

LUIS M. ROCHA - Curriculum Vitae

School of Informatics and Cognitive Science Program
Indiana University
1900 East Tenth Street, Bloomington IN 47406
+1-812-856-1832 • Fax: +1-812-856-3015

e-mail: rocha@indiana.edu
www: <http://informatics.indiana.edu/rocha>

DADOS PESSOAIS

Luis Rocha é Professor Associado (com “tenure”) de *Informática*, docente votante do *Programa de Ciência Cognitiva*, Professor Associado Adjunto em *Ciência de Computação* e investigador afiliado ao *Biocomplexity Institute* na *Indiana University*, *Bloomington*, EUA. É também director do *FLAD Computational Biology Collaboratorium* e membro da direcção do *PhD program in Computational Biology* no *Instituto Gulbenkian da Ciência*, Portugal.

Data de Nascimento, 5 de Outubro de 1966.

INTERESSES DE INVESTIGAÇÃO

Sistemas Complexos Adaptativos: Análise de redes complexas, autómatos celulares, cognição corporizada, computação bio-inspirada, computação emergente, modelação multi-agentes, origem da informação, robótica, sistemas evolucionários e adaptativos, vida artificial.

Biologia Computacional: Análise de dados de expressão genética, anotação automática de dados, bioinformática, biologia de sistemas, edição de ARN, prospecção inteligente de texto e literatura biomédica.

Inteligência Computacional: Busca de informação, computação evolucionária, conexionismo, informática de busca (search), modelação de incerteza, organização colectiva e adaptativa de conhecimento, prospecção inteligente de dados e texto, redes de conhecimento e documentos, sistemas de recomendação, teoria de conjuntos difusos, teoria de informação generalizada.

FORMAÇÃO ACADÉMICA

STATE UNIVERSITY OF NEW YORK, BINGHAMTON, NEW YORK

Doutoramento em Systems Science e Ciência de Computação (1992-1997)

Equiparação a doutoramento em Informática pelo Instituto Superior Técnico, 1999

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

INSTITUTO SUPERIOR TÉCNICO, LISBOA, PORTUGAL

Licenciatura em Engenharia Mecânica, Ramo de Sistemas (1985-1990)

Incluindo um semestre no STAFFORDSHIRE UNIVERSITY, STAFFORD, ENGLAND, pelo programa ERASMUS com frequência do Mestrado em *Computer Integrated Manufacturing (CIM)*.

EXPERIÊNCIA PROFISSIONAL

INDIANA UNIVERSITY, SCHOOL OF INFORMATICS AND COGNITIVE SCIENCE PROGRAM,

Professor Associado (tenured), Desde Agosto de 2004

- Cadeiras leccionadas:: I101 - Introduction to Informatics (<http://informatics.indiana.edu/rocha/i101>) e I490/590 - Bio-inspired Computing (<http://informatics.indiana.edu/rocha/i-bic/>)
- Investigação na áreas de *Sistemas Complexos* (ver <http://informatics.indiana.edu/rocha/cprojects.html>).
- Trabalho corrente com alunos graduados e assistentes: grupo de 6 alunos de doutoramento, 1 pósdoc, e 3 assistentes.

INSTITUTO GULBENKIAN DA CIÊNCIA, Lisbon Portugal.

Director do Mathematical and Computational Biology Collaboratorium e membro da direcção do PhD in Computational Biology, desde 2005.

Ver <http://bc.igc.gulbenkian.pt/>

LOS ALAMOS NATIONAL LABORATORY, MODELING, ALGORITHMS, AND INFORMATICS GROUP
Pósdoc, Setembro de 1997 a Janeiro de 1999

Investigador Permanente, Fevereiro de 1999 a Julho de 2004

- Chefe do *Complex Systems Team* (<http://informatics.indiana.edu/rocha/complex>)
- Investigador principal e membro de vários projectos de investigação (ver Projectos de Investigação).
- Trabalho com alunos graduados.

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

Professor Convidado, Março a Junho de 2004

Programa em “Proteomics: Sequence, Structure, Function”

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

- *Professor auxiliar adjunto, 1995-1997*. Desenvolvimento e ensino da cadeira “*Evolutionary Systems and Artificial Life*”, aparentemente, o primeiro curso Mundial sobre este tema: <http://informatics.indiana.edu/rocha/alife.html>.
- *Assistente de investigação, 1996*. Modelação, simulação e projecto de requerimentos de prontidão de rota e operação de porto para bases da Marinha Norte-Americana.
- *Assistente de ensino, 1995-1997*. Assistente das aulas práticas das cadeiras de Mestrado e Doutoramento: “*Neural Network and Genetic Models*” e “*Modeling and Simulation*”. Responsável pelo desenvolvimento de trabalhos interactivos para a Web: <http://informatics.indiana.edu/rocha/assign.html>.
- *Gestor de Informação e Web, 1995-1997*.

LABORATÓRIO NACIONAL DE ENGENHARIA CIVIL, LISBOA, PORTUGAL

Bolseiro de investigação:1990 (part-time)

Bolseiro graduado de investigação:1991 (full-time)

Projecto e desenvolvimento de sistema de controlo para mesa sísmica. Desenvolvimento de software para controlo desta mesa em *Fortran* e *C*.

