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Bio

Born 1974, Italian citizen.

Research interests

Complex Systems, Complex Networks, Agent-Based Modeling, Computational Economics, Econometrics, Operational Research, Data Mining, Soft Computing Methods (Neural Networks, Genetic Algorithms, Classifier Systems).

Education

2017 PhD in Computer Science; dissertation title: *“Des Outils pour Comprendre les Dynamiques des Réseaux Sociaux”/“Tools for Understanding the Dynamics of Social Networks”*. Supervisors: Eric Fleury, Pablo Jensen, Márton Karsai. École Doctorale d'Informatique et Mathématiques, Ecole Normale Supérieure, Lyon, France.

2016 Santa Fe Institute “Complex Systems Summer School”, Santa Fe, NM.

2001 MS in Economics; thesis on supply chain optimization (“job shop problem”), genetic algorithms-based optimization of an agent-based model. Advisors: Pietro Terna and Serge Margarita. Università degli Studi, Torino; further development funded within the EU-FP5 IST-2000-28221 cluster (EUTIST-AMI, MODA-ML activity, “Penelope” project); budget: 480.000€.

Employment history

Current positions

2018-present Universität Koblenz-Landau, E-Government Research Group at the Institut für Wirtschafts- und Verwaltungsinformatik, postdoctoral researcher, Koblenz, Germany.

2008-present (on leave) University of Torino, Department of Economics and Statistics, tenured research scientist, Torino, Italy.

Previous positions

2008 University of Milan, Department of Information Technologies, “*Simulation and Optimization Models for EMS Management*” fellowship, Milano, Italy.

2004 Exystence Thematic Institute for Complexity and Innovation, member of the Regional Innovation Systems and Complexity WG, ARC Systems Research, Vienna, Austria.

2001-2008 LABORatorio – Centre for Employment Studies Riccardo Revelli – Collegio Carlo Alberto Foundation, researcher, on a series of grants with the Università degli Studi di Torino. Since **2006**, on an ISI (Institute for Scientific Interchange Foundation) Progetto Lagrange scholarship. Moncalieri, Italy.

2001-2004 EU-FP5 “Penelope Project”, leader (Agent-Based supply chain simulator), Torino, Italy; Barcelona, Spain; Saarbrücken, Germany; Athens, Greece.

Visiting and other positions

July 2018 Visiting scholar, National Institute of Informatics, Tokyo, Japan.

2014-present Member of the board of directors, Vice president (since **2015**), Swarm Development Group – SDG

Teaching Activities

2018-present Computer Science for Socio-economic Research, University of Turin, Italy

2016-present Agent-Based Models, Master in Data Science for Complex Systems, Collegio Carlo Alberto, Turin, Italy

2013-2016 Modelling Complex Systems, Master in Economics and Complexity, Collegio Carlo Alberto, Turin, Italy

Major Collaborations

2017-present “Graph-based Semi-Supervised Learning”, based at the ENS Lyon, with Sarah De Nigris; graph partitioning by biased random walks.

2016-present “Devising Null Models of Lexicostatistics and Glottochronology”, based at the Santa Fe Institute, with David Wolpert, William Croft, Richard Blythe, et al.; Agent-Based modelling of language evolution.

2016-present “Temporal Evolution of Scientific Communities”, based at the ENS Lyon, with Patrick Flandrin; graph-based reconstruction of the history of science, with a scientometrics approach.

2015-present “Agent-Based Modeling of Research Hierarchies Driving Scientific Discovery”, based at the Harvard Medical School, with Alex Lancaster.

2015-present “Japanese Business Networks”, based at the ENS Lyon, with Jean-Pascal Bassino; finding evidence of the unbreakable ties and the nature of “Big-6” keiretsu-style industries in Japan.

Selected publications and presentations

Books, book chapters, journal articles, working papers and technical reports

“*Rethinking Macroeconomics with Endogenous Market Structure*”, Cambridge University Press, **forthcoming** (with M. Mazzoli, P. Terna)

“*Personal Income Tax Reforms: a Genetic Algorithm Approach*”, European Journal of Operational Research, Volume 264, Issue 3, pp. 994-1004, doi:10.1016/j.ejor.2016.07.059, Elsevier Publishing, **2018** (with S. Pellegrino)

“*Business Cycle in a Macromodel with Oligopoly and Agents' Heterogeneity: an Agent-Based Approach*”, Italian Economic Journal, available online, doi:10.1007/s40797-017-0058-y, Springer, **2017** (with P. Terna, M. Mazzoli)

