

LUIS M. ROCHA

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PERSONAL DATA

Luis M. Rocha is an Associate Professor of Informatics and member of the Complex Systems Group. He is currently the director of the complex systems PhD track in Informatics. He is also core faculty of the *Cognitive Science Program*, Adjunct Associate Professor in *Computer Science* and affiliated with the *Center for Complex Networks and Systems* at *Indiana University, Bloomington*. He is also the director of the *FLAD Computational Biology Collaboratorium* and in the direction of the associated *PhD program in Computational Biology* at the *Instituto Gulbenkian da Ciencia, Portugal*.

RESEARCH INTERESTS

Complex adaptive systems: Agent-based modeling, artificial life, bio-inspired computing, cellular automata, embodied cognition, emergent computation, evolutionary and adaptive systems, network analysis, origin of information, theoretical biology

Computational biology: Automatic functional annotation, bioinformatics, microarray analysis, RNA editing, text and literature mining, systems biology

Computational intelligence: Collective and adaptive knowledge organization, connectionism, data and text mining, evolutionary computation, fuzzy set theory, generalized information theory, information retrieval, knowledge and document networks, recommender systems, search informatics, uncertainty modeling.

ACADEMIC EDUCATION

STATE UNIVERSITY OF NEW YORK, BINGHAMTON, NEW YORK

PhD in Systems Science and Computer Science (1992-1997)

Thesis: “*Evidence Sets and Contextual Genetic Algorithms: Exploring Uncertainty, Context, and Embodiment in Cognitive and Evolutionary Systems*”.

INSTITUTO SUPERIOR TÉCNICO, LISBON, PORTUGAL

Licentiate (5 year degree) in Mechanical and Systems Engineering (1985-1990): *equivalent to Bachelor's in Mechanical Engineering* (1985-1988) and *Masters in Systems Engineering* (1988-1990)

Included an exchange semester, as an ERASMUS student, at the STAFFORDSHIRE UNIVERSITY, STAFFORD, ENGLAND, attending the *Msc. in Computer Integrated Manufacturing (CIM)*.

PROFESSIONAL APPOINTMENTS

UNIVERSITY OF INDIANA, SCHOOL OF INFORMATICS AND COGNITIVE SCIENCE PROGRAM,

Associate Professor, Since August 2004. Director of Informatics Graduate Programs, September 2007-August 2008. Director of Complex Systems PhD Track, Since October 2008. Liaison for Cognitive Science PhD Program.

- Teaching: I101-Introduction to Informatics (<http://informatics.indiana.edu/rocha/i101>), I485/I585-Bio-inspired Computing (<http://informatics.indiana.edu/rocha/i-bic/>), I709 - Complex Systems Seminar II (<http://informatics.indiana.edu/rocha/icx2>), I-501 - Introduction to Informatics (<http://informatics.indiana.edu/rocha/i501>).
- Project development in the areas of *Complex Systems*, *Computational Biology*, and *Cognitive Science* (see <http://informatics.indiana.edu/rocha/cprojects.html>).
- Work with graduate and undergraduate students. Currently advisor of 4 Phd students, 1 postdoctoral fellow, and 2 M.S. students; committee member of another 7 Phd students. See: <http://casci.informatics.indiana.edu>.

INSTITUTO GULBENKIAN DA CIENCIA, Lisbon Portugal.

Director of the FLAD Computational Biology Collaboratorium and in the direction of the associated PhD program in Computational Biology, 04/00-present.

(See <http://bc.igc.gulbenkian.pt>).

LOS ALAMOS NATIONAL LABORATORY, MODELING, ALGORITHMS, AND INFORMATICS GROUP

Postdoctoral Associate, September 1997 to January 1999

Technical Staff Member, February 1999 to July 2004

- Leader of the *Complex Systems Team* <http://informatics.indiana.edu/rocha/complex>)
- Leader and member of several research projects (see details in funded projects).
- Work with graduate and undergraduate students: Supervised 2 PhD dissertations.

UNIVERSITY OF CALIFORNIA, LOS ANGELES, INSTITUTE FOR PURE AND APPLIED MATHEMATICS

Fellowship appointment, March-June 2004

Program on “Proteomics: Sequence, Structure, Function”

STATE UNIVERSITY OF NEW YORK AT BINGHAMTON, DEPARTMENT OF SYSTEMS SCIENCE AND INDUSTRIAL ENGINEERING

- *Adjunct Professor, 1995-1997.* Developed and taught the graduate course “*Evolutionary Systems and Artificial Life*”, the first course developed on Artificial Life:
<http://informatics.indiana.edu/rocha/alife.html>.
- *Research Assistant, April 1996-January 1997.* Model design of budget and fleet readiness requirements for the U.S. NAVY bases. Data analysis with neural networks: Backpropagation and Adaptive Resonance Theory (ART2), NEURALWARE. Simulation of port operations with SIMAN/ARENA.
- *Teaching Assistant, Fall 1995, Spring 1996, and Spring 1997.* Assisted and taught the computational sections of the graduate courses “Neural Network and Genetic Models” and “Modeling and Simulation”. Created interactive World Wide Web assignments: <http://informatics.indiana.edu/rocha/assign.html>.
- *Information Systems Manager, 1995-1997.* Established and maintained the department’s Internet server.

LABORATÓRIO NACIONAL DE ENGENHARIA CIVIL (NATIONAL LABORATORY FOR CIVIL ENGINEERING), LISBON, PORTUGAL

Research Assistant from June 1990 to December 1990 (part-time)

Graduate Researcher from January 1991 to November 1991 (full-time)

Design and development of the control system for a seismic table used to execute earthquake resistance tests on large scale models of structures. Developed the software for portions of its control system as well as signal identification and analysis in *Fortran* and *C*.

PROFESSIONAL SERVICE

Editorial and Advisory Boards

Biosemiotics, International Journal of Natural Computing Research, Journal of Applied Systems Studies, Ciência Hoje, Center of Computing Sciences and Technology at the University of Minho, International Forum of Portuguese Scientists, The Open Cybernetics And Systemics Journal, Polimetrica Publisher, Principia Cybernetica Project.

Ad Hoc Editor

Artificial Life, Biosystems, Communication and Cognition - Artificial Intelligence

Ad Hoc Reviewer

Adaptive Behavior, Advances in Complex Systems, Artificial Intelligence, Artificial Life, Behavioral and Brain Sciences, Biosystems, BMC Bioinformatics, Clinical Chemistry, Cognitive Science, Complex Systems, Data & Knowledge Engineering journal, Data Mining & Knowledge Discovery, Foundations of Science, Genome Biology, IEEE Transactions on Evolutionary Computation, IEEE Transaction on Systems Man and Cybernetics, Interacting with computers journal, International Journal of Human-Computer Studies, International Journal of General Systems, International Journal of Operations Research, Journal of Artificial Societies and Social Simulation, Journal of Statistical Mechanics, Journal of Theoretical Biology, Molecular Biosystems, Nucleic Acids Research, Proceedings of the National Academy of Sciences (PNAS), Systems Research, Transactions on Information Systems.

Conference Organizing Committees

EPIA 2009: *14th Portuguese Conf. on Artificial Intelligence*, Aveiro, Portugal (Program Chair)
FIIP 2008: *Brain, Life, and Culture: VI Fórum Int. de Invest. Portugueses*, Lisbon, December 18-20, 2008
ECAL 2007: *European Conference on Artificial Life*, September 2007, Lisbon, Portugal
MA4CS07: *Multi-Agents for modelling Complex Systems*, track chair. Workshop at the *European Conference on Complex Systems 2007 (ECCS'07)* Dresden, Germany, October 1-6, 2007
Artificial Life X: Bloomington, IN, June 3-7, 2006 (Chair of Organizing Committee)
Genetic Regulatory Networks: Theory and Practice workshop at CEC03, Canberra, Australia, December 2003
International interdisciplinary seminar on new robotics, evolution and embodied cognition, Lisbon, Portugal, November 12-15 2002