SERVIÇO PRESTADO À COMUNIDADE CIENTÍFICA

Conselhos Editoriais e Científicos (Editorial and Advisory Boards)

Journal of Applied Systems Studies, Journal of Biosemiotics, Ciencia Hoje, Polimetrica Publisher, Principia Cybernetica Project

Editor Ad Hoc

Artificial Life, Biosystems, Communication and Cognition - Artificial Intelligence

Avaliador (Reviewer)

Adaptive Behavior, Advances in Complex Systems, Artificial Intelligence, Artificial Life, Behavioral and Brain Sciences, Biosystems, Clinical Chemistry, Cognitive Science, Complex Systems, Data & Knowledge Engineering journal, Data Mining & Knowledge Discovery, Foundations of Science, 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 Theoretical Biology, Molecular Biosystems, Nucleic Acids Research, Proceedings of the National Academy of Sciences (PNAS), Systems Research, Transactions on Information Systems.

Comité Organizador de Conferências (Conference Organizing Committees)

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, Australia, Dezembro 2003
International interdisciplinary seminar on new robotics, evolution and embodied cognition, Lisboa, Portugal, Novembro 12-15 2002

Comité de Programa de Conferências (Conference Program Committees)

EPIA 2007: 13th Portuguese Conf. 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. , 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., Oct. 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

Painéis de Avaliação

Fundação para a Ciência e Tecnologia, Portugal. Painel de Engenharia de Computadores, 2007.
National Science Foundation, USA, Computer & Information Science & Engineering, 2006
Science Foundation Ireland , President of Ireland Young Researcher Award, 2006
 Coordenador do Painel de avaliação de projectos de investigação em *Robótica e Sistemas Inteligentes e de Informação* para a *Fundação para a Ciência 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
 Painel de avaliação de propostas em *Computer Science and Software Engineering* do *Los Alamos National Laboratory* 1998-2000.

PALESTRANTE CONVIDADO

NATIONAL SCIENCE FOUNDATION WORKSHOP ON BIO-INSPIRED COMPUTATION, October 29-30, 2007, Arlington, Virginia, USA.

Orador Convidado: "Bio-inspired Computing and New Design Principles from Computational Biology"

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.

Orador Convidado: "The emergence of regulation in artificial models of genotype editing"

INTERNATIONAL WORKSHOP ON PRACTICAL APPLICATIONS OF COMPUTATIONAL BIOLOGY AND BIOINFORMATICS, 20-22 de Junho, 2007, Ourense, Espanha.

Orador Convidado: "Uncovering Protein-Protein Interactions in the Bibliome".

DEPARTAMENTO DE MATEMÁTICA, UNIVERSIDADE DE SEVILHA, 13 de Junho, 2007, Sevilha, Espanha

Orador Convidado: "Transitivity in weighted graphs: effects on network topology".

DEPARTAMENTO DE INFORMÁTICA, UNIVERSIDADE NOVA DE LISBOA, 4 de Junho, 2007, Lisboa, Portugal

Orador Convidado: "Complex Adaptive Systems and Computational Intelligence".

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

Session Chair

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

Orador Convidado: "Bibliome Informatics: uncovering inferences by literature mining".

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

Orador Convidado: "Knowledge Integration in Biomedicine"

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

Orador Convidado: "Effects of Transitive and Metric Closure on Weighted Graphs"

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

Professor Convidado: two day course "Brief Introduction to Bioinformatics and Computational Biology"

INSTITUTO GULBENKIAN DE CIENCIA, April 3, 2006

Professor Convidado: "Bibliome Informatics"

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

Orador Convidado: "Bibliome Informatics"

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

Participante Convidado

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

Orador Convidado: "The Emergence of Representations".

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

Coordenador Convidado: "Sessão Intelligent E-Technology".

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

Orador Convidado: "Artificial Life Models of Genotype Editing".

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

Orador Convidado: "Proximity Networks and Semi-Metric Behavior"

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

Orador Convidado: "Proximity Networks and Fuzzy Graphs"

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

Orador Convidado: "Mathematical and Computational Biology"

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

Orador Convidado: "Extraction and Semi-metric Analysis of Social and Biological Networks"

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

Orador Convidado: "From Document Networks to the Adaptive Web"

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

Orador Convidado: "Evidence sets: Using uncertainty as an engine for adaptive recommendation".

INDIANA UNIVERSITY, BLOOMINGTON, SCHOOL OF INFORMATICS AND COGNITIVE SCIENCE PROGRAM, February 16th, 2004
Orador Convidado

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
Orador Principal

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

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

INTERNATIONAL INTERDISCIPLINARY SEMINAR ON NEW ROBOTICS, EVOLUTION AND EMBODIED COGNITION, LISBON, PORTUGAL, NOVEMBER 12-15 2002.
Co-Chair e Orador Convidado: <http://wwwinformatics.indiana.edu/rocha/embrob>

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

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

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

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

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

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

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

III ENCONTRO DO FORUM INTERNACIONAL DE INVESTIGADORES PORTUGUESES, FARO, PORTUGAL ABRIL, 2001.
Orador Convidado da Sessão sobre Informática

INSTITUTO GULBENKIAN DA CIENCIA, LISBON PORTUGAL, MARÇO 2001.
Orador Convidado

GORDON RESEARCH CONFERENCE ON RNA EDITING, JANUARY 21-26, 2001, VENTURA, CA.
Orador da Sessão de Abertura (Keynote).