“*Detecting Global Bridges in Networks*”, Journal of Complex Networks, Volume 4, Issue 3, pp. 319-329, doi:10.1093/comnet/cnw022, **2016**, Oxford University Press (with P. Jensen, T. Venturini, A. Vespignani, M. Jacomy, J.-P. Cointet, P. Mercklé, M. Karsai, E. Fleury)

“*Agent-based Dynamic Optimization of Fiscal Systems*”, in “*Agent-based Models of the Economy. From Theories to Applications*”, Palgrave Macmillan, London, **2015** (with S. Pellegrino)

“*The Emergence of Cooperation*”, in “*Agent-based Models of the Economy. From Theories to Applications*”, Palgrave Macmillan, London, **2015**

“*Agent-based Models of the Economy. From Theories to Applications*”, Palgrave Macmillan, London, ISBN 978-1-349-67406-0, **2015** (with R. Boero, M. Sonnessa, P. Terna)

“*Rapporto sull'assistenza territoriale a favore delle persone anziane non autosufficienti in Piemonte*”, CORIPE Piemonte report, **2010** (with N. Dirindin, C. Rivoiro, S. Riva, G. Viberti)

“*Employment Security and Employability: A Contribution to the Flexicurity Debate*”, European Foundation for the Improvement of Living and Working Conditions Report, ISBN 978-92-897-0828-9, **2008** (with F. Devicienti, A. Maida, A. Poggi, P. Vesan)

“*Testing Bounded Rationality Against Full Rationality in Job Changing Behavior*”, Discussion Paper 3148, Institute for the Study of Labor (IZA), **2007** (with B. Contini)

“*Econometric Explorations on Bounded Rationality: The Case of Job Changing Behavior*”, Discussion Paper 2631, Institute for the Study of Labor (IZA), **2007** (with B. Contini)

“*Modelli per la complessità, la simulazione ad agenti in economia*”, il Mulino, Bologna, ISBN 978-88-15-10988-0, **2006** (with P. Terna, R. Boero, M. Sonnessa, eds.)

“*Simulation in the Textile Industry: Production Planning Optimization*”, WOA 2004: From Objects to Agents. 5th AI*IA/TABOO Joint Workshop, **2004** (with G. Ferraris)

Conference Papers

Sep 23-28 2018: CSS2018, Thessaloniki, Greece, “*Graph Semi-Supervised Learning through Bridgeness-Biased Random Walks*”, (with S. De Nigris)

Feb 6-8, 2018: BIF2018, Complexity, Networks and Collective Behaviour, Zaragoza, Spain, “*A Simple Model of Co-evolution for Macroscopic and Microscopic Levels*”, (with S. De Nigris)

Nov 29-31, 2017: Complex Networks 2017, Lyon, France, “*The Evolution of Japanese Business Networks in ASEAN Countries Since the 1960s*”, in Complex Networks & Their Applications VI, Proceedings of Complex Networks **2017**, pp. 1065-1075 (with J.-P. Bassino, P. Jensen)

Jul 10-13, 2017: IC2S2, International Conference on Computational Social Science, Gesis, Leibniz Institute for the Social Sciences, Cologne, Germany, “*A Mesoscale Description of Networks’ Dynamics Through Continuous Partitioning*” (with P. Jensen, E. Fleury, M. Karsai)

May 11, 2017: Trajectoires et dynamiques des réseaux: approches quantitatives, ENS Lyon, France, “*Emergence d’un nouveau domaine scientifique : les ondelettes*” (with P. Jensen, P. Flandrin)

Jul 30-Aug 3, 2016: SwarmFest2016, University of Vermont, Burlington, VT, “*Agent-Based Modeling of Research Hierarchies Driving Scientific Discovery*” (with A. Lancaster)

Jul 11-13, 2016: Complex Networks, From Theory to Interdisciplinary Applications, Satellite meeting of StatPhys26, Marseille, France, “*Detecting Global Bridges in Networks*”

Nov 25, 2015: Journée Data Science - Social Science, Science des données et humanités numériques, Institut des Systèmes Complexes Paris-Île de France (ISC-PIF), Paris, France, “*Bridgeness and Scientometrics*”

Oct 29-Nov 1, 2015: The Computational Social Sciences Society of the Americas, CSSSA 2015, Santa Fe, NM, “*A Simple Model of Coevolution for Macroscopic and Microscopic Levels*” (with P. Jensen)