Conference Program Committees

ISMB 2009: *17th Int. Conf. on Intelligent Systems for Molecular Biology*, June 27 - July 2, Stockholm, Sweden.
GECCO 2009: *Genetic and Evolutionary Computation Conference*, Montreal, Canada, July 8-12, 2008.
IWPACBB'08: *2nd International Workshop on Practical Applications of Computational Biology & Bioinformatics*. University of Salamanca, Spain, 22-24 October 2008
Alife XI: Artificial Life XI, 5-8 August, 2008, University of Southampton, Winchester, UK.
ISMB 2008: *16th International Conference on Intelligent Systems for Molecular Biology*, Toronto, July 17-23
BioLINK 2008: *Linking Literature, Information and Knowledge for Biology*. SIG at ISMB 2008, July 18, 2007.
AAAI-08: *The 23rd National Conference on Artificial Intelligence*, Chicago, Illinois, July 13-17, 2008.
GECCO 2008: *Genetic and Evolutionary Computation Conference*, Atlanta, Georgia, USA, July 12-16, 2008.
WI-08: *2008 IEEE World Congress on Computational Intelligence*. Hong Kong, China, June 1-6, 2008.
Social Linking Track at HT2008: *the Nineteenth ACM Conference on Hypertext and Hypermedia*. June 19th-21st 2008, Pittsburgh, PA, USA.
EPIA 2007: *13th Portuguese Conference on Artificial Intelligence*, December 3-7, 2007, Guimarães, Portugal.
WI-07: *2007 IEEE/WIC/ACM Int. Conference on Web Intelligence*, Silicon Valley, USA, November 2-5.
AAAI-07: *The 22nd National Conference on Artificial Intelligence*, July 22-26, 2007, Vancouver, Canada
BioLINK 2007: *Linking Literature, Information and Knowledge for Biology*. SIG at ISMB 2007, July 19, 2007, Vienna, Austria.
GECCO 2007: *Genetic and Evolutionary Computation Conference*, July 7-11, 2007, London, England.
KIMAS '07: *International Conference Integration of Knowledge Intensive Multi-Agent Systems: Modeling, Evolution and Engineering*. April 29 – May 3, 2007 Waltham, Massachusetts
2006 *IEEE/WIC/ACM International Conference on Web Intelligence (WI-06)*, Hong Kong, Dec. 18-22, 2006
JBB06: *The Joint BioLINK-BioOntologies Meeting*, in association with the *14th International Conference on Intelligent Systems for Molecular Biology (ISMB'06)*, Fortaleza, Brazil, August 4-10, 2006.
GECCO 2006: *Genetic and Evolutionary Computation Conference*, July 8-12, 2006, Seattle, USA.
BioNLP06: *Linking Natural Language Processing and Biology: Towards deeper biological literature exploitation*. Special Workshop of the *Human Language Technology conference - North American chapter of the Association for Computational Linguistics (HLT-NAACL06)*, June 8, 2006, New York City, NY, USA
Exploration vs. Exploitation in Naturally Inspired Search: Special workshop for the *UK Society for the Study of Artificial Intelligence and Simulation of Behaviour Conference - AISB 2006*, April 5, 2006, Bristol, England
EPIA 2005: *12th Portuguese Conference on Artificial Intelligence*, December 5-8, 2005, Covilhã, Portugal

ALEA05: Artificial Life and Evolutionary Algorithms - Special Workshop at EPIA'05
 IROBOT'05: 1st International Workshop on Intelligent Robotics. Special Workshop at EPIA '05.
 ECAL 2005: *European Conference on Artificial Life*, September 5-9, 2005, University of Kent, UK.
Active agents and their environments as dynamical systems workshop - at ECAL 2005
 CEC 05: *IEEE Congress on Evolutionary Computation*, Edinburgh, UK, September 2-5, 2005.
 GECCO 2005: *Genetic and Evolutionary Computation Conference*, June 25-29, 2005, Washington, D.C.
 KIMAS 05: *IEEE International Conference on Integration of Knowledge Intensive Multi-Agent Systems*. April 18
 - 21, 2005, Waltham, Massachusetts.
 CEC 2004: *Congress on Evolutionary Computation*, Portland, Oregon, June 19-23
Agent-Based Simulation 5, Lisbon, Portugal May 3-5, 2004
 CEC 2003: *Congress on Evolutionary Computation*, Canberra, Australia, December 2003
 KIMAS 03: *IEEE Integration of Knowledge Intensive Multi-Agent Systems*, Cambridge, MA., 1-3 October 2003.
Oeiras Mathematical and Computational Biology Workshop, Oeiras, Portugal, June 20th 2003.
Autonomy, Delegation, and Control: From Inter-agent to Organizations and Institutions Workshop, 2nd
International Conference on Autonomous Agents and Multi-Agent Systems, Melbourne, Australia, 2003
 EPIA'03: *11th Portuguese Conference on Artificial Intelligence* -, December 4-7, 2003, Beja, Portugal.
Workshop on Distributed Computing Architectures for Digital Libraries, at the 31th *International Conference on*
Parallel Processing ICPP 2002, Vancouver, Canada August 18-21, 2002.
 CEC 2002: *Congress on Evolutionary Computation, part of the IEEE World Congress on Computational*
Intelligence, Hawaii, 2002
10th Mediterranean Conference On Control And Automation Med2002, Lisbon, Portugal July 2002
From Intelligent Networks to the Global Brain: Evolutionary Social Organization through Knowledge
Technology, Brussels, July 3-5, 2001.
Complex Systems 2000, Dunedin, New Zealand, November 2000.
1998 Conference on Intelligent Systems and Semiotics, NIST, Gaithersburg, Maryland – Session Chair.
2nd International Symposium On Intelligent Manufacturing Systems, August 1998, Sakarya , Turkey

Review Panels

Fundação para a Ciência e Tecnologia, Portugal. Computer Engineering,, 2007; *Ciencia Viva* 2008.
National Science Foundation, Computer & Information Science & Engineering, 2006; *Cyber-Enabled Discovery*,
 2008; *IIS-Biomedical Career awards* 2008.
Science Foundation Ireland , President of Ireland Young Researcher Award, 2006
 Chair of Robotics, Intelligent and Information Systems Review Panel of the *Fundacao Ciencia e Tecnologia*,
 Portugal, 2000, 2003, 2004
Belgian Fund for Scientific Research, 2005 (Vrije Universiteit Brussels - VUB), 2004, 2005, 2006.
UMCEES Review Panel, National Research Council, 2001
 Computer Science and Software Engineering internal proposal (LDRD) review committee at the *Los Alamos*
National Laboratory 1998-2000.