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

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

XEROX PARC, PALO ALTO. JUNE 2000
Orador Convidado no User-Interaction Group

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

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

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 da sessão "Semiotics of Autonomous Information Systems"

WORKSHOP ON EMERGENT SEMANTIC AND COMPUTATIONAL PROCESSES IN DISTRIBUTED INFORMATION SYSTEMS, AUGUST 1998, LOS ALAMOS, NEW MEXICO
Co-organizador (<http://www.c3.lanl.gov/~joslyn/pcp/workshop98.html>)

2ND INTERNATIONAL SYMPOSIUM ON INTELLIGENT MANUFACTURING SYSTEMS, AUGUST 1998, SAKARYA , TURKEY
Chair da sessão "Emergent Computation and Intelligent Manufacturing Systems"

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

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

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

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

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

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

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
Participante Convidado

PROJECTOS DE INVESTIGAÇÃO PATROCINADOS

NATIONAL SCIENCE FOUNDATION, HUMAN AND SOCIAL DYNAMICS PROGRAM, OCTOBER 2005/SEPTEMBER 2008
DHB: Dynamics of Information Flow and Decisions in Social Networks
 Co-PI com Eliot Smith, Robert Goldstone, Hugh Kelly, US\$ 530.000.

FLAD COMPUTATIONAL BIOLOGY COLLABORATORIUM E PhD PROGRAM IN COMPUTATIONAL BIOLOGY NO INSTITUTO GULBENKIAN DA CIENCIA, PORTUGAL. Patrocínios obtidos de: *Fundação Gulbenkian, Fundação para a Ciência e Tecnologia, Siemens Academic, Fundação Luso-Americana para o Desenvolvimento, e Portugal Telecom.*

Membro da direcção destas iniciativas. A totalidade dos patrocínios chega a vários milhões de euros para um período de quatro anos.

DEPARTMENT OF ENERGY/LOS ALAMOS NATIONAL LABORATORY, LDRD-DR, 2002-2005
Structural Bioinformatics: Inferring protein function from sequence and structure on a genomic scale
 Co-PI, US\$ 3.100.000

DEPARTMENT OF ENERGY/LOS ALAMOS NATIONAL LABORATORY, RESEARCH LIBRARY, 1998-2004
Research and Development of Active Recommendations Systems for the Library Without Walls Project.
 PI, US\$ 1.800.000. (<http://arp.lanl.gov>).

DEPARTMENT OF ENERGY/LOS ALAMOS NATIONAL LABORATORY - LDRD-ER, 2001-2004
Identification of Interests, Trends and Dynamics in Document Networks.
 PI. US\$ 315.000 (<http://wwwinformatics.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
Cientista convidado: US\$ 20.000

DEPARTMENT OF ENERGY/LOS ALAMOS NATIONAL LABORATORY - LDRD- DR, 2002
Advanced Knowledge Integration In Assessing Terrorist Threats – Network Analysis Component
Co-PI. US\$ 250.000

DEPARTMENT OF ENERGY/LOS ALAMOS NATIONAL LABORATORY, 1998-2001
Gene Expression Array Analysis as Part of the Functional Genomics Research Program
Cientista Convidado, US\$ 90.000. (<http://informatics.indiana.edu/rocha/fungen>)

XEROX CORPORATION/DEPARTMENT OF ENERGY/LOS ALAMOS NATIONAL LABORATORY, 2000-2001
Knowledge Management
Membro de equipa de 8 cientistas: US\$ 1.000.000.

PHYSICAL SCIENCE LABORATORY AT NEW MEXICO STATE UNIVERSITY (NMSU), 1998-2000
Agent-based modeling of socio-technical organizations
Co-PI, US\$ 120.000

U.S. NAVY (CINCLANFLT) AND RESEARCH FOUNDATION OF THE STATE UNIVERISTY OF NEW YORK AT BINGHAMTON, 1996-1997
Model design of budget and fleet readiness requirements and Simulation of Port Operations
Assistente de Investigação de Prof. Donald Gause

NATO INTERNATIONAL SCIENTIFIC EXCHANGE PROGRAMMES, ENGLAND-THE NETHERLANDS- IST PORTUGAL, 1990-1992
Inference Mechanisms in Artificial Intelligenc

COBERTURA MEDIÁTICA, PRÉMIOS E BOLSAS

RADIO TELEVISÃO PORTUGUESA (RTP): Interview for 2010 program on Artificial Life. : September 24, 2007, Portugal.

RADIODIFUSÃO PORTUGUESA ANTENA 1: Interview for news service about Artificial Life. September 12, 2007, Portugal.

RADIO CLUBE PORTUGUÊS: Interview in "Janela Aberta", apresentado por Ana Sousa Dias, September 10, 2007, Portugal.

FUNDAÇÃO CALOUSTE GULBENKIAN NEWSLETTER: “Tecendo Redes Para A Biologia Computacional”, September, 2007, Portugal. <http://www.gulbenkian.pt/v1/newsletters/86.pdf>

CIÊNCIA HOJE WEB PORTAL: “Luis Rocha: FLAD and the Portuguese Scientists in America”, 1 de Outubro, 2006
<http://www.cienciahoje.pt/index.php?oid=9116&op=all>

CORREIO DA MANHÃ NEWSPAPER: “Aposta na investigação”, Portugal, 22 de Junho, 2006.
<http://www.correiomanha.pt/noticia.asp?id=205996&idCanal=10>

CIÊNCIA HOJE WEB PORTAL: “IGC e FLAD criam laboratório de biologia computacional”, 22 de Junho 2006.
<http://www.cienciahoje.pt/index.php?oid=3452&op=all>

LUSA NEWS AGENCY: “Biologia Computacional: Parceria luso-americana para co-laboratório”, 21 de Junho 2006. <http://www.lusa.pt/print.asp?id=SIR-8102084>

COMPLEXITY DIGEST WEB PORTAL: "Interview at the Alife X Conference", 6 de Junho, 2006.
<http://complexity.vub.ac.be/~comdig/ALifeX/>

INDIANA DAILY STUDENT: "IU to showcase AI technology", 1 de Junho, 2006
<http://www.idsnews.com/news/story.php?id=36111&adid=news>

DE FRENTE WEB PORTAL: "Luis Rocha": 29 de Maio, 2006
<http://www.algebraica.pt/Arquivo/Newsletters/defrente/44/index.htm>

THE INDIANAPOLIS STAR NEWSPAPER: "Indiana noteworthy": 22 de Maio, 2006
<http://www.indystar.com/apps/pbcs.dll/article?AID=/20060522/BUSINESS/605220344&SearchID=73245320450948>

INDIANA UNIVERSITY, SCHOOL OF INFORMATICS, Maio de 2006
Teaching Excellence Award 2006

LABORATORYTALK WEB PORTAL: "Integrating artificial life simulation with synthetic biology": 22 de Maio, 2006
<http://www.laboratorytalk.com/news/iqd/iqd126.html>

BIOHEALTHMATHEMATICS WEB PORTAL: "Integrating artificial life simulation with synthetic biology", 19 de Maio, 2006
<http://news.biohealthmatics.com/PressReleases/2006/05/20/000000004557.aspx>

TECHPOINT WEB PORTAL: "Scientists to Get 'Alife' at International Conference", 15 de Março, 2006
<http://www.techpoint.org/pressreleasesdetails.aspx?id=293>

CIENCIA HOJE WEB PORTAL: "Luís Rocha preside a conferência sobre duas décadas de Vida Artificial", 15 de Março, 2006, Portugal
<http://www.cienciahoje.pt/index.php?oid=2703&op=all>

COMPLEXITY DIGEST WEB PORTAL: "Interview at the Artificial Life 9 Conference", Boston, MA, 14 de Setembro, 2004
<http://complexity.vub.ac.be/~comdig/ALife9/Rocha.asf>

UNIVERSITY OF CALIFORNIA, LOS ANGELES, INSTITUTE FOR PURE AND APPLIED MATHEMATICS
Fellowship, March-June 2004, Program on "Proteomics: Sequence, Structure, Function"

JORNAL EXPRESSO. Entrevista: "Mentes Lusas", numero 1653, Julho 2004.

JORNAL THE WASHINGTON POST, "Web May Hold the Key to Achieving Artificial Intelligence", 6 de Setembro, 2002; Page A01. <http://www.washingtonpost.com/wp-dyn/articles/A43363-2002Sep5.html>. Também apareceu no MSNBC News: <http://www.msnbc.com/news/804291.asp?0dm=C13KT>.

2010, RADIOTELEVISÃO PORTUGUESA (RTP2): Entrevista sobre Inteligência Artificial e Robótica, November 2002. http://informatics.indiana.edu/rocha/videos/2010rtp_high.rm

JORNAL ESTADO DE SÃO PAULO: "Insetos, neurônios e sistema imunológico. Esses são os modelos das redes do futuro", São Paulo Brasil, 16 de Setembro, 2002.
<http://www.estado.estadao.com.br/suplementos/info/2002/09/16/info041.html>.

JORNAL EXPRESSO: "O Português de Los Alamos", 31 de Agosto, 2002.
http://semanal.expresso.pt/economia/artigos/interior.asp?edicao=1557&id_artigo=ES69166

JORNAL EXPRESSO: "Nova robótica apresenta-se em Lisboa": 17 de Agosto, 2002.
http://semanal.expresso.pt/economia/artigos/interior.asp?edicao=1555&id_artigo=ES68023

INFORMAR PORTUGAL - ICEP MAGAZINE, Ano II, N. 7, Setembro 2002.

MAGAZINE ARTICLE "Evolution and scientific literature: towards a decentralized adaptive web" in *Nature: WebDebates*, 2001. <http://www.nature.com/nature/debates/e-access/Articles/luce.html>

MCDONNELL-PEW CENTRE FOR COGNITIVE NEUROSCIENCE GRADUATE STUDENT BURSARY, *Christ Church, Oxford*, March 1997

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

para o artigo "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

Bolsa de Doutoramento

BEST PAPER AWARD OF THE *TWELFTH EUROPEAN MEETING ON CYBERNETICS AND SYSTEMS RESEARCH*, FOR THE SYMPOSIUM "HUMANITY, ARCHITECTURE AND CONCEPTUALIZATION", VIENNA, APRIL 1994

para o artigo "Von Foerster's Cognitive Tiles: Semantically Closed Building Blocks for AI and Alife", Rocha, Luis [1994a]

CIENCIA PROGRAM, JUNTA NACIONAL DE INVESTIGAÇÃO CIENTÍFICA E TECNOLÓGICA, PORTUGAL-EUROPEAN UNION-USA, 1992-1995

Bolsa de Doutoramento

ERASMUS PROGRAM SCHOLARSHIP, EUROPEAN UNION, 1990

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

PUBLICAÇÕES

VOLUMES E LIVROS:

Almeida e Costa, F., L.M. Rocha, E. Costa, I. Harvey, A. Coutinho (Eds.) [2007]. *Advances in Artificial Life: Proceedings of the 2007 European Conference on Artificial Life*. Lecture Notes in Artificial Intelligence (LNAI), **4648**. Springer-Verlag.

Rocha, L.M., M. Bedau, D. Floreano, R. Goldstone, A. Vespignani, and L. Yaeger (Eds.) [2006]. *Artificial Life 10: Proceedings of the 10th Int. Conference on the Simulation and Synthesis of Living Systems*. MIT Press.

Almeida e Costa, F., and Luis M. Rocha (Eds.) [2005]. *Embodied and Situated Cognition. Artificial Life*. **11** (1-2). Editorial Preface: *Artificial Life*. **11** (1-2), pp. 5 - 11

Rocha, Luis M. (Ed.) [2001]. *The Physics and Evolution of Symbols and Codes. Biosystems* **60**, No. 1-3. Editorial Preface: *Biosystems* **60**, pp. 1-4.

Rocha, Luis M. (Ed.) [1995]. *Self-Reference in Biological and Cognitive Systems. Communication and Cognition - Artificial Intelligence*. Vol. 12, nos. 1-2.

Rocha, Luis M. [1997a]. *Evidence Sets and Contextual Genetic Algorithms: Exploring Uncertainty, Context, and Embodiment in Cognitive and Biological Systems*. PhD Dissertation. State University of New York at Binghamton.

ARTIGOS EM JORNAIS CIENTÍFICOS:

A. Abi-Haidar, J. Kaur, A. Maguitman, P. Radivojac, A. Retchsteiner, K. Verspoor, Z. Wang, and L.M. Rocha [2007]. "Uncovering protein-protein interactions in abstracts and text using linear models and word proximity networks". *Genome Biology*. In Press.

Rocha, L.M., C. Huang, A. Maguitman, J. Kaur. [2007]. "Agent-based Model of Genotype Editing". *Evolutionary Computation*. **15** (3): 253-89.

Rocha, Luis M. And W. Hordijk [2005]. "Material Representations: From the Genetic Code to the Evolution of Cellular Automata". *Artificial Life*. **11** (1-2), pp. 189 - 214.

Verspoor, K., J. Cohn, C. Joslyn, S. Mniszewski, A. Rechtsteiner, L.M. Rocha, T. Simas [2005]. "Protein Annotation as Term Categorization in the Gene Ontology using Word Proximity Networks". *BMC Bioinformatics*. **6**(Suppl 1): S20. doi:10.1186/1471-2105-6-S1-S20.

- Challacombe, J., A. Rechtsteiner, L.M. Rocha, E.P. Brown, T. Shenk, M. Altherr, T. Brettin [2004]. "Evaluation of the host transcriptional response to human cytomegalovirus infection" *Physiol. Genomics*. 10.1152/physiolgenomics.00155.2003.
- Rocha, Luis M. and A. Rechtsteiner [2004]. "Review of Bioinformatics for Geneticists." *Clinical Chemistry*. 50, No. 9, pp. 2471 - 2472. CLINCHEM/2003/020909.
- Rocha, Luis M. [2001]. "Evolution with material symbol systems". *Biosystems*. Vol. 60, pp. 95-121.
- Rocha, Luis M. [2001]. "Adaptive recommendation and open-ended semiosis". *Kybernetes*. Vol. 30, No. 5/6, pp. 821-851.
- Rocha, Luis M. [1999]. "Evidence Sets: Modeling Subjective Categories." *International Journal of General Systems*. Vol. 27, pp. 457-494.
- Joslyn, Cliff and Luis M. Rocha [1998] "Towards a Formal Taxonomy of Hybrid Uncertainty Representations". *Information Sciences*. Vol. 110, pp. 255-277.
- Rocha, Luis M. and Cliff Joslyn [1998] "Simulations of Embodied Evolving Semiosis: Emergent Semantics in Artificial Environments". *Simulation Series*; Vol. 30, (2), p.233-238.
- Rocha, Luis M. [1998]. "Where is the progress?" *Cybernetics and Human Knowing*. Vol.5, No. 4, pp. 86-90.
- Rocha, Luis M. [1997]. "Relative Uncertainty and Evidence Sets: A Constructivist Framework." *International Journal of General Systems*. Vol. 26 (1-2), pp. 35-61.
- Henry, Charles and Luis M. Rocha [1996] "Language Theory: Consensual Selection of Dynamics". *Cybernetics and Systems*. Vol. 27, pp. 541-553.
- Rocha, Luis M., V. Kreinovich, and R. Kearfott [1996]. "Computing Uncertainty in Interval Based Sets." *Applied Optimization*. Vol. 3, pp. 337-380. Also appears in: *Applications of Interval Computation*. R.B. Kearfott and V. Kreinovich (Eds.). Kluwer Academic Publishers. pp.337-380.
- Rocha, Luis M. [1996]. "Eigenbehavior and symbols." *Systems Research* Vol. 13, No 3, pp. 371-384.
- Rocha, Luis M. [1995]. "Artificial semantically closed objects." *Communication and Cognition - Artificial Intelligence*. Vol. 12, nos. 1-2 (Rocha [1995a]), pp. 63-90.