Sep 15-18, 2015: Historical Network Research Conference, Lisbon, Portugal, “*The Evolution of Japanese Business Networks in ASEAN Countries since the 1960s*” (with J.-P. Bassino, P. Jensen)

July 10-12, 2015: SwarmFest2015, University of South Carolina, Columbia, SC, “*A Simple Model of Coevolution for Macroscopic and Microscopic Levels*” (with P. Jensen)

September 22-26, 2014: ECCS14, European Conference on Complex Systems, Lucca, Italy, “*Bridgeness: A Novel Centrality Measure to Detect Global Bridges*” (with P. Jensen, T. Venturini, A. Vespignani, M. Jacomy, J.-P. Cointet, P. Mercklé, M. Karsai, E. Fleury)

June 29-July 1, 2014: SwarmFest2014, University of Notre Dame, IN, “*Taking Genetic Algorithms and Personal Income Tax Reforms One Step Beyond: Enter Agents*” (with S. Pellegrino)

June 2, 2014: TopoNets’14, NetSci’14 Satellite, University of California, Berkeley, CA, “*A New Measure to Detect Global Bridges*” (with P. Jensen, T. Venturini, A. Vespignani, M. Jacomy, J.-P. Cointet, P. Mercklé, M. Karsai, E. Fleury)

July 8-9, 2013: SwarmFest2013, Complex Adaptive Systems Laboratory, UCF Orlando, FL, “*Doing more with less? An Agent-Based Tale of Emergency Medical Services and Shrinking Budgets in Piedmont, Italy*” (with M. Bortolin)

July 29-31, 2012: SwarmFest2012, Complex Systems Institute, UNC Charlotte, NC, “*Antitrust Regulation in Schumpeterian Markets: an ABM*”

June 26-28, 2011: SwarmFest2011, Santa Fe Complex, Santa Fe, NM, “*The Emergence and Inevitability (or not) of Co-operation*” (with S. Beraldo)

October 23-24, 2009: NAACSOS 2009, North American Association for Computational Social and Organizational Sciences, Arizona State University, Tempe, AZ, “*Minimal Group Phenomena in Harvesting Games*” (with U. Merlone, P. Terna)

April 5, 2006: Collegio Carlo Alberto Seminar, Moncalieri, Italy “*How Much Evidence of Rationality Do We Find in Job Changing Behavior? (...Not Much Indeed)*” (with B. Contini)

September 29-October 1, 2005: “Metodi e applicazioni per la valutazione delle politiche del lavoro e di aiuto alle imprese” Workshop, Napoli, PRIN Programme 2003 “*Are movers better off than stayers?*”

June 5-7, 2005: SwarmFest2005, Department of Economics and Finance “G. Prato” and ISI, Torino, Italy, “*Distributed Agent-based Models Meet Multi Agent Systems: Exploring Contracting Protocols in a Simple Market Model*” (with R. Boero, G. Ferraris, M. Sonnessa)

November 18, 2004: Collegio Carlo Alberto Seminar, Moncalieri, “*The Complexity of Local Production Systems: Theoretical Issues and Agent-Based Modelling*” (with R. Boero)

May 9-11, 2004: SwarmFest2004, University of Michigan, Ann Arbor, MI, “*Penelope Meets Nemote: Distributed Production Planning Optimization*”

March 19-20, 2004: II Convegno nazionale, Associazione Italiana di Scienze Cognitive (AISC), “*Penelope project: web-based textile production planning; the Enterprise Simulator (ES) side of the story*”

April 13-15, 2003: SwarmFest2003, University of Notre Dame, IN, “*Penelope Project: Web-Based Textile Production Planning*”

March 29-31, 2002: SwarmFest2002, CBR, University of Washington, Seattle, WA, “*SMS: a Spinning Mill Simulator made in Swarm*”

Editorial/Refereeing activities

Winter Simulation Conference, Computational Social Science Society of the Americas, KI - Künstliche Intelligenz, Simulation&Games, SIMULTECH, SwarmFest, Mind&Society, Italian Journal of Public Economics, Bureau for Research in Innovation, Complexity and Knowledge (BRICK), Journal of Economic Interaction and Coordination.

Languages

Italian: native language

English and French: full professional proficiency

Spanish: limited working proficiency

CS skills

Python, JavaScript, Java, C, