

## **Jorge Sergio Zwir (Igor)**

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### **Present position**

2001-to present

Research Specialist II, Biomathematics and Bioinformatics, Howard Hughes Medical Institute, Department of Molecular Microbiology, Washington University School of Medicine, Saint Louis, Missouri, USA.

### **Education**

2003-to present.

Genetic Epidemiology Master of Science (GEMS), Washington University School of Medicine, USA.

2001-2003.

Post doctoral: Groisman Lab, Department of Molecular Microbiology, Washington University School of Medicine, Saint Louis, Missouri, USA.

January, 2001

Ph.D. in Computer Science, Department of Computer Science and Artificial Intelligence, University of Granada, Spain.

PhD. Thesis Title: "Hierarchical Models and Methodologies for Learning Fuzzy Rule-Based Systems".

Advisors: Dr. Francisco Herrera and Dr. Oscar Cordón.

November, 1997

Master in Computer Science, Department of Computer Science, University of Buenos Aires, Argentina.

Master Thesis Title: "Fuzzy Controllers: Study and evaluation of modern methods for design and learning. Some proposals of hybrids techniques"

Advisor: Dr. Enrique Segura

February, 1993

Bachelor in Computer Science, Department of Computer Science, University of Buenos Aires.

### **Professional Experience and Appointments**

2003-to present

Invited Professor and Ramon y Cajal Researcher, Department of Computer Science and Artificial Intelligence, University of Granada, Spain.

2001-2007

Invited Professor, Department of Computer Science, University of Buenos Aires, Argentina.

2000-2001

Assistant Professor, Department of Computer Science, University of Buenos Aires, Argentina.

1998-1999

International Fellowship, SRI International, Menlo Park, California, USA.

1994-2000

Auxiliary Professor, Department of Computer Science, University of Buenos Aires, Argentina.

1992-1997

Data Analyst, Ratto-Humphreys Calificadora de Riesgo (Rating Agency) / Canadian Bond Rating Service, Buenos Aires, Argentina.

1990-1997

Computer Systems Analysts, Ratto-Villares y Asociados (Firm of public accountants) / Member of ACPA International (Affiliated Conference of Practicing Accountants), Buenos Aires, Argentina.

## Teaching

2005-2007

Introduction to Computational Biology

([http://decsai.ugr.es/index.php?p=info\\_asigtura&cod\\_asigtura=202](http://decsai.ugr.es/index.php?p=info_asigtura&cod_asigtura=202)).

Department of Computer Science and Artificial Intelligence, University of Granada, Spain

2006-2007

Applications of Bioinformatics

Master on Soft Computing and Intelligent Systems

(<http://docto-si.ugr.es/master/>)

Department of Computer Science and Artificial Intelligence, University of Granada, Spain.

2006-2007

Bioinformatics

Master on Computation and Intelligent Systems. Applications to Internet and E-commerce

(<http://docto-si.ugr.es/moodle/course/category.php?id=4>)

Department of Computer Science and Artificial Intelligence, University of Granada, Spain, and Universidad Tecnológica Metropolitana del Estado de Chile.

2007-2008

Interaction Networks and Array Analysis

Master on Computational Biotechnology

(<http://biolab.uspceu.com/CompBiotech/>).

University of San Pablo, Madrid, Spain.

2002-2004

Master Program in Medical Molecular Biology.

University of Buenos Aires, Argentina.

2003-2005

Master Program in Data Mining.

University of Buenos Aires, Argentina

2001-2007

Introduction to Computational Biology

(<http://www.dc.uba.ar/people/materias/biocomp/>).

Computer Science Department, University of Buenos Aires, Argentina

2000-2001

Machine Learning

(<http://www.dc.uba.ar/people/materias/aa/homepage.html>).

Computer Science Department, University of Buenos Aires, Argentina

1997-2000

Computational Paradigms

Computer Science Department, University of Buenos Aires, Argentina

1995-1997

Functional Programming

Computer Science Department, University of Buenos Aires, Argentina

1994-1995

Introduction to Fuzzy Set Theory

Computer Science Department, University of Buenos Aires, Argentina

### **PhD. thesis advisor**

2005

Rocío C. Romero Zaliz

Recognizing gene regulatory profiles by using multiobjective genetic algorithms

Computer Science and Artificial Intelligence Department, University of Granada, Spain.

### **PhD. students**

Cristina Rubio Escudero

Identifying gene profiles by reverse problem solving: from grouping gene expressions to combining microarray analysis methods"

Computer Science and Artificial Intelligence Department, University of Granada, Spain.

Oscar Marcos Harari

Predicting prokaryotic and eukaryotic gene networks by fusing domain knowledge with conceptual clustering algorithms

Computer Science and Artificial Intelligence Department, University of Granada, Spain.