INVITED TALKS AND CONFERENCE APPEARANCES

INDIANA UNIVERSITY PURDUE UNIVERSITY INDIANAPOLIS, SCHOOL OF INFORMATICS, JANUARY 23, 2009.
 Colloquium Speaker: "Bibliome Informatics and Complex Networks in Proteomics and Systems Biology".
 BRAIN, LIFE, AND CULTURE: VI ENCONTRO DO FÓRUM INTERNACIONAL DE INVESTIGADORES PORTUGUESES, LISBON,
 DECEMBER 18-20, 2008
 Invited Participant.
 6TH ANNUAL NATIONAL ACADEMIES KECK FUTURES INITIATIVE (NAKFI) CONFERENCE: COMPLEX SYSTEMS,
 IRVINE, CALIFORNIA, NOVEMBER 13-15, 2008
 Invited Participant.
 FIRST PORTUGUESE FORUM ON COMPUTATIONAL BIOLOGY , OEIRAS, PORTUGAL, JULY 10-12, 2008.
 Invited Speaker: "Complex Networks and Bibliome Informatics: Applications to Computational Biology"
 UNIVERSITY OF THE BASQUE COUNTRY, SAN SEBASTIAN, SPAIN, JUNE 23-24, 2008.
 Invited Speaker: "Complex Systems Approaches to Theoretical Biology".

SYSTEMS BIOLOGY IN MEDICINE WORKSHOP, UNIVERSITY OF BARCELONA, HOSPITAL CLINIC, MAY 8-10, 2008.

Invited Speaker: "Complex Networks and Bibliome Informatics: Applications to Computational Biology"
SOCIAL DATA MINING AND KNOWLEDGE BUILDING WORKSHOP, INSTITUTE FOR PURE & APPLIED MATHEMATICS,
UNIVERSITY OF CALIFORNIA AT LOS ANGELES, NOVEMBER 5-9, 2007, LOS ANGELES.

Invited Speaker: "Semi-metric Knowledge Networks: Applications to Information Retrieval and Social
Data-mining"

COMPUTER SCIENCE AND INFORMATICS HONORS SEMINAR. OCTOBER 29, 2007, INDIANA UNIVERSITY.

Invited Speaker: "A Computational Model of RNA Editing and the Evolution of Regulation and Memory in
Dynamic Environments"

EUROPEAN CONFERENCE ON ARTIFICIAL LIFE, 2007, SEPTEMBER 10-15, LISBON, PORTUGAL.

Invited Discussant: "Reality is Stranger than Fiction: What to do in Artificial Life About Advances in Biology?"
INSTITUTO GULBENKIAN DE CIENCIA, July, 2007, Oeiras, Portugal

Invited Speaker: "The emergence of regulation in artificial models of genotype editing"

INTERNATIONAL WORKSHOP ON PRACTICAL APPLICATIONS OF COMPUTATIONAL BIOLOGY AND BIOINFORMATICS,
June 20-22, 2007, Ourense, Spain.

Invited Speaker: "Uncovering Protein-Protein Interactions in the Bibliome".

MATHEMATICS DEPARTMENT, UNIVERSITY OF SEVILLE, June 13, 2007, Seville, Spain

Invited Speaker: "Transitivity in weighted graphs: effects on network topology".

COMPUTER SCIENCE DEPARTMENT, NEW UNIVERSITY OF LISBON, June 4, 2007, Lisbon, Portugal

Invited Speaker: "Complex Adaptive Systems and Computational Intelligence".

SECOND BIOCREATIVE CHALLENGE WORKSHOP: CRITICAL ASSESSMENT OF INFORMATION EXTRACTION IN
MOLECULAR BIOLOGY, April 23-25, 2007, Madrid, Spain .

Session Chair

DATA AND SEARCH INSTITUTE, INDIANA UNIVERSITY, January 31, 2007, Bloomington, Indiana, USA

Invited Speaker: "Bibliome Informatics: uncovering inferences by literature mining"

FORUM INTERNACIONAL DE INVESTIGADORES PORTUGUESES, BIOMEDICINA: INVESTIGACAO, ENSINO E IMPACTO NA
SOCIEDADE, September 21-23, 2006, Porto, Portugal.