ARTIGOS EM CONFERÊNCIAS "PEER-REVIEWED"

- L.M. Rocha and J. Kaur [2007]. "Genotype Editing and the Evolution of Regulation and Memory". *Proceedings of the 9th European Conference on Artificial Life*. LNAI, Springer, **4648**: 63-73.
- A. Abi-Haidar, J. Kaur, A. Maguitman, P. Radivojac, A. Retchsteiner, K. Verspoor, Z. Wang, and L.M. Rocha [2007]. "Uncovering Protein-Protein Interactions in the Bibliome". *Proceedings of the Second BioCreative Challenge Evaluation Workshop* (ISBN 84-933255-6-2), pp
- Rechtsteiner, A., Luinstra, J., Rocha, L.M., Strauss, C.E., [2006]. "Use of Text Mining for Protein Structure Prediction and Functional Annotation in Lack of Sequence Homology". In: *Joint BioLINK and Bio-Ontologies Meeting 2006* (ISMB Special Interest Group). In Press
- Maguitman, A.G., A. Rechtsteiner, K. Verspoor, C.E. Strauss, L.M. Rocha [2006]. "Large-Scale Testing Of Bibliome Informatics Using Pfam Protein Families". In: *Pacific Symposium on Biocomputing 2006*. R. Altman, A.K. Dunker, L. Hunter, T. Murray, T.E. Klein (Eds.) World Scientific Press, pp 76-87.
- Rocha, L.M., A. Maguitman, C. Huang, J. Kaur, and S. Narayanan. [2006]. "An Evolutionary Model of Genotype Editing". In: *Artificial Life 10: Tenth International Conference on the Simulation and Synthesis of Living Systems*, L.M. Rocha, M. Bedau, D. Floreano, R. Goldstone, A. Vespignani, and L. Yaeger (Eds.). MIT Press, pp. 105-111.
- Huang, Chien-Feng and Luis M. Rocha [2005]. "Tracking Extrema in Dynamic Environments using a Coevolutionary Agent-based Model of Genotype Edition". In: *Genetic and Evolutionary Computation Conference: GECCO 2005*. ACM Press, pp. 545 - 552.
- Rocha, L.M., T. Simas, A. Rechtsteiner, M. DiGiacomo, R. Luce [2005]. "MyLibrary@LANL: Proximity and Semi-metric Networks for a Collaborative and Recommender Web Service". In: *Proc. 2005 IEEE/WIC/ACM International Conference on Web Intelligence (WI'05)*, IEEE Press. pp. 565-571.
- Huang, Chien-Feng and Luis M. Rocha [2004]. "A Systematic Study of Genetic Algorithms with Genotype Editing". In: *Genetic and Evolutionary Computation: GECCO 2004. Lecture Notes in Computer Science*. Vol. 3102, pp.1233 - 1245. Springer-Verlag.
- Rocha, L. M. and Huang, C.-F. [2004]. "The Role of RNA Editing in Dynamic Environments". *Ninth International Conference on the Simulation and Synthesis of Living Systems (ALIFE9)*. MIT Press, pp. 489-494.
- Rocha, Luis M. [2004]. "Evolving Memory: Logical Tasks for Cellular Automata". *Ninth International Conference on the Simulation and Synthesis of Living Systems (ALIFE9)* . MIT Press, pp 256-261.