Patricio Yankelevich

Integrating genomic, proteomic and transcriptomic information by using conceptual clustering techniques

Centro de Biología Molecular, Universidad Autónoma de Madrid, Spain

Luis Herrera

Multiobjective web mining: towards identifying biologicaly meaningful information  
Universidad Metropolitana de Chile, Chile – University of Granada, Spain.

**Master thesis advisor**

2005

Juan Pablo Grassi

A Conceptual Clustering Proposal to Identify Gene Regulatory Profiles  
Computer Science Department, University of Buenos Aires, Argentina

2005

Marcelo Santos

Learning Robust Dynamic Networks in Bacterial Genomes  
Computer Science Department, University of Buenos Aires, Argentina

2004

Patricio Traverso

An Adaptive Approach to Infer Realistic, Robust and Flexible Genetic Networks  
Computer Science Department, University of Buenos Aires, Argentina

2003

Viviana Cotik

A Conexionist Approach to Discover and Predict Prokaryotic Promoters  
Computer Science Department, University of Buenos Aires, Argentina

2003

Damian D'Onia

Genetic Circuits: Identification of Regulatory Relationships from Temporal Series derived  
from Microarray Gene Expression  
Computer Science Department, University of Buenos Aires, Argentina

2002

Pablo Pastorino

Learning Classifier Systems for On-line Modeling Investment Strategies  
Computer Science Department, University of Buenos Aires, Argentina

2001

Rocío C. Romero Zaliz

Using Qualitative Object Description in DNA Sequencing of Trypanosome Cruzi  
Computer Science Department, University of Buenos Aires, Argentina

2001

Gabriel Bulfon

Designing Evolutive Algorithms for Extracting Investment Strategies  
Computer Science Department, University of Buenos Aires, Argentina

### **Research Projects/Grants**

2006-2009

Project title: Identification of complex information in Biology: from data collections to knowledge-based networks (TIN2006-12879)

Finance provider: Programa Nacional de Cooperación Internacional de Ciencia y Tecnología, Spain

Participating entities: M4M Laboratory, Dept. of Computer Science and Artificial Intelligence, E.T.S. de Ingeniería Informática, University of Granada, Spain.

Head of research: Dr. Igor Zwir

Number of researchers taking part: 4

2005-2007

Project title: Extracting knowledge from genetic regulatory processes by using microarrays (BIO2004-0270-E (a7))

Finance provider: Programa Nacional de Cooperación Internacional de Ciencia y Tecnología, Spain

Participating entities: Dept. of Computer Science and Artificial Intelligence, E.T.S. de Ingeniería Informática, University of Granada, Spain; Department of Molecular Microbiology, Howard Hughes Medical Institute, Washington University School of Medicine, St. Louis, MO, USA; Cellular Injury and Adaptation Laboratory, Washington University School of Medicine, St. Louis, MO, USA; and Ctr. for High Performance Computing, University of Utah, Salt Lake City, UT, USA.

Head of research: Dr. Igor Zwir

Number of researchers taking part: 7

2003-2006

Project title: Hybridizing Evolutionary Computation and Ant Colony Optimization. Applications to Fuzzy Rule Learning and Bioinformatics Problems

Finance provider: Convocatoria de ayudas de Proyectos de Investigación Científica y Desarrollo Tecnológico (2003)

Participating entities: Dept. of Computer Science and Artificial Intelligence, E.T.S. de Ingeniería Informática, University of Granada, Spain

Head of research: Dr. Oscar Cordón García

Number of researchers taking part: 6

2003-2006

Project title: Optimization Research Problems and Computational Biology

Participating entities: Dept. of Computer Science, University of Buenos Aires, Argentina

Finance provider: PME 84

Head of research: Dr. Guillermo Marshall

Number of researchers taking part: 10

2001-2002

Project title: Clusterización y modelación de Perfiles de Expresión génica utilizando Tecnología Difusa

Finance provider: Ministerio de Ciencia y Tecnología, para proyectos de Investigación científica y desarrollo tecnológico. Programa: Programas nacionales de I+D orientada (Spain)

Participating entities: Dept. of Computer Science and Artificial Intelligence, E.T.S. de Ingeniería Informática, University of Granada, Spain

Head of research: Armando Blanco Morón

Number of researchers taking part: 6

Project title: Models and Techniques for Combinatorial Optimization Problems

2004-2007

Finance provider: UBACYT X212

2002-2005

Finance provider: PICT

2001-2004

Finance provider: UBACYT - X036

Participating entities: University of Buenos Aires, School of Science, Computer Science Department

Head of research: Lic. Irene Loiseau

Number of researchers taking part: 8

2001-2002

Project title: Models for Risk Analisis in the Argentinian Market

Finance provider: SECYT – UBACYT - E031

Participating entities: University of Buenos Aires, School of Science, School of Economics

Head of research: Dr. Maria Teresa Casparri (FCE - UBA)

Number of researchers taking part:5

1998-2000

Project title: Neural Networks: A conexionist view of the planning tasks and trayectories generation problems in robotics

Finance provider: SECYT - UBACYT

Participating entities:

Head of research: Prof. Hugo Scolnik

Number of researchers taking part: 5

### **Scholarships**

2003

Programa Ramón y Cajal, University of Granada, Spain.

