th Annual Conference on Genetic and Evolutionary Computation (GECCO2008)*, pp. 1421-1422, ACM Press, 2008.
- Bacardit, J.**, M. Stout, J.D. Hirst, K. Sastry, X. Llorà and N. Krasnogor, Automated Alphabet Reduction Method with Evolutionary Algorithms for Protein Structure Prediction, in *Proceedings of the 9th Annual Conference on Genetic and Evolutionary Computation (GECCO2007)*, pp. 346-353, ACM Press, 2007. This publication won the Bronze medal on the 2007 edition of the Humies awards for human-competitive results produced by evolutionary computation methods.
- Bacardit, J.** and N. Krasnogor, Empirical evaluation of ensemble techniques for a Pittsburgh Learning Classifier System, in *Ninth International Workshop on Learning Classifier Systems, IWLCS2006*
- Bacardit, J.** and N. Krasnogor, Smart Crossover operator with multiple parents for a Pittsburgh Learning Classifier System, in *Proceedings of the 8th Annual Conference on Genetic and Evolutionary Computation (GECCO2006)*, pp. 1441 - 1448, ACM Press, 2006.
- Bacardit, J.**, M. Stout, J.D. Hirst, N. Krasnogor and J. Blazewicz, Coordination number prediction using Learning Classifier Systems: Performance and interpretability, in *Proceedings of the 8th Annual Conference on Genetic and Evolutionary Computation (GECCO2006)*, pp. 247-254, ACM Press, 2006. Citations: 3.
- Stout, M., **Bacardit, J.**, Hirst, J.D., and Krasnogor, N., Prediction of Residue Exposure and Contact Number for Simplified HP Lattice Model Proteins Using Learning Classifier Systems, in *D. a. Ruan, P. D'hondt, P. F. Fantoni, M. D. Cock, M. Nachtegael and E. E. Kerre, eds., 7th International FLINS Conference on Applied Artificial Intelligence, World Scientific, 2006*, pp. 601-608.
- M. Stout, **J. Bacardit, J.**, D. Hirst, N. Krasnogor and J. Blazewicz, From HP Lattice Models to Real Proteins: coordination number prediction using Learning Classifier Systems, in *4th European Workshop on Evolutionary Computation and Machine Learning in Bioinformatics 2006, Lecture Notes in Computer Science vol. 3907*, pp. 208-220, Springer, 2006. Citations: 6
- Bacardit, J.**, Analysis of the Initialization Stage of a Pittsburgh Approach Learning Classifier System, in *Proceedings of the 7th Annual Conference on Genetic and Evolutionary Computation (GECCO2005)*, pp. 1843–1850, ACM Press, 2005. Citations: 3.
- Bacardit, J.**, Goldberg D.E., Butz, M.V., Llorà, X. and Butz, M.V., Speeding-up Pittsburgh Learning Classifier Systems: Modeling Time and Accuracy, in *Parallel Problem Solving from Nature - PPSN VIII, LNCS vol. 3242*, pp. 1021–1031, 2004, Springer. Citations: 4.
- Aguilar–Ruiz, J., **Bacardit, J.** and Divina, F., Experimental Evaluation of Discretization Schemes for Rule Induction, in *Proceedings of the 6th Annual Conference on Genetic and Evolutionary Computation (GECCO2004)*, *LNCS vol. 3102*, pp 828–839, 2004, Springer. Citations: 1.

- Bacardit, J.** and Garrell, J.M., Analysis and improvements of the Adaptive Discretization Intervals knowledge representation, in *Proceedings of the 6th Annual Conference on Genetic and Evolutionary Computation (GECCO2004)*, LNCS vol. 3103, pp 726–738, 2004, Springer. Citations: 2.
- Bacardit, J.** and Butz, M.V., Data Mining in Learning Classifier Systems: Comparing XCS with GAssist, in *7th International Workshop on Learning Classifier Systems - IWLCS 2004*, Seattle, USA. Citations: 16
- Bacardit, J.**, Goldberg D.E. and Butz, M.V., Improving the Performance of a Pittsburgh Learning Classifier System Using a Default Rule, in *7th International Workshop on Learning Classifier Systems - IWLCS 2004*, Seattle, USA. Citations: 4.
- Llorà, X., Goldberg, D.E., **Bacardit, J.**, Traus, I., and Bernadó, E. Where to Go Once You Evolved a Bunch of Promising Hypotheses?, in *6th International Workshop on Learning Classifier Systems - IWLCS 2003*, Chicago, USA. Citations: 1.
- Bacardit, J.** and Garrell, J.M., Bloat control and generalization pressure using the minimum description length principle for a Pittsburgh approach Learning Classifier System, in *6th International Workshop on Learning Classifier Systems - IWLCS 2003*, Chicago, USA. Citations: 11.
- Bacardit, J.** and Garrell, J.M., Evolving multiple discretizations with adaptive intervals for a Pittsburgh Rule-Based Learning Classifier System, in *Proceedings of the 5th Annual Conference on Genetic and Evolutionary Computation (GECCO2003)*, LNCS vol. 2724, pp. 1818–1831, 2003, Springer. Citations: 16.
- Bacardit, J.** and Garrell, J.M., Evolution of Multi-Adaptive Discretization Intervals for a Rule-Based Genetic Learning System, in *Proceedings of the 7th Iberoamerican Conference on Artificial Intelligence (IBERAMIA2002)*, LNCS vol. 2527, pp. 350-360, 2002, Springer. Citations: 7.
- Bacardit, J.** and Garrell, J.M., Evolution of Adaptive Discretization Intervals for a Rule-Based Genetic Learning System, in *Proceedings of the 4th Annual Conference on Genetic and Evolutionary Computation (GECCO2002)*, pp. 677, 2002, Morgan Kaufmann. Citations: 8.

## Technical reports

- Bacardit, J.**, Stout, M., Hirst, J.D., Sastry, K., Llorà, X. and Krasnogor, N., Automated Alphabet Reduction Method with Evolutionary Algorithms for Protein Structure Prediction, Illinois Genetic Algorithms Laboratory, Technical report 2007015. University of Illinois at Urbana-Champaign, IL, USA.
- Bacardit, J.** and Krasnogor, N., BioHEL: Bioinformatics-oriented hierarchical evolutionary learning. Nottingham eprints, University of Nottingham.
- Bacardit, J.**, Goldberg D.E. and Butz, M.V., Improving the Performance of a Pittsburgh Learning Classifier System Using a Default Rule, Illinois Genetic Algorithms Laboratory, Technical report 2004032. University of Illinois at Urbana-Champaign, IL, USA.

Abbass, H.A., **Bacardit, J.**, Butz, M.V., Llorà, X., Online adaptation in Learning Classifier Systems: Stream Data Mining, Illinois Genetic Algorithms Laboratory, Technical report 2004031. University of Illinois at Urbana-Champaign, IL, USA.

**Bacardit, J.** and Butz, M.V., Data Mining in Learning Classifier Systems: Comparing XCS with GAssist, Illinois Genetic Algorithms Laboratory, Technical report 2004030. University of Illinois at Urbana-Champaign, IL, USA.

**Bacardit, J.**, Goldberg D.E., Butz, M.V., Llorà, X. and Butz, M.V., Speeding-up Pittsburgh Learning Classifier Systems: Modeling Time and Accuracy, Illinois Genetic Algorithms Laboratory, Technical report 2004022. University of Illinois at Urbana-Champaign, IL, USA.

## Professional activities

### Conference organization

- Workshops co-chair of the 13th Genetic and Evolutionary Computational Conference (GECCO2011)
- Workshops chair of the 12th Genetic and Evolutionary Computational Conference (GECCO2010)
- Co-organizer of the Plant Bioinformatics, Systems and Synthetic Biology Summer School. Nottingham July 27th-July 31st, 2009.
- Chair of the Genetics-Based Machine Learning (GBML) track of the 11th Genetic and Evolutionary Computational Conference (GECCO2009)
- Co-chair of the International Workshop on Learning Classifier Systems from 2007 to 2010. Elected as organizer in a community-wide voting by the Learning Classifier Systems researchers.
- Logistics Chair, 4th Catalan Conference on Artificial Intelligence (CCIA 2001).

### Conference program committees and journal reviews

I review papers for the following journals:

- IEEE Transactions on Systems, Man and Cybernetics Part-B
- IEEE Transactions on Evolutionary Computation
- Evolutionary Computation Journal
- International Journal of AI Tools
- Soft Computing Journal
- Expert Systems, the Journal of Knowledge Engineering.
- Frontiers in Bioscience
- Journal of Artificial Evolution and Applications
- Computers in Biology and Medicine

- Evolutionary Intelligence
- Information Sciences
- Pattern Recognition Letters
- Data and Knowledge Engineering
- Advances in Artificial Intelligence
- Knowledge and Information Systems
- Journal of Multiple-Valued Logic and Soft Computing

I was member of the program committee for the following events:

- Genetic and Evolutionary Computation Conference (GECCO) (Since 2005)
- Spanish Conference on meta-heuristics and evolutionary and bio-inspired algorithms (Since 2005)
- Spanish Conference on Artificial Intelligence - CAEPIA (Since 2009)
- International Workshop on Learning Classifier Systems (Since 2005)
- ASME 2005 International Design Engineering Technical Conference
- International Joint Conference on Neural Networks (IJCNN) (Since 2006)
- International Conference on Evolutionary Computation (CEC) (Since 2008)
- 2nd International Conference on Bio-Inspired Computing: Theory and Applications (BIC-TA 2007)
- International Workshop on Nature Inspired Cooperative Strategies for Optimization (Since 2007)
- IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology (2006 and 2007)
- Workshop on Pattern Recognition in Bioinformatics (Since 2007)
- Special session on Learning Classifier Systems of the 8th International Conference on Hybrid Intelligent Systems(HIS08)
- International Meeting on Computational Intelligence Methods for Bioinformatics and Biostatistics (CIBB2008)
- 11th Ibero-American Conference on Artificial Intelligence, IBERAMIA 2008
- 6th International Conference on Evolutionary Multi-Criterion Optimization (EMO2011)

## Professional Memberships

- Member, Association for Computing Machinery (ACM), 2005-Current Date.
- Member, ACM Special Interest Group for Genetic and Evolutionary Computation (SIGEVO) (formerly International Society of Genetic and Evolutionary Computation) , 2002-Current Date.