Invited Speaker: "Knowledge Integration in Biomedicine"

JOINT STATISTICAL MEETINGS, COMPLEX NETWORKS SESSION, August 6-20, 2006, Seattle, WA

Invited Speaker: "Effects of Transitive and Metric Closure on Weighted Graphs"

INSTITUTO SUPERIOR TECNICO, INSTITUTO DE SISTEMAS E ROBOTICA, June 19-20, 2006

Invited Lecturer: two day course "Brief Introduction to Bioinformatics and Computational Biology"

INSTITUTO GULBENKIAN DE CIENCIA, April 3, 2006, Oeiras, Portugal

Invited Lecturer: "Bibliome Informatics"

UNIVERSITY OF BRAGA, DOCTORAL SYMPOSIUM, February 2006, Braga, Portugal

Invited Speaker: "Bibliome Informatics"

NATIONAL SCIENCE FOUNDATION: WORKSHOP ON DYNAMIC DATA-DRIVEN APPLICATIONS SYSTEMS, Arlington, VA,
January 19-20, 2006

Invited Participant

UNIVERSITY OF INDIANA, BLOOMINGTON, Cognitive Science Program Seminar Series , November 16, 2005.

Invited Speaker: "The Emergence of Representations".

IEEE/WIC/ACM INTERNATIONAL CONFERENCE ON WEB INTELLIGENCE AND INTELLIGENT AGENT TECHNOLOGY ,
Compiègne, France, September 19-22, 2005

Session Chair: "Intelligent E-Technology" Session.

UNIVERSITY OF INDIANA, BLOOMINGTON, Biocomplexity Institute Seminar Series, April 16, 2005.

Invited Speaker: "Artificial Life Models of Genotype Editing".

UNIVERSITY OF INDIANA, BLOOMINGTON, Networks Science Seminar, January 24, 2005

Invited Speaker: "Proximity Networks and Semi-Metric Behavior"

UNIVERSIDADE NOVA DE LISBOA, Lisbon, Portugal. December, 10th, 2004.

Invited Speaker: "Proximity Networks and Fuzzy Graphs"

INSTITUTO GULBENKIAN DE CIENCIA, Lisbon, Portugal. December, 22nd 2004

Invited Speaker: "Mathematical and Computational Biology"

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN. Nonlinear Dynamics and Complex Systems Seminar, October 29th, 2004.

Invited Speaker: "Extraction and Semi-metric Analysis of Social and Biological Networks"

UNIVERSITY OF INDIANA, BLOOMINGTON, School of Informatics and Computer Science Department Colloquium, October 8th, 2004.

Invited Speaker: "From Document Networks to the Adaptive Web"

COGNITIVE SYSTEMS: HUMAN COGNITIVE MODELS IN SYSTEM DESIGN. Santa Fe, NM, June 30th, 2004

Invited Speaker: "Evidence sets: Using uncertainty as an engine for adaptive recommendation".

INDIANA UNIVERSITY, BLOOMINGTON, SCHOOL OF INFORMATICS, February 16th, 2004

Invited Speaker

GENETIC REGULATORY NETWORKS: THEORY AND PRACTICE, Canberra, Australia, 8th - 12th December 2003

Co-Chair: http://www.itee.uq.edu.au/~complexity/CEC_Special_Session/

OEIRAS MATHEMATICAL AND COMPUTATIONAL BIOLOGY WORKSHOP, Oeiras, Portugal, June 20th 2003.

Co-Chair: <http://informatics.indiana.edu/rocha/cbigc>

INFORMATION SCIENCE AND TECHNOLOGY COLLOQUIUM, NASA GODDARD SPACE FLIGHT CENTER, Jan. 29, 2003

Featured speaker

CENTER FOR THE STUDY OF COMPLEX SYSTEMS, UNIVERSITY OF MICHIGAN, ANN ARBOR, December 5, 2002

Invited Speaker

ENTREPRENEURSHIP IN BIOTECHNOLOGY, VENTURING IDEAS ACROSS THE ATLANTIC WORKSHOP, Newark, NJ, January 31, 2003

Invited Speaker

INTERNATIONAL INTERDISCIPLINARY SEMINAR ON NEW ROBOTICS, EVOLUTION AND EMBODIED COGNITION, LISBON, PORTUGAL, NOVEMBER 12-15 2002.

Co-Chair and Invited Speaker: <http://wwwinformatics.indiana.edu/rocha/embrob>

2002 INNOVATIVE STUDIES RESEARCH PROGRAM WORKSHOP, Santa Fe, NM October 15th

invited speaker

WORKSHOP ON ENABLING CONCEPTS IN BIOSYSTEMS ANALYSIS, SEPTEMBER 19-20, 2002, SANTA FE, NM

Invited Speaker

CRITICAL STUDIES WORKSHOP, STANFORD UNIVERSITY, MAY 8, 2002.