1998-2000

AECI – Agencia Española de Cooperación Internacional.

1998-2000

FOMEC – Programa de Reforma de Educación Superior, U.B.A. - BIRF.

### **Awards**

2006

HHMI for five-year distinguished employees

2002

Best Ph.D. Thesis in Computer Science, University of Granada, Spain.

### **Professional activities/Membership**

Board editor and/or reviewer in the following journals and conferences:

- Bioinformatics
- IEEE Transactions
- Mathware and Soft Computing
- Fuzzy Sets and Systems, Elsevier Science.



- International Journal of Approximate Reasoning, Elsevier Science.
- Congreso Español de Algoritmos Evolutivos y Bioinspirados (AEB).
- Online World Conference on Soft Computing in Industrial Applications, EvoNet.
- Argentinian Symposium on Artificial Intelligence (ASAI).
- International Association for Fuzzy Set Management and Economy (SIGEF)
- System Analysis Group, Washington University, St. Louis, Missouri, USA

### **Ad hoc and special reviewer**

2005-to present

National Science Foundation (NSF)

2006-to present

Consejo Nacional de Investigaciones Científicas y Técnicas de Argentina (CONICET)

### **Special Sessions Organizer of International Conferences**

2007

Bioinformatics, SCSC07, San Diego, USA

(<http://www.softconf.com/scs/SCSC07/>)

Soft Computing in Bioinformatics and Computational Biology, FUZZ IEEE

Imperial College, London, UK

(<http://www.fuzzieee2007.org/specialsessions2.php#S25>)

## Publications

- **Igor Zwir**, Oscar Harari, and Eduardo A. Groisman. "GENE PROMOTER SCAN (GPS) METHODOLOGY FOR IDENTIFYING AND CLASSIFYING CO-REGULATED PROMOTERS". *Methods in Enzymology - Two-Component Signaling Systems, Part A* Vol. 422. 2007. Academic Press – Elsevier Inc.
- Oscar Harari, Cristina Rubio-Escudero, **Igor Zwir**. "TARGETING DIFFERENTIALLY CO-REGULATED GENES BY MULTIOBJECTIVE AND MULTIMODAL OPTIMIZATION". *Evolutionary Computation, Machine Learning and Data Mining in Bioinformatics - Lecture Notes in Computer Science*. Vol. 4447 – pp. 68-77. 2007. Springer – Verlag Berlin, Heidelberg.
- Cristina Rubio-Escudero, Oscar Harari, Oscar Cerdón, **Igor Zwir**. "MODELING GENETIC NETWORKS: COMPARISON OF STATIC AND DYNAMIC MODELS". *Evolutionary Computation, Machine Learning and Data Mining in Bioinformatics - Lecture Notes in Computer Science*. Vol.4447 –pp. 78-89. 2007. Springer – Verlag Berlin, Heidelberg
- Oscar Harari, Cristina Rubio-Escudero, Coral del Val, Oscar Cerdón, **Igor Zwir**. "DECISION MAKING ASSOCIATION RULES FOR RECOGNITION OF DIFFERENTIAL GENE EXPRESSION PROFILES". *Intelligent Data Engineering and Automated Learning - Lecture Notes in Computer Science*. Vol.4224 – pp. 1137-1149. 2006. Springer – Verlag Berlin, Heidelberg
- Oscar Harari, Rocio Romero-Zalíz, Cristina Rubio-Escudero, **Igor Zwir**. "FUSION OF DOMAIN KNOWLEDGE FOR DYNAMIC LEARNING IN TRANSCRIPTIONAL NETWORKS". *Intelligent Data Engineering and Automated Learning - Lecture Notes in Computer Science*. Vol.4424 –pp.1067-1078. 2006. Springer – Verlag Berlin, Heidelberg
- R. Romero-Zalíz, C. Rubio-Escudero, O. Cerdón, O. Harari, C. del Val, **I. Zwir**. "MINING STRUCTURAL DATABASES: AN EVOLUTIONARY MULTI-OBJECTIVE CONCEPTUAL CLUSTERING METHODOLOGY". *Applications of Evolutionary Computing - Lecture Notes in Computer Science*. Vol.3907 – pp. 159-171. 2006. Springer – Verlag Berlin, Heidelberg.
- C. Rubio-Escudero, R. Romero-Zalíz, O. Cerdón, O. Harari, C. del Val, and **I. Zwir**. "OPTIMAL SELECTION OF MICROARRAY ANALYSIS METHODS USING A CONCEPTUAL CLUSTERING ALGORITHM" *Applications of Evolutionary Computing, Lecture Notes in Computer Science*. Vol. 3907 - pp. 172-183. 2006. Springer-Verlag Berlin, Heidelberg
- **I. Zwir**, H. Huang, y E.A. Groisman . "ANALYSIS OF DIFFERENTIALLY-REGULATED GENES WITHIN A REGULATORY NETWORK BY GPS GENOME NAVIGATION". *Bioinformatics*. : Vol. 21 – pp. 4073 – 4083. 2005. Oxford University Press
- **I. Zwir**, D. Shin, A. Kato, K. Nishino, T. Latifi, F. Solomon, J. M. Hare, H. Huang and E. A. Groisman. "DISSECTING THE PHOP REGULATORY NETWORK OF ESCHERICHIA COLI AND SALMONELLA ENTERICA". *PNAS, Proceedings of the National Academy of Sciences of the United States of America*. Vol. 102 – pp. 2862-2867. 2005. PNAS (Proc Natl Acad Sci).

- V. Cotik, R. Romero Zaliz, **I. Zwir**. “**A HYBRID PROMOTER ANALYSIS METHODOLOGY FOR PROKARYOTIC GENOMES**”. *Fuzzy Sets and Systems, Special Edition on Bioinformatics*. Vol. 152 – pp. 83 – 102. 2005. Elsevier B.V.
- R. Alcalá, J. R. Cano, O. Cordon, F. Herrera, P. Villar, **I. Zwir**. “**LINGUISTIC MODELING WITH HIERARCHICAL SYSTEMS OF WEIGHTED LINGUISTIC RULES, SPECIAL ISSUE ON INFORMATION MINING**”. *International Journal of Approximate Reasoning*. Vol. 32 – pp. 187 – 215. 2002. : Elsevier Science Inc.
- O. Cordon F. Herrera, **I. Zwir**. “**A HIERARCHICAL KNOWLEDGE-BASED ENVIRONMENT FOR LINGUISTIC MODELING: MODELS AND ITERATIVE METHODOLOGY**”. *Fuzzy Sets and Systems*. Vol. 138 – pp. 307 – 341. 2002. Elsevier B.V.
- O. Cordon, F. Herrera, **I. Zwir**. “**LINGUISTIC MODELING BY HIERARCHICAL SYSTEMS OF LINGUISTIC RULES**”. *IEEE Transactions on Fuzzy Systems* . Vol. 10 – pp. 02 – 20. 2002. IEEE
- **I. Zwir**, R. Romero Zaliz, E. Ruspini. “**AUTOMATED BIOLOGICAL SEQUENCE DESCRIPTION BY GENETIC MULTIOBJECTIVE GENERALIZED CLUSTERING**”. *Techniques in Bioinformatics and Medical Informatics - Annals of the New York Academy of Sciences*. Vol 980 – pp. 65 – 82. 2002. The New York Academy of Sciences.
- O. Cordon F. Herrera, **I. Zwir**. “**FUZZY MODELING BY HIERARCHICALLY BUILT FUZZY RULE BASES**”. *International Journal of Approximate Reasoning*. Vol. 27 – pp. 61 – 93.2001. Elsevier Science Inc.

## Book Chapters

- R. Romero-Zaliz, **I. Zwir**, E. Ruspini. “**APPLICATIONS OF MULTI-OBJECTIVE EVOLUTIONARY ALGORITHMS**”. “**GENERALIZED ANALYSIS OF PROMOTERS (GAP): A METHOD FOR DNA SEQUENCE DESCRIPTION**”. pp. 427 – 447. 2004. World Scientific Publishing Company. Singapore. ISBN: 981-256-106-4
- R. Alcalá, J. Casillas, O. Cordon, F. Herrera, **I. Zwir**. “**ACCURACY IMPROVEMENTS IN LINGUISTIC FUZZY MODELING - STUDIES IN FUZZINESS AND SOFT COMPUTING**”. “**AN ITERATIVE LEARNING METHODOLOGY TO DESIGN HIERARCHICAL SYSTEMS OF LINGUISTIC RULES FOR LINGUISTIC MODELING**”. Vol.129. pp. 277 – 301. 2003. Springer-Verlag Heidelberg Engineering. Germany. ISBN: 978-3540029335
- E. H. Ruspini, **I. Zwir**. “**LECTURE NOTES IN PATTERN RECOGNITION. FROM CLASSICAL TO MODERN APPROACHES**”. “**AUTOMATED GENERATION OF QUALITATIVE REPRESENTATIONS OF COMPLEX OBJECT BY HYBRID SOFT-COMPUTING METHODS**”. pp. 454 – 474. 2001. World Scientific Company. Singapore. ISBN: 978-981-02-4684-6

- R. Alcalá, J. Casillas, O. Cordón, F. Herrera, **I. Zwir**. **“KNOWLEDGE-BASED SYSTEMS, TECHNIQUES AND APPLICATIONS”**. **“LEARNING AND TUNING FUZZY RULE-BASED SYSTEMS FOR LINGUISTIC MODELING”**. Vol.: 3. pp. 889 – 941. 2000. Academia Press Inc.. United of States of America. ISBN: 978-0124438750
- O. Cordón, M. J. Del Jesús, F. Herrera, P. Villar, **I. Zwir**. **“FUZZY IF-THEN RULES IN COMPUTATIONAL INTELLIGENCE: THEORY AND APPLICATIONS”**. **“DIFFERENT PROPOSALS TO IMPROVE THE ACCURACY OF FUZZY LINGUISTIC MODELING”**. Vol.: 553. pp. 189 – 221. 2000. *The Springer International Series in Engineering and Computer Science*. Kluwer Academic Publishers. United of States of America. ISBN: 978-0-7923-7820-4

## Conferences

- Cristina Rubio-Escudero, Oscar Cordón and **Igor Zwir**. **GENETIC NETWORK CONSTRUCTION USING STATIC AND DYNAMIC MODELS**. *2007 SUMMER COMPUTER SIMULATION CONFERENCE (SCSC'07)*. Proceedings of Summer Computer Simulation Conference (SCSC'07). San Diego, California – USA. July, 2007
- Oscar Harari, **Igor Zwir**. **DISSECTING NETWORK MOTIFS BY IDENTIFYING PROMOTER FEATURES THAT GOVERN DIFFERENTIAL GENE EXPRESSION**. *2007 SUMMER COMPUTER SIMULATION CONFERENCE (SCSC'07)*. Proceedings of Summer Computer Simulation Conference (SCSC'07). San Diego, California – USA. July, 2007
- Rocio Romero Zaliz, Oscar Harari, Cristina Rubio Escudero and **Igor Zwir**. **IDENTIFYING THE PROMOTER FEATURES GOVERNING DIFFERENTIAL KINETICS OF CO-REGULATED GENES USING FUZZY EXPRESSIONS**. *IEEE INTERNATIONAL CONFERENCE ON FUZZY SYSTEMS - SPECIAL SESSION: SOFT COMPUTING IN BIOINFORMATICS AND COMPUTATIONAL BIOLOGY*. Proceedings of FUZZ-IEEE 2007. London, United Kingdom. July 2007.
- Patricio Yankilevich, Paola Barrero and **Igor Zwir**. **AN INTEGRATED TIME SERIES GENE EXPRESSION DATA ANALYSIS PIPELINE WITH A FUZZY CLUSTERING METHOD TO ASSESS EXPRESSION PATTERNS**. *IEEE INTERNATIONAL CONFERENCE ON FUZZY SYSTEMS - SPECIAL SESSION: SOFT COMPUTING IN BIOINFORMATICS AND COMPUTATIONAL BIOLOGY*. Proceedings of FUZZ-IEEE 2007. London, United Kingdom. July 2007
- **Igor Zwir**, Dongwoo Shin, Henry Huang and Eduardo A. Groisman..**IDENTIFYING THE PROMOTER FEATURES GOVERNING DIFFERENTIAL EXPRESSION OF CO-REGULATED GENES WITH SIMILAR NETWORK MOTIFS**. *SYSTEMS BIOLOGY AND REGULATORY NETWORKS (X5)*. Proceedings of the Systems Biology and Regulatory Networks (X5). Steamboat Springs, Colorado. USA. March, 2007

- C. Rubio Escudero, R. Romero Zaliz, O. Harari, C. del Val, **Igor Zwir**. **DECISION MAKING ASSOCIATION RULES FOR RECOGNITION OF DIFFERENTIAL GENE EXPRESSION PROFILES**. *ESF-EMBO: 7th. SPANISH SYMPOSIUM ON BIOINFORMATICS AND COMPUTATIONAL BIOLOGY*. Book of Abstracts. VII Jornadas de Bioinformática. Zaragoza, Spain. November, 2006.
- Rocio Romero Zaliz, Cristina Rubio Escudero, Oscar Harari, **Igor Zwir** and Coral del Val. **IDENTIFICATION OF TRANSCRIPTION FACTOR MODULES IN MICROORGANISMS USING GENETIC ALGORITHMS**. *ESF-EMBO: 7th. SPANISH SYMPOSIUM ON BIOINFORMATICS AND COMPUTATIONAL BIOLOGY*. Book of Abstracts. VII Jornadas de Bioinformática. Zaragoza, Spain. November, 2006.
- Oscar Harari, Coral del Val, Rocio Romero Zaliz, Cristina Rubio Escudero and **Igor Zwir**. **IDENTIFYING THE PROMOTER FEATURES GOVERNING DIFFERENTIAL EXPRESSION OF CO-REGULATED GENES WITH SIMILAR NETWORK MOTIFS**. *ESF-EMBO: 7th. SPANISH SYMPOSIUM ON BIOINFORMATICS AND COMPUTATIONAL BIOLOGY*. Book of Abstracts. VII Jornadas de Bioinformática. Zaragoza, Spain. November, 2006.
- Oscar Harari, Coral del Val, **Igor Zwir**. **FUSING GENETIC KNOWLEDGE BY DYNAMIC LEARNING REGULATORY PROFILES: VISUALIZING THE STRATEGY**. *I INTERNACIONAL CONFERENCE ON MULTIDISCIPLINARY INFORMATION SCIENCES AND TECHNOLOGIES (InSciT2006)*. Proceedings of the InSciT2006. Vol.: I. pp.: 47 – 51. Mérida, Spain. October, 2006
- **Igor Zwir**, Henry Huang and Eduardo A. Groisman. **DISSECTING THE PHOP REGULATORY NETWORK OF ESCHERICHIA COLI AND SALMONELLA ENTERICA**. *EFS WORKSHOP ON NETWORKS: A GLOBAL VIEW*. Proceedings of the EFS WORKSHOP ON NETWORKS: A GLOBAL VIEW. Madrid, Spain. 2005
- Rocio Romero Zaliz, Oscar Cordon, Cristina Rubio Escudero and **Igor Zwir**. **A MULTI-OBJECTIVE EVOLUTIONARY FUZZY SYSTEM FOR PROMOTER DISCOVERY IN E. COLI**. *I WORKSHOP ON GENETIC FUZZY SYSTEMS*. Proceedings of the FIRST WORKSHOP on GENETIC FUZZY SYSTEMS. pp. 68 – 75. Granada, Spain. March, 2005.
- Cristina Rubio Escudero, Oscar Cordon and **Igor Zwir**. **IDENTIFYING MEANINGFUL TEMPORAL GENE EXPRESSION PATTERNS IN THE INFLAMMATION AND THE HOST RESPONSE TO INJURY PROBLEM**. *AFFYMETRIX USER GROUP MEETING 2004*. Edinburg, Scotland, United Kingdom. May, 2004
- Rocio Romero Zaliz, , **Igor Zwir** and Francisco Herrera. **BÚSQUEDA DISPERSA MULTIOBJETIVO DE PROMOTORES EN SECUENCIAS DE ADN**. *MAEB'04 (TERCER CONGRESO ESPAÑOL DE METAHEURÍSTICAS, ALGORITMOS EVOLUTIVOS Y BIOINSPIRADOS)*. Proceedings of the MAEB'04. pp.: 141 = 147. Córdoba, Spain. February, 2004.
- D. D'Onia, L. Tam, J. Perren Cobb, and **I. Zwir**. **A HIERARCHICAL REVERSE-FORWARD METHODOLOGY FOR LEARNING COMPLEX GENETIC NETWORKS**. *4th. INTERNATIONAL CONFERENCE ON SYSTEMS BIOLOGY (ICSB)*. Proceedings of the 4th. International Conference on Systems Biology (ICSB). pp.: 284 – 285. Saint Louis, Missouri, USA. November, 2003

- **Zwir**, P. Traverso, and E. A. Groisman. **SEMANTIC-ORIENTED ANALYSIS OF REGULATION: THE PHOP REGULON AS A MODEL NETWORK**. 4<sup>th</sup>. *INTERNATIONAL CONFERENCE ON SYSTEMS BIOLOGY (ICSB)*. Proceedings of the 4<sup>th</sup>. International Conference on Systems Biology (ICSB). pp.: 282 – 283. Saint Louis, Missouri, USA.. November, 2003
- R. Alcalá, O. Cordón, F. Herrera, **I. Zwir**. **INSURANCE MARKET RISK MODELING WITH HIERARCHICAL FUZZY RULE BASED SYSTEMS**. 4<sup>TH</sup>. *INTERNATIONAL CONFERENCE ON ENTERPRISE INFORMATION SYSTEMS (ICEIS)*. Proceedings of the 4<sup>th</sup>. International Conference on Enterprise Information Systems. Vol.: I. pp.: 325 – 333. Ciudad Real, Spain. April, 2002.
- R. Alcalá, J. Casillas, O. Cordón, F. Herrera, **I. Zwir**. **HYBRIDIZING HIERARCHICAL AND WEIGHTED LINGUISTIC RULES**. 17<sup>th</sup>. *ACM SYMPOSIUM ON APPLIED COMPUTING (SAC)*. Proceedings of the 17<sup>th</sup>. ACM SYMPOSIUM ON APPLIED COMPUTING. Madrid, Spain. March, 2002.
- R. Alcalá, J. Casillas, O. Cordón, F. Herrera, **I. Zwir**. **HYBRIDIZING HIERARCHICAL AND WEIGHTED LINGUISTIC RULES**. 17<sup>th</sup>. *ACM SYMPOSIUM ON APPLIED COMPUTING (SAC)*. Proceedings of the 17<sup>th</sup>. ACM SYMPOSIUM ON APPLIED COMPUTING.. Madrid, Spain. March, 2002
- R. Romero Zaliz, **I. Zwir**. **AUTOMATED BIOLOGICAL SEQUENCE DESCRIPTION AND RECOGNITION BY A LOCALIZED MULTI-OBJECTIVE GENETIC ALGORITHM**. *FEA 2002 (THE FOURTH INTERNATIONAL WORKSHOP ON FRONTIERS IN EVOLUTIONARY ALGORITHMS)*. *Proceedings of the FOURTH INTERNATIONAL WORKSHOP ON FRONTIERS IN EVOLUTIONARY ALGORITHMS*. North Carolina, USA. March, 2002.
- R. Romero Zaliz, **I. Zwir**. **DNA BIOLOGICAL SEQUENCE DESCRIPTION BY GENETIC MULTI-OBJECTIVE GENERALIZED CLUSTERING**. 1<sup>º</sup> *CONGRESO ESPAÑOL DE ALGORITMOS EVOLUTIVOS Y BIOINSPIRADOS (AEB)*. Actas del 1<sup>º</sup> Congreso Español de Algoritmos Evolutivos y Bioinspirados (AEB). Mérida, Spain. February, 2002.
- R. Romero Zaliz, **I. Zwir**, I. Loiseau. **USING MULTI-OBJECTIVE GENETIC ALGORITHMS FOR BIOLOGICAL SEQUENCE PATTERN RECOGNITION**. *ARGENTINEAN SYMPOSIUM OF ARTIFICIAL INTELLIGENCE (ASAI), JORNADAS ARGENTINAS DE INFORMATICA E INVESTIGACIÓN OPERATIVA (JAIIO)*. Proceedings of the Argentinean Symposium of Artificial Intelligence (ASAI), Jornadas Argentinas de Informática e Investigación Operativa (JAIIO). Ciudad de Buenos Aires, Argentinean. September, 2001.
- O. Cordón, F. Herrera, **I. Zwir**. **ANALYZING AND EXTENDING HIERARCHICAL SYSTEMS OF LINGUISTIC RULES**. *JOINT 9TH IFSA WORLD CONGRESS AND 20TH NAFIPS INTERNATIONAL CONFERENCE OF NAFIPS, THE NORTH AMERICAN FUZZY INFORMATION PROCESSING SOCIETY AND IFSA, THE INTERNATIONAL FUZZY SYSTEMS ASSOCIATION*. Proceedings of the Joint 9<sup>th</sup>. IFSA-NAFIPS International Conference. pp.: 1121-1126. Vancouver, Canada. July, 2001.

- R. Romero Zaliz, **I. Zwir**, I. Loiseau. **AUTOMATED BIOLOGICAL SEQUENCE DESCRIPTION AND RECOGNITION: STUDIES OF QUALITY AND EXTENSION FEATURES.** *INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING TECHNIQUES AND BIOLOGICAL SCIENCES (METMBS '01)*. Proceedings of the METMBS 2001. Las Vegas, Nevada. USA. June, 2001
- M. T. Casparri, L. L. Lazzari, **I. Zwir**. **A MACHINE LEARNING APPROACH TO REINSURANCE COMPANY EVALUATION IN THE ARGENTINEAN MARKET.** *VII Congress of SIGEF*. Proceedings of the VII Congress of SIGEF. Chania, Chalk, Greece. September, 2000.
- O. Cerdón, F. Herrera, **I. Zwir**. **HIERARCHICAL KNOWLEDGE BASES FOR FUZZY RULE-BASED SYSTEMS.** *8<sup>TH</sup> CONFERENCE ON INFORMATION PROCESSING AND MANAGEMENT OF UNCERTAINTY IN KNOWLEDGE-BASED SYSTEMS (IPMU)*. Proceedings of the 8<sup>th</sup> Conference on Information Processing and Management of Uncertainty in Knowledge-based Systems (IPMU). Vol. III. pp. : 1770 – 1777. Madrid, Spain. July, 2000.
- **Igor Zwir**, Enrique H. Ruspini. **QUALITATIVE OBJECT DESCRIPTION: INITIAL REPORTS OF THE EXPLORATION OF THE FRONTIER.** *EUROFUSE-SIC'99*. Proceedings of the EUROFUSE-SIC'99. Budapest, Hungary. May, 1999.
- Enrique H. Ruspini, **Igor Zwir**. **AUTOMATED QUALITATIVE DESCRIPTION OF MEASUREMENTS.** *16<sup>th</sup>. IEEE INSTRUMENTATION AND MEASUREMENT TECHNOLOGY CONFERENCE*. Proceedings of the 16th IEEE Instrumentation and Measurement Technology Conf. Venice, Italy. May, 1999.
- **Igor Zwir**. **FUZZY CONTROL AND LEARNING FOR NONLINEAR SYSTEMS.** *III CONGRESO DE LA SOCIEDAD INTERNACIONAL DE GESTIÓN Y ECONOMÍA FUZZY*. Proceedings of the III Congreso de la Sociedad Internacional de Gestión y Economía Fuzzy. Ciudad de Buenos Aires, Argentinean. November, 1996.
- **Igor Zwir**. **AN APPLICATION OF FUZZY CONTROL WITH REINFORCEMENT LEARNING TO THE INVERTED PENDULUM PROBLEM.** *24<sup>o</sup> JORNADAS ARGENTINAS DE INFORMÁTICA E INVESTIGACIÓN OPERATIVA (JAIIO)*. Proceedings of the 24<sup>o</sup> Jornadas Argentinas de Informática e Investigación Operativa (JAIIO). Ciudad de Buenos Aires, Argentinean. August, 1995.

## Invited seminars

2006

Fusion of domain knowledge for dynamic learning in transcriptional networks

ECMI, Madrid

Host: José Maria Carazo

2005

Computational and experimental analysis of bacterial regulatory circuits/Identifying gene profiles by reverse problem solving: from grouping gene expressions to combining microarray analysis methods

Dpt. Molecular Biophysics, German Cancer Research Center, Heidelberg, Germany

Host: Dr. Coral del Val

Analysis of differentially-regulated genes within a regulatory network by gps genome navigation

National Center for Biotechnology. CNB-CSIC

Host: Alfonso Valencia

Regulatory networks discovered by GPS genome navigation/A multi-objective evolutionary conceptual clustering methodology for gene annotation from networking databases

Ctr. for High Performance Computing, University of Utah, Salt Lake City, Utah, USA

Host: Julio Facelli

2004

Boolean Networks emerging from Microarray

System Analysis Group, Washington University, St. Louis, Missouri, USA

Host: Bijoy Ghosh

Dissecting regulatory networks by GPS genome navigation / Promoter binding dynamics reveals architecture of small bacterial regulatory networks / T-test, Anova, Manova, ...

How to solve it?

Universidad del Pais Vasco - San Sebastian, Spain

Host: Pedro Larrañaga Múgica

Dissecting regulatory networks by GPS genome navigation

Washington University, School of Medicine, ST. Louis, Missouri, USA

Host: Eduardo A. Groisman

Analysis and Modeling Aspects of Endotoxin time series data ()

Glue Grant Meeting, Chicago, Illinois, USA

(In collaboration with Ashoka Polpitiya, Bijoy Ghosh, and Perren Cobb)

Host: Glue Grant – Computational Analysis and Modeling Core

2003

Mining into the gene regulation problem

Red Iberoamericana de Bioinformatica (RIB), Buenos Aires, Argentina



Host: Ricardo Baeza-Yates

2001

Qualitative Object Description in the Stock Market

Perceptual Dynamics Laboratory, RIKEN Brain Science Institute, Japan

Host: Cees van Leeuwen

2000

Intelligent Data Analysis in Actuarial Science

School of Economic Science, University of Buenos Aires Argentina.

Host: Maria Teresa Casparri

1999

Automated qualitative description and annotation of complex objects

Berkeley Initiative in Soft Computing (BISC)

Computer Science Division Department of Electrical Engineering and Computer Sciences

University of California Berkeley, USA

Host: Lotfi A. Zadeh

Qualitative Object Description: Initial Reports of the Exploration of the Frontier

Artificial Intelligence Center, SRI International, Menlo Park, California, USA

Host: Jeff Lowrance