## Awards and medals

- 2007** Bronze medal in the 'Humies Awards'. This prize is awarded to Evolutionary Computation applications that manage to obtain human-competitive results of high relevance and impact. My entry was part of my Bioinformatics work on automated information-theory based alphabet reduction techniques applied to a variety of protein structure prediction datasets.
- 2001-2004** FI Fellowship (FI 2001 00514). Sponsor: Departament d'Universitats, Recerca i Societat de la Informació. Generalitat de Catalunya (Catalan Government). Doctoral fellowship.
- 1999** Beca Colaboración del Ministerio de Educación y Cultura. Fellowship granted by the Spanish Government to students in their degree final year to collaborate in a university department.
- 1998-1999** Beca Universitaria de Caixa de Manresa. Sponsor: Manresa Savings Bank, Catalonia, Spain. Fellowship granted to the best university students in the Manresa region, Spain.

## Invited talks

- July 2011** "Large-Scale Data Mining using Genetics-Based Machine Learning", tutorial co-presented with Dr. Xavier Llorà, Genetic and Evolutionary Computation Conference, GECCO-2011
- July 2010** "Large-Scale Data Mining using Genetics-Based Machine Learning", tutorial co-presented with Dr. Xavier Llorà, World Conference on Computational Intelligence, WCCI-2010
- May 2010** "Data Mining Protein Structures' Topological Properties to Enhance Contact Map Predictions", invited talk to the Bioinformatics and Genome Research Open Club, Weizmann Institute of Science, Israel.
- July 2009** "Large-Scale Data Mining using Genetics-Based Machine Learning", tutorial co-presented with Dr. Xavier Llorà, Genetic and Evolutionary Computation Conference, GECCO-2009
- June 2009** "GBML methods for large-scale datasets", invited talk to the Learning Classifier Systems Group, University of the West of England, Bristol, UK
- May 2008** "Memetic Pittsburgh Learning Classifier Systems", invited talk during the I Workshop on Knowledge Extraction based on Evolutionary Learning, Granada, Spain.
- May 2008** "GBML methods for large-scale datasets", invited talk during the I Workshop on Knowledge Extraction based on Evolutionary Learning, Granada, Spain.
- December 2007** "Bioinformatics: Protein Structure Prediction using Evolutionary Rule Learning", invited talk to the School of Mathematics, University of La Laguna, Spain.

**December 2006** "Coordination number prediction using Learning Classifier Systems: Performance and interpretability", invited talk to the Structural Computational Biology Group of the Spain National Center for Oncology Research - CNIO, Madrid, Spain.

**May 2006** "Pittsburgh Learning Classifier Systems for Protein Structure Prediction: Scalability and Explanatory Power", invited talk during the NCSA/Iligal Gathering on Evolutionary Learning, NIGEL2006, Urbana, IL, USA

**February 2006** "The GAssist Learning Classifier System", invited talk to the Learning Classifier Systems Group, University of the West of England, Bristol, UK.

**September 2004** "The GAssist Learning Classifier System", invited talk in the Workshop on Future Directions of Learning Classifier Systems, Birmingham, UK

## Software

I have always tried to design rigorously the software tools I produce for my research and teaching efforts and, if possible, place them freely available for anyone to download. The first tool of the list below was made for teaching purposes as to facilitate the understanding of how evolutionary algorithms work in undergraduate cohorts. The second tool has dual teaching/research purposes. It is a framework of evolutionary computation tools for all aspects of data mining, while the last two software programs are the product of my research in Learning Classifier Systems research. The first of them was created during my PhD and the second one for my EPSRC-funded research on Bioinformatics.

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

**KEEL (Knowledge Extraction based on Evolutionary Learning)** Platform for the analysis of evolutionary learning for data mining problems. It includes dozens of algorithms (evolutionary and non-evolutionary) covering each stage of the data mining process, plus a graphical interface for the design of experiments and an educational module to illustrate the behaviour of the included methods.

**GAssist (Genetic cLASSifier sySTem)** Genetic-based machine learning platform based on the Pittsburgh model. Contains several knowledge representations, windowing techniques for run-time reduction and several generalization pressure techniques to obtain compact and accurate solutions

**BioHEL (BIOinformatics-oriented Hierarchical Evolutionary Learning)** Genetic-based machine learning platform based on the Iterative Rule Learning model. Contains several knowledge representations, windowing techniques for run-time reduction and several generalization pressure techniques to obtain compact and accurate solutions

## Other skills

- Programming Languages: C, C++, Java, Javascript, Perl, Prolog, Lisp, Sh
- Java technologies: RMI, JDBC, JSP, EJB
- Development frameworks: Visual C++, Eclipse

- Linux, Solaris and Windows platforms
- Distributed and web programming
- Data-Base Management Systems: MySQL, PostgreSQL and Oracle
- Languages: Catalan, English and Spanish