**Ignacio Ponzoni, PhD**
***Short Curriculum Vitae – April 2016***

## 1. Personal Details


Name: Ignacio Ponzoni
Date of Birth: 29th March, 1972
City of Birth: Bahía Blanca (Argentina)

Business Address: Department of Computer Science and Engineering
Universidad Nacional del Sur
Avda. Alem 1253 – 8000 – Bahía Blanca
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## 2. Educational Qualifications

Degrees

- PhD in Computer Science, Universidad Nacional del Sur.
  - Thesis title: "Application of Graph Theory to the Development of Algorithms for Classification of Variables". Supervisors: Dra. Nélida Brignole and Dr. Guillermo Simari.
  - Thesis dissertation: April-2001.
  - Mark: 10 (Outstanding[1]).
- Graduate in Computer Science, Universidad Nacional del Sur.
  - Graduation date: March-1996.
  - Academic Average: 8.63.

Post-doctoral stays

- Visiting Researcher in the **Department of Genomics and Bioinformatics, Principe Felipe Research Center**, Valencia, Spain. From 6-June-201 until 15-July-2011. Activity: research in the development of pathway network inference methods.
- Visiting Researcher in the **Department of Genomics and Bioinformatics, Principe Felipe Research Center**, Valencia, Spain. From 3-March-2009 until 5-July-2009. Activity: research in the development of pathway network inference methods.
- Visiting Researcher in the **School of Computing and Mathematics, University of Ulster, United Kingdom**. From 28-August-2006 until 26-Sept-2006. Activity: research in the development of gene regulatory network inference methods.
- Visiting Researcher in the **School of Computing and Mathematics, University of Ulster, United Kingdom**. From 28-February-2005 until 6-July- 2005. Activity: research in the development of gene regulatory network inference methods.

## 3. Current Positions

- **Scientific and Technological Researcher of CONICET[2]**
  Category: Investigador Independiente **(***equivalent to a* ***Senior Researcher*** position**)**
- **Profesor Asociado (***equivalent to* ***Reader*** *position in UK Educational System***)**
  Department of Computer Science and Engineering
  Universidad Nacional del Sur[3], Bahía Blanca, Argentina.
- **Vice-head** of the **Laboratory of Research and Development in Scientific Computing (LIDeCC).** Lab site: http://lidecc.cs.uns.edu.ar

[1] "10 (outstanding)" is the maximum mark in Argentine Evaluation University System.
[2] National Council of Scientific and Technological Research of Argentina (www.conicet.gov.ar).
[3] Nacional University of South (www.uns.edu.ar).

## 4. Research Interests

Development of Machine Learning and Evolutionary Computing techniques for Computational Modelling in:

- Bioinformatics & Computational Biology
- Chemioinformatics
- Medical Informatics
- Materials Science
- Chemical Engineering

## 5. Selected Publications (in Journals and LNCS/LNAI/LNBI chapters)

- Gallo, C.A., Cecchini, R.L., Carballido, J.A. **Ponzoni, I.** "Towards the discretization of gene expression data", ***Briefings in Bioinformatics****, Oxford Press,* (2015). In press.
- Martínez, M.J., **Ponzoni, I.**, Díaz, M.F., Vazquez, G.E., Soto, A.J. "Visual Analytics in Cheminformatics: User-Supervised Descriptor Selection for QSAR Methods", ***Journal of Cheminformatics***, Vol. 7, paper 39. *Springer Science+Business Media*, (2015).
- Carballido, J.A., Gallo, C.A., Dussaut J.S., **Ponzoni, I.** "On Evolutionary Algorithms for Biclustering of Gene Expression Data", ***Currents Bioinformatics****,* Vol. 10, No3, pp. 259-267. Bentham Science, (2015).
- **Ponzoni I.**, Nueda M.J., Tarazona S., Götz S., Montaner D., Dussaut J.S., Dopazo J., Conesa A. "Pathway network inference from gene expression data", ***BMC Systems Biology***, Vol. 8, S7. Springer Science+Business Media, (2014).
- Romero, J.R., Roncallo, P.F., Akkiraju, P.C., **Ponzoni, I.**, Echenique, V.C., Carballido, J.A. "Using classification algorithms for predicting durum wheat yield in the province of Buenos Aires", ***Computers and Electronics in Agriculture***, Vol. 96, pp. 173-179. Elsevier, (2013).
- Palomba, D., Martínez, M.J., **Ponzoni, I.**, Díaz, M.F., Vazquez, G.E., Soto, A.J. "QSAR models for predicting log Pliver on volatile organic compounds combining statistical methods and domain knowledge", ***Molecules***, Vol. 17, No. 12, pp. 14937-14953. MDPI AG, (2012).
- Cecchini, R.L., Ponzoni, I., Carballido, J.A. "Multi-objective evolutionary approaches for intelligent design of sensor networks in the petrochemical industry", ***Expert Systems with Applications***, Vol. 39, pp. 2643-2649, Elsevier, (2012).
- Soto, A.J., Vazquez, G.E., Strickert, M., **Ponzoni, I.** "Target-driven subspace mapping methods and their applicability domain estimation", ***Molecular Informatics***, Vol. 30, pp. 779–789, Wiley, (2011).
- Gallo, C.A., Carballido, J.A., **Ponzoni, I.** "Discovering Time-Lagged Rules from Microarray Data using Gene Profile Classifiers", ***BMC Bioinformatics***, Vol. 12, paper 123, Springer Science+Business Media, (2011).
- Gallo, C.A., Dussaut, J.S., Carballido, J.A., **Ponzoni, I.** "BAT: A new Biclustering Analysis Toolbox", ***Lecture Notes in Bioinformatics***, Vol. 6268, pp. 67-71. Springer-Verlag, (2010).
- Soto, A.J., Cecchini, R.L., Vazquez, G.E., **Ponzoni, I.** "Multi-Objective Feature Selection in QSAR/ QSPR using a Machine Learning Approach", ***QSAR & Combinatorial Science***, Vol. 28, No. 11-12, pp. 1509-1523. Wiley, (2009).
- Domancich, A.O., Maidana, M., Hoch, P., Brignole, N.B., **Ponzoni, I.** "mp4so: A Model-Partitioning Software for Simulation and Optimization", ***Computer-Aided Chemical Engineering***, Vol.27, Part A, pp. 471-476. Elsevier, (2009).
- Gallo, C.A., Carballido, J.A., **Ponzoni, I.** "BiHEA: A Hybrid Evolutionary Approach for Microarray Biclustering", ***Lecture Notes in Bioinformatics***, Vol. 5676, pp. 36–47. Springer-Verlag, (2009).
- Carballido, J.A., **Ponzoni, I.**, Brignole, N.B. "SID-GA: an Evolutionary Approach for improving Observability and Redundancy Analysis in Structural Instrumentation Design". ***Computers & Industrial Engineering***. Vol. 56, No. 4, pp. 1419-1428. Elsevier, (2009).
- Soto, A.J., **Ponzoni, I.**, Vazquez, G.E. "Segregating Confident Predictions of Chemicals' Properties for Virtual Screening of Drugs", ***Lecture Notes in Computer Science***, Vol. 5518, pp. 1005–1012. Springer-Verlag, (2009).

- Olivera, A.C., Carballido, J.A., Frutos, M., **Ponzoni, I.**, Bringnole, N.B. "Bus Network Scheduling Problem: Memetic Multi-objective Evolutionary Approaches based on the PISA platform", ***Lecture Notes in Computer Science***, Vol. 5517, pp. 1272–1279. Springer-Verlag, (2009).
- Domancich, A., Durante, M., Ferraro, S., Hoch, P., Brignole N.B., **Ponzoni I.** "How To Improve the Model Partitioning in a DSS for Instrumentation Design", ***Industrial & Engineering Chemistry Research***. Vol. 48, No. 7, pp. 3513-3525. American Chemical Society, (2009).
- Gallo, C.A., Carballido, J.A., **Ponzoni, I.** "Microarray Biclustering: A Novel Memetic Approach based on the PISA Platform", ***Lecture Notes in Computer Science***, Vol. 5483, pp. 44–55. Springer-Verlag, (2009).
- Carballido, J.A., **Ponzoni, I.** "On Artificial Gene Regulatory Networks", ***Electronic Journal of SADIO***, Vol. 8, No. 1, pp. 25-34 (2008).
- Soto, A.J., Cecchini, R., Vazquez, G., **Ponzoni, I.** "A Wrapper-based Feature Selection Algorithm for ADMET Prediction using Evolutionary Computing", ***Lecture Notes in Computer Science***, Vol. 4973, pp. 188–199. Springer-Verlag, (2008).
- Soto, A.J., Cecchini, R.L., Vazquez, G.E., **Ponzoni, I.** "An Evolutionary Approach for Feature Selection applied to ADMET Prediction", ***Ibero-American Journal of Artificial Intelligence***, Vol. 37, pp. 55-63 (2008).
- **Ponzoni, I.**, Azuaje, F.J., Augusto, J.C., Glass, D.H. "Inferring association rules between genes using a combinatorial optimization learning process and adaptive regulation thresholds". ***IEEE/ACM Transactions on Computational Biology and Bioinformatics***, Vol. 4, No. 4, pp. 624-634. IEEE Computer Society, (2007).
- Carballido, J.A., **Ponzoni, I.**, Brignole, N.B. "CGD-GA: A Graph-based Genetic Algorithm for Sensor Network Design". ***Information Sciences***. Vol. 177, No. 22, pp. 5091–5102. Elsevier, (2007).
- Asteasuain, F., Carballido, J.A., Vazquez, G.E., **Ponzoni, I.**, "Using Computational Intelligence and Parallelism to solve an Industrial Design Problem". ***Lecture Notes in Artificial Intelligence***, Vol. 4140, 188–197. Springer-Verlag Berlin Heidelberg, (2006).
- Carballido, J.A., **Ponzoni, I.**, Brignole, N.B., "A Novel Application of Evolutionary Computing in Process Systems Engineering". ***Lecture Notes in Computer Science***, Vol. 3448, 12–22. Springer-Verlag Berlin Heidelberg, (2005).
- Safe, M.D., Carballido, J.A., **Ponzoni, I.**, Brignole, N.B., "On Stopping Criteria for Genetic Algorithms". ***Lecture Notes in Artificial Intelligence***, Vol. 3171, 405–413. Springer-Verlag Berlin Heidelberg, (2004).
- **Ponzoni I.**, Sánchez M.C., Brignole N.B. "A Direct Method for Structural Observability Analysis", ***Industrial & Engineering Chemistry Research***. Vol. 43, No. 2, pp. 577-588, (2004). American Chemical Society.
- Ferraro, S., **Ponzoni I.**, Sánchez M.C., Brignole N.B. "A Symbolic Derivation Approach for Redundancy Analysis", ***Industrial & Engineering Chemistry Research***. Vol. 41, No. 23, pp. 5692-5701 (2002). American Chemical Society.
- **Ponzoni I.**, Vazquez G.E., Sánchez M.C., Brignole N.B. "Parallel Observability Analysis on Networks of Workstations", ***Computers & Chemical Engineering***. Vol 25, No.7-8, pp. 997-1002 (2001). Elsevier.
- Vazquez G.E., **Ponzoni I.**, Sánchez M.C., Brignole N.B. "ModGen: A Model Generator for Instrumentation Analysis", ***Advances in Engineering Software.*** Vol. 32, No. 1, pp. 37-48 (2001). Elsevier.
- **Ponzoni I.**, Sánchez M.C., Brignole N.B. "A New Structural Algorithm for Observability Classification", ***Industrial & Engineering Chemistry Research***, Vol. 38, No. 8, pp. 3027-3035 (1999). American Chemical Society.
- **Ponzoni I.**, Sánchez M.C., Brignole N.B. "CDHG: a New Partitioning Algorithm based on the Detection of Cycles in Hypergraphs", ***Latin American Applied Research***. Vol. 28, Nº1/2, pp. 31-36 (1998).

## 6. PhD Supervision

### *Current*

Fiorella Cravero. “Predictive Modelling of Complex Systems in Molecular Informatics: Development of Feature Selection and Extraction Methods under Uncertainty”. PhD in Computer Sciences, Universidad Nacional del Sur (Argentina). Start date: Jun-2015.

José Romero. “Development of Data Mining and Machine Learning Methods for the Study of Gene Expression in Plants”. PhD in Computer Sciences, Universidad Nacional del Sur (Argentina). Start date: Sep-2010.

### *Completed*

Julieta S. Dussaut. “Development of Evolutionary Computing and Machine Learning Methods for the inference of Pathway Networks”. PhD in Computer Sciences, Universidad Nacional del Sur (Argentina). Thesis dissertation: March-2016. Mark: 10 (Outstanding). Thesis reviewers: Dr. Elizabeth Tapia (UNR, Argentina) and Dr. Pilar Bulacio (UNR, Argentina).

Cristian A. Gallo. “Development of Multiobjective Evolutionary Computing and Machine Learning Techniques for the Inference, Modelling and Simulation of Gene Regulatory Networks”. PhD in Computer Sciences, Universidad Nacional del Sur (Argentina). Thesis dissertation: March-2014. Mark: 10 (Outstanding). Thesis reviewers: Dr. Elizabeth Tapia (UNR, Argentina) and Dr. Pilar Bulacio (UNR, Argentina).

Axel J. Soto. “Machine learning and Scientific Computing Techniques applied to the Prediction of ADMET properties”. PhD in Computer Sciences, Universidad Nacional del Sur (Argentina). Thesis dissertation: Junio-2010. Mark: 10 (Outstanding). Thesis reviewers: Dr. Pablo Granitto (UNR, Argentina) and Dr. Diego Milone (UNL, Argentina).

Jessica A. Carballido. “Design of Evolutionary Algorithms for Initial Optimal Allocation of Sensor Networks in Industrial Processes”. PhD in Computer Sciences, Universidad Nacional del Sur (Argentina). Thesis dissertation: Nov-2005. Mark: 10 (Outstanding). Thesis reviewers: Dr. Carlos Coello Coello (CINVESTAV-IPN, Mexico) and Dr. Gerardo Acosta (UNICEN, Argentina).

## 7. Funded Research Proposals

- PIP 2013-2015: Machine Learning and Evolutionary Computing Techniques applied to the Design of Predictive Models in Bioinformatics applied to Systems Biology and Molecular Informatics. Grant code: 112-2012-0100471CO. Project Leader: Dr. Ignacio Ponzoni. Supporting Organization: CONICET. Period: 1/11/2014 – 31/10/2017. Amount: 360.000 Argentinean pesos.

- PIP 2010-2012: Machine Learning and Evolutionary Computing Techniques applied to the Design of Predictive Models in Bioinformatics. Applications: Gene Regulatory Networks Inference and ADMET Prediction. Grant code: 112-2009-0100322. Project Leader: Dr. Ignacio Ponzoni. Supporting Organization: CONICET. Period: 1/5/2010 – 31/10/2014. Amount: 180.000 Argentinean pesos.

- PGI-UNS: Machine Learning and Evolutionary Computing Techniques applied to the Design of Predictive Models in Bioinformatics. Grant code: 24/ZN15. Project Leader: Dr. Ignacio Ponzoni. Supporting Organization: SGCyT, Universidad Nacional del Sur. Peŕiod: 1/1/2008–31/12/2010. Amount: 10.000 Argentinean pesos.

- PIP: Computational for Prediction of ADMET Properties, and Instrumentation & Simulation of Industrial Processes. Grant Code: 5930. Project Leaders: Dra. Nélida B. Brignole and Dr. Ignacio Ponzoni. Supporting Organization: CONICET. Period: 2/9/2005 – 1/9/2007. Amount: 36.000 Argentinean pesos.

- PICT B: Parallel Processing Applied to Chemical Engineering. Grant Code: 11-12778. Project Leader: Dr. Ignacio Ponzoni. Supporting Organization: ANPCyT. Period: 6/4/2004 – 6/7/2007. Amount: 20.000 Argentinean pesos.

## 8. Editorial Work, Committee Memberships and other Professional Activities

- **President** of the **Directive Council** of the **Argentine Association for Computational Biology and Bioinformatics (A2B2C)**. Link: www.a2b2c.org

- **Editorial Board Member** of the following indexed journals:
  - Journal of Universal Computer Science (ISSN: 0948-695x)
  - Biomedical Engineering and Computational Biology (ISSN: 1179-5972)

- **Member** of the following Scientific Societies:
  - Argentine Association for Computational Biology and Bioinformatics (A2B2C) (http://www.a2b2c.org.ar)
  - International Society for Computational Biology (ISCB) (http://www.iscb.org/)
  - Association for Computing Machinery (ACM) (http://www.acm.org/)

- **Member** of the Multidisciplinary Consortium for the Improvement of Cancer Data Management (GRUPROIC), Universidad Nacional del Sur, Bahía Blanca.

- **Chairman** of the ***VI Argentine Symposium of Artificial Intelligence (ASAI 2004)***, XXXIII JAIIO (Argentine Conference on Computer Science and Operational Research).

- **Program Committee Member** of the several International Conferences in Machine Learning, Evolutionary Computing and Bioinformatics.