Invited speaker.

WORKSHOP OF THE SYSTEMS THEORY OF BIO-INFORMATICS AND ITS EXTENSION TOWARDS ENGINEERING DESIGN THEORY PROJECT, GRADUATE SCHOOL OF ENGINEERING, KYOTO UNIVERSITY, KYOTO, JAPAN, NOVEMBER 2001.

Invited Speaker

1ST PORTUGUESE MEETING ON THEORETICAL AND COMPUTATIONAL BIOLOGY. INSTITUTO GULBENKIAN DE CIENCIA, OEIRAS, PORTUGAL, 23RD-26TH OF OCTOBER 2001

Invited Speaker

NATO ADVANCED RESEARCH WORKSHOP ON SYSTEMATIC ORGANISATION OF INFORMATION USING FUZZY SYSTEMS, VILA REAL, PORTUGAL, 24TH-26TH OF OCTOBER 2001

Invited Speaker

FROM INTELLIGENT NETWORKS TO THE GLOBAL BRAIN: EVOLUTIONARY SOCIAL ORGANIZATION THROUGH KNOWLEDGE TECHNOLOGY, BRUSSELS, JULY 3-5, 2001.

Invited Speaker

III ENCONTRO DO FORUM INTERNACIONAL DE INVESTIGADORES PORTUGUESES, FARO, PORTUGAL APRIL 7-10, 2001.

Invited Speaker in Computer Science Session

INSTITUTO GULBENKIAN DA CIENCIA, LISBON PORTUGAL, MARCH 2001.

Invited Speaker

GORDON RESEARCH CONFERENCE ON RNA EDITING, JANUARY 21-26, 2001, VENTURA, CA.

Keynote Session Speaker.

HETERARCHIES: DISTRIBUTED INTELLIGENCE AND THE ORGANIZATION OF DIVERSITY, SANTA FE INSTITUTE WORKSHOP OCTOBER 13 AND 14, 2000, SANTA FE, NM.

Invited Speaker

INSTITUTO DE SISTEMAS E ROBOTICA, INSTITUTO SUPERIOR TECNICO, LISBON, PORTUGAL. AUGUST 2000 AND SEPTEMBER 2001.

Invited Speaker

XEROX PARC, PALO ALTO. JUNE 2000

Invited Speaker at the User-Interaction Group

DESIGN PRINCIPLES FOR THE IMMUNE SYSTEM AND OTHER DISTRIBUTED AUTONOMOUS SYSTEMS, SANTA FE INSTITUTE, JULY 1999, SANTA FE, NEW MEXICO.

Invited Speaker

INTERNATIONAL MEETING ON EMERGENT ORGANIZATIONS AND THEIR DYNAMICS, MAY 1999, UNIVERSITY OF GHENT, GHENT, BELGIUM

Invited Speaker

ISIC/CIRA/ISAS '98: IEEE INTERNATIONAL SYMPOSIUM ON INTELLIGENT CONTROL (ISIC), INTERNATIONAL SYMPOSIUM ON COMPUTATIONAL INTELLIGENCE IN ROBOTICS AND AUTOMATION (CIRA), INTELLIGENT SYSTEMS AND SEMIOTICS (ISAS), SEPTEMBER 1998, GAITHERSBURG, MARYLAND U.S.A.

Co-Chair of the "Semiotics of Autonomous Information Systems" session

WORKSHOP ON EMERGENT SEMANTIC AND COMPUTATIONAL PROCESSES IN DISTRIBUTED INFORMATION SYSTEMS, AUGUST 1998, LOS ALAMOS, NEW MEXICO

Co-organizer (<http://www.c3.lanl.gov/~joslyn/pcp/workshop98.html>)

2ND INTERNATIONAL SYMPOSIUM ON INTELLIGENT MANUFACTURING SYSTEMS, AUGUST 1998, SAKARYA, TURKEY

Chair of the "Emergent Computation and Intelligent Manufacturing Systems" session, and member of the Program Committee

THE PHILOSOPHY OF ARTIFICIAL LIFE, MARCH 1997. CHRIST CHURCH, OXFORD, UNITED KINGDOM

Invited Participant

WORKSHOP ON CONTROL MECHANISMS FOR COMPLEX SYSTEMS, DECEMBER 1996, U.S. AIR FORCE BASE, LAS CRUCES, NEW MEXICO, U.S.A.

Invited Speaker

THE LOS ALAMOS NATIONAL LABORATORY, (CNLS/XCM), AUGUST 1996, LOS ALAMOS, NEW MEXICO, U.S.A.

Invited Speaker

THE SANTA FE INSTITUTE, AUGUST 1996, SANTA FE, NEW MEXICO, U.S.A.