- Verspoor, K., J. Cohn, C. Joslyn, S. Mniszewski, A. Rechtsteiner, L.M. Rocha, T. Simas [2004]. "Protein Annotation as Term Categorization in the Gene Ontology". *EMBO Workshop: A critical assessment of text mining methods in molecular biology, Granada, Spain, March 28-31, 2004*.
- Huang, Chien-Feng and Luis M. Rocha [2003]. "Exploration of RNA Editing and Design of Robust Genetic Algorithms". *2003 IEEE Congress on Evolutionary Computation (CEC)*, Canberra, Australia, December 2003. R.Sarker et al (Eds). IEEE Press, pp. 2799-2806.
- Rocha, Luis M. [2002]. "Combination of Evidence in Recommendation Systems Characterized by Distance Functions". In: *Proceedings of the 2002 World Congress on Computational Intelligence: FUZZ-IEEE'02*. Honolulu, Hawaii, May 2002. IEEE Press, pp. 203-208.
- Rocha, Luis M. [2001]. "Adaptive Webs for Heterarchies with Diverse Communities of Users". Paper prepared for the workshop *From Intelligent Networks to the Global Brain: Evolutionary Social Organization through Knowledge Technology*, Brussels, July 3-5, 2001.
- Joslyn, Cliff and L. M. Rocha [2000]. "Towards Semiotic Agent-Based Models of Socio-Technical Organizations." *Proc. AI, Simulation and Planning in High Autonomy Systems*, ed. HS Sarjoughian et al., pp. 70-79.
- Bollen, Johan, Luis M. Rocha [2000]. "An Adaptive Systems Approach to the Implementation and Evaluation of Digital Library Recommendation Systems." In: *Research and Advanced Technology for Digital Libraries: 4th European Conference, ECDL 2000*. Lectures Notes in Computer Science, Springer-Verlag, pp.356-359.
- Bollen, Johan, Hebert Van de Sompel, and Luis M. Rocha [1999]. "Mining associative relations from website logs and their application to context-dependent retrieval using spreading activation". *Workshop on Organizing Web Space (WOWS), ACM Digital Libraries 99*, August 1999, Berkeley, California.
- Rocha, Luis M. [1999]. "TalkMine and the Adaptive Recommendation Project". In: *the Proceedings of the Association for Computing Machinery (ACM) - Digital Libraries 99. U.C. Berkely, August 1999*, pp. 242-243.
- Johnson, Norman, Steen Rasmussen, Cliff Joslyn, Luis Rocha, Steven Smith, and Marianna Kantor [1998] "Symbiotic intelligence: self-organizing knowledge on distributed networks, driven by human interaction". *Proceedings of the Sixth International Conference on Artificial Life*, C. Adami, R. K. Belew, H. Kitano, C. E. Taylor (Eds.), MIT Press, pp. 403-407.
- Rocha, Luis M. [1998]. "Syntactic autonomy". In: *Proceedings of the Joint Conference on the Science and Technology of Intelligent Systems (ISIC/CIRA/ISAS 98)*. National Institute of Standards and Technology, Gaithersburg, MD, September 1998. IEEE Press, pp. 706-711.
- Rocha, Luis M. [1997]. "Evidence Sets: Contextual Categories". In: *Proceedings of the meeting on Control Mechanisms for Complex Systems, Physical Science Laboratory, New Mexico State University, Las Cruces, New Mexico, January 1997*. M. Coombs (ed.). NMSU Press, pp. 339-357.
- Rocha, Luis M. [1996]. "Relative Uncertainty: Measuring Uncertainty in Discrete and Nondiscrete Domains". In: *Proceedings of the NAFIPS'96*. M. Smith et al (Eds). IEEE Press, pp. 551-555.
- Rocha, Luis M. [1995]. "Contextual Genetic Algorithms: Evolving Developmental Rules." In: *Advances in Artificial Life*. F. Moran, A. Moreno, J.J. Merelo, and P. Chacon (Eds.). *Lecture Notes in Artificial Intelligence*, V. 929. Springer-Verlag, pp. 368-382.
- Rocha, Luis M. [1995]. "Interval Based Evidence Sets." In: *Proceedings of the ISUMA-NAFIPS'95*. B. Ayyub (Ed.). IEEE Press. pp.624-629.
- Medina-Martins, Pedro R., Luis M. Rocha, et al [1994]. "Metalogues: an essay on computers' psychology — from childhood to adulthood." In: *Cybernetics and Systems 94*. R. Trappl (Ed.). World Scientific Press. pp. 565-572.
- Rocha, Luis M. [1994]. "Von Foerster's cognitive tiles: semantically closed building blocks for AI and Alife." In: *Cybernetics and Systems '94*. Robert Trappl (Ed.).World Scientific Press. pp 621-628.
- Rocha, Luis M. [1994]. "Cognitive Categorization revisited: extending interval valued fuzzy sets as simulation tools for concept combination." In: *Proceedings of the 1994 International Conference of NAFIPS/IFIS/NASA*. IEEE Press. pp 400-404.
- Medina-Martins, Pedro R. and Luis M. Rocha [1992]. "The in and the out: an evolutionary approach." In: *Cybernetics and Systems '92*. Robert Trappl. World Scientific Press. pp 681-689.
- Rocha, Luis M. [1991]. "Fuzzification of Conversation Theory." In: *Principia Cybernetica Conference*, Free University of Brussels, Brussels, June 1991. Ed. Francis Heylighen.

ARTIGOS EM CAPÍTULOS DE LIVROS "PEER-REVIEWED":

- Rocha, L.M. [2003]. "Automatic Conversation Driven by Uncertainty Reduction and Combination of Evidence for Recommendation Agents ". In: *Systematic Organization of Information in Fuzzy Systems*. NATO Science Series. P. Melo-Pinto, H.N. Teodorescu and T. Fukuda (Eds.) IOS Press, pp 249-265.

- Wall, Michael E., Andreas Rechtsteiner, and Luis M. Rocha [2003]. "Singular Value Decomposition and Principal Component Analysis ". In: *Understanding And Using Microarray Analysis Techniques: A Practical Guide*. D. P. Berrar, W. Dubitzky, and M. Granzow (Eds.). Kluwer Academic Publishers, pp. 91-109.
- Rocha, Luis M. [2002]. "Semi-metric Behavior in Document Networks and its Application to Recommendation Systems". In: *Soft Computing Agents: A New Perspective for Dynamic Information Systems*. V. Loia (Ed.) International Series Frontiers in Artificial Intelligence and Applications. IOS Press, pp. 137-163.
- Rocha, Luis M. and Johan Bollen [2001]. "Biologically motivated distributed designs for adaptive knowledge management". In: *Design Principles for the Immune System and other Distributed Autonomous Systems*. L. Segel and I. Cohen (Eds.) Santa Fe Institute Series in the Sciences of Complexity. Oxford Univ. Press, pp. 305-334.
- Rocha, Luis M. [2001]. "TalkMine: a Soft Computing Approach to Adaptive Knowledge Recommendation". In: *Soft Computing Agents: New Trends for Designing Autonomous Systems*. Vincenzo Loia and Salvatore Sessa (Eds.). Physica-Verlag, Springer, pp. 89-116.
- Rocha, Luis M. [2000]. "Syntactic autonomy, cellular automata, and RNA editing: or why self-organization needs symbols to evolve and how it might evolve them". In: *Closure: Emergent Organizations and Their Dynamics*. Chandler J.L.R. and G. Van de Vijver (Eds.) *Annals of the N. Y. Academy of Sciences*. Vol. 901, pp 207-223.
- Rocha, Luis M. [1998]. "Selected Self-Organization and the Semiotics of Evolutionary Systems." In: *Evolutionary Systems: Biological and Epistemological Perspectives on Selection and Self-Organization*. S. Salthe, G. Van de Vijver, and M. Delpo (eds.). Kluwer Academic Publishers, pp. 341-358.

PEQUENOS ARTIGOS:

- L.M. Rocha [2007]. "Reality is Stranger than Fiction: What can Artificial Life do about Advances in Biology?". Invited presentation for the "Biocomplexity" discussion section at the *9th European Conference on Artificial Life*, September 12, 2007 in Lisbon, Portugal.
- Rechtsteiner, A., Rocha, L.M., Strauss, C.E., [2005]. "Clustering of Protein Families in Literature Keyword Space. Currents in Computational Molecular Biology". *Proceedings of the 9th Annual International Conference on Research in Computational Molecular Biology (RECOMB 2005)*. Boston, MA, 2005.
- Rechtsteiner, A. and L.M. Rocha [2004]. "MeSH Key Terms for Validation and Annotation of Gene Expression Clusters". *Currents in Computational Molecular Biology. Proceedings of the Eight Annual International Conference on Research in Computational Molecular Biology (RECOMB 2004)*, San Diego, CA, March 2004. A. Gramada and Philip E. Bourne (Eds). pp. 212-213.
- Rechtsteiner, A., R. Gottardo, L.M. Rocha, and M.E. Wall [2003]. "Singular Value Decomposition for Analysis of Gene Expression". *Currents in Computational Molecular Biology. Proceedings of the The Seventh Annual International Conference on Research in Computational Molecular Biology (RECOMB 2003)*, Berlin, April 10-13, 2003. R. Spang, P. Beziat and M. Vingron (Eds). pp. 275-276
- Rechtsteiner, A., R. Gottardo, L.M. Rocha, M.E. Wall and T. Brettin [2003]. "Three Algorithms for Filtering and Analysis of Gene Expression Data". Poster at *Pacific Symposium on Biocomputing 2003*.
- Rocha, Luis M. and Andreas Rechtsteiner [2003]. "Fast Cheap and Synthetic Oracle (FACSO): Proximity Measures to capture Expert Knowledge in the Bibliome". Poster at *Pacific Symposium on Biocomputing 2003*.
- Rocha Luis M. [2003]. "Extraction and Semi-metric Analysis of Social and Biological Networks". Poster at *Networks: Structure, Dynamics and Function*, May 12 - 16, 2003, Santa Fe, New Mexico, USA.
- Rocha, Luis M. [2002]. "Partnership of Fools." *Wired Magazine*, (Rants and Raves) April 2002.
- Rocha, Luis M. [2002]. "Path to Enlightenment?". *New York Times Book Review*, pp. 4, June 23.
- Rocha, Luis M. [1999]. "Complex Systems Modeling: Using Metaphors From Nature in Simulation and Scientific Models". *BITS: Computer and Communications News*. Computing, Information, and Communications Division. Los Alamos National Laboratory. November 1999.
- Rocha, Luis M. [1997]. "Obituary for Professor Gordon Pask". *International Journal of General Systems*. Vol. 26, no. 3, pp. 219-222.

PUBLICAÇÕES ELECTRÓNICAS:

- Introduction to Informatics*, with Santiago Schnell. Notas da Cadeira leccionada na Indiana University: <http://informatics.indiana.edu/rocha/i101/>
- Biologically-inspired Computing*. Notas da Cadeira leccionada na Indiana University: <http://informatics.indiana.edu/rocha/i-bic>

From Artificial Life to Semiotic Agent Models: Review and Research Directions. Los Alamos National Laboratory Internal Report. LA-UR-99-5475. <http://informatics.indiana.edu/rocha/sim/review.html>
Evolutionary Systems and Artificial Life. Notas da Cadeira leccionada no Department of Systems Science and Industrial Engineering at the State University of New York at Binghamton
<http://informatics.indiana.edu/rocha/alife.html>

TRADUÇÕES CIENTÍFICAS:

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*”.

VISITAS DE INVESTIGAÇÃO LONGAS E COLABORAÇÕES

UNIVERSITY OF CALIFORNIA, LOS ANGELES, INSTITUTE FOR PURE AND APPLIED MATHEMATICS
Fellowship appointment, March-June 2004

INSTITUTO DE SISTEMAS E ROBOTICA, INSTITUTO SUPERIOR TÉCNICO, Lisboa, Portugal.
Professor Visitante, desde 2000.

THE SANTA FE INSTITUTE, SANTA FE, NEW MEXICO, U.S.A.
Membro da Comunidade de Investigação, desde Agosto de 1996

THE PRINCIPIA CYBERNETICA PROJECT
Associado desde 1991

FUZZY SETS AND SYSTEMS GROUP, DEPARTMENT OF COMPUTER SCIENCE AND APPLIED MATHEMATICS,
UNIVERSITY OF GHENT, BELGIUM
Investigador Visitante, Verão de 1993