Invited Speaker

WASHINGTON EVOLUTIONARY SYSTEMS SOCIETY, SEPTEMBER 21, 1995 WASHINGTON D.C., U.S.A.

Invited Speaker

INTERNATIONAL MEETING ON EVOLVING SYSTEMS, MARCH 1995, KONRAD LORENZ INSTITUTE, VIENNA, AUSTRIA

Invited Speaker

JOINT CONFERENCE OF THE NORTH AMERICAN FUZZY INFORMATION PROCESSING SOCIETY (NAFIPS), INTERNATIONAL FEDERATION OF INFORMATION SYSTEMS (IFIS), AND NORTH AMERICAN SPACE AGENCY (NASA): NAFIPS/IFIS/NASA'94, DECEMBER 1994, SAN ANTONIO, TEXAS, U.S.A.

Session Chair

ARTIFICIAL LIFE: A BRIDGE TOWARDS A NEW ARTIFICIAL INTELLIGENCE, DECEMBER 1993, SAN SEBASTIAN, SPAIN

Invited participant

SUCCESSFUL GRANTS AND FUNDED PROJECTS

NATIONAL SCIENCE FOUNDATION, HUMAN AND SOCIAL DYNAMICS PROGRAM, OCTOBER 2005/SEPTEMBER 2008

DHB: Dynamics of Information Flow and Decisions in Social Networks

with Eliot Smith, Robert Goldstone, Hugh Kelly, \$530K.

DEPARTMENT OF ENERGY/LOS ALAMOS NATIONAL LABORATORY, LDRD-DR, 2002-2005

Structural Bioinformatics: Inferring protein function from sequence and structure on a genomic scale

Funded to investigate literature mining techniques, as part of this larger project, to discover protein functions associated with known protein structures. Responsible for a budget of 103K\$

DEPARTMENT OF ENERGY/LOS ALAMOS NATIONAL LABORATORY, RESEARCH LIBRARY, 1998-2004

Research and Development of Active Recommendations Systems for the Library Without Walls Project.

Funded to develop the next generation of recommendation systems for distributed information systems. Budget FY03 300K\$. (<http://arp.lanl.gov>).

DEPARTMENT OF ENERGY/LOS ALAMOS NATIONAL LABORATORY - LDRD-ER, 2001-2004

Identification of Interests, Trends and Dynamics in Document Networks.

Funded to investigate the metric behavior of distance functions on document graphs as a predictor and identifier of semantic relationships. Budget FY03 105K\$ (<http://www.informatics.indiana.edu/rocha/DN/>)

DEPARTMENT OF ENERGY/LOS ALAMOS NATIONAL LABORATORY - LDRD- DR, 2002

Discovering Signatures of Human Infection by Biothreat Agents with Application to Bioterrorism Countermeasures– Literature Analysis Component

Funded to produce text mining techniques to discover novel relationships among components of the immune system. Budget FY02 20K\$

DEPARTMENT OF ENERGY/LOS ALAMOS NATIONAL LABORATORY - LDRD- DR, 2002

Advanced Knowledge Integration In Assessing Terrorist Threats – Network Analysis Component

Network analysis methods to discover implicit relationships in databases of documents. Budget FY02 50K\$

DEPARTMENT OF ENERGY/LOS ALAMOS NATIONAL LABORATORY, 1998-2001

Gene Expression Array Analysis as Part of the Functional Genomics Research Program

Funded to investigate data-mining techniques to discover hidden relationships in gene expression data. Project leader of a sub-team of 3 researchers. (<http://informatics.indiana.edu/rocha/fungen>)

XEROX CORPORATION/DEPARTMENT OF ENERGY/LOS ALAMOS NATIONAL LABORATORY, 2000-2001

Knowledge Management

Funded to investigate adaptive recommendation systems for distributed information systems. Part of a team of 8 researchers. (<http://www.c3.lanl.gov/~joslyn/xerox>)

PHYSICAL SCIENCE LABORATORY AT NEW MEXICO STATE UNIVERSITY (NMSU), 1998-2000

Agent-based modeling of socio-technical organizations

Funded as the Los Alamos National Laboratory component (2 research staff members) of a multi-institution project. Actively participated in project proposal and statement of work writing.

(<http://www.c3.lanl.gov/~joslyn/nmsu>).

U.S. NAVY (CINCLANFLT) AND RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK AT BINGHAMTON, 1996-1997

Model design of budget and fleet readiness requirements and Simulation of Port Operations

Research Assistant in a project of seven researchers. Actively participated in project proposal writing. Project leader Prof. Donald Gause.

NATO INTERNATIONAL SCIENTIFIC EXCHANGE PROGRAMMES, ENGLAND-THE NETHERLANDS- PORTUGAL, 1990-1992

Research Assistant, Investigation of Inference Mechanisms in Artificial Intelligence

Developed fuzzy logic and approximate reasoning mathematical structures and algorithms. Results published in Rocha [1991], Medina-Martins and Rocha [1992], and Medina-Martins et al [1993, 1994] (see list of publications). Project Directors: Prof. Gordon Pask Prof. Gerard and de Zeeuw in the University of Amsterdam, The Netherlands, and Prof. Pedro Medina-Martins at I.S.T. Portugal.

SCHOLARSHIPS, AWARDS, AND MEDIA COVERAGE

BBC DIGITAL PLANET, U.K.: Forthcoming World Service interview about immune-inspired spam-detection system.
http://www.bbc.co.uk/worldservice/programmes/digital_planet.shtml

SIC NEWS, PORTUGAL: Forthcoming TV interview (leading 24-hour news channel in Portugal) about immune-inspired spam-detection system.
<http://sic.aeiou.pt/online/noticias>

RÁDIO RENASCENÇA, PORTUGAL: Radio interview about immune-inspired spam-detection system, October 5, 2008.
<http://www.rr.pt/>

L'ATELIER, FRANCE: "Spams et bacteries : meme combat", August 22th, 2008.
<http://parentheses.atelier.fr/recherche/article/spams-et-bacteries-meme-combat>

TECNOMANIA, SPAIN: "Podemos hacer software que nazca a la vida?", August 12th, 2008.
<http://www.tecnomania.com/?p=1065>

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BEST PAPER AWARD OF THE *PROGRAMME COMMITTEE OF THE THIRTEENTH EUROPEAN MEETING ON CYBERNETICS AND SYSTEMS RESEARCH*, FOR THE ENTIRE MEETING, AND THE GORDON PASK MEMORIAL AWARD, VIENNA, APRIL 1996 to the contribution "*Language Theory: Consensual Selection of Dynamics*", Henry, Charles and Luis Rocha [1996]

PRAXIS XXI PROGRAM, JUNTA NACIONAL DE INVESTIGAÇÃO CIENTÍFICA E TECNOLÓGICA, PORTUGAL-EUROPEAN UNION-USA, 1995-1996

PhD Scholarship, Fuzzy Logic and Adaptive Systems

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ERASMUS PROGRAM SCHOLARSHIP, EUROPEAN UNION, 1990

Exchange Student in the Masters Program of the Staffordshire University, Stafford, England. Computer Integrated Manufacturing.

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<http://informatics.indiana.edu/rocha/alife.html>

SCIENTIFIC TRANSLATIONS:

Varela F., E. Thompson and E. Rosch [2001]. *A Mente Corpórea: Ciência Cognitiva e Experiência Humana*. Editora Piaget, Portugal. Translation and Scientific Editing by Luis M. Rocha from the original “*The Embodied Mind*”.

LONG RESEARCH VISITS AND COLLABORATIONS

UNIVERSITY OF CALIFORNIA, LOS ANGELES, INSTITUTE FOR PURE AND APPLIED MATHEMATICS

Fellowship appointment, March-June 2004

Program on “Proteomics: Sequence, Structure, Function”

INSTITUTO DE SISTEMAS E ROBOTICA, INSTITUTO SUPERIOR TÉCNICO, Lisbon Portugal.

Visiting Professor, 09/00-present.

Works with graduate students and fellow faculty on computational biology.

THE SANTA FE INSTITUTE, SANTA FE, NEW MEXICO, U.S.A.

Member of Research Community, Since August 1996

Joined the SFI’s research community. Visited the Institute and worked with Melanie Mitchell and others, on models of Evolutionary Systems utilizing Fuzzy Logic and Genetic Algorithms. Delivered a talk.

THE PRINCIPIA CYBERNETICA PROJECT

Associate, Since 1991

Computer-supported collaborative development of an evolutionary-systemic philosophy. This project has been at the forefront of the development hypertext technology and the World Wide Web since 1990.

<http://pespmc1.vub.ac.be/>

FUZZY SETS AND SYSTEMS GROUP, DEPARTMENT OF COMPUTER SCIENCE AND APPLIED MATHEMATICS, UNIVERSITY OF GHENT, BELGIUM

Visiting Researcher, Summer 1993

Worked with Etienne Kerre and Bernard de Baets.

SHORT DEGREES

LABORATÓRIO NACIONAL DE ENGENHARIA CIVIL (NATIONAL LABORATORY FOR CIVIL ENGINEERING), LISBON, PORTUGAL

4-month intensive post-graduate course (6 hours daily) on Digital Control Systems, 1991.

INSTITUTO SUPERIOR TÉCNICO, LISBON, PORTUGAL

3-month intensive (6 hours daily) summer course, sponsored by the Social European Fund, on Computer Control of Noise Pollution, 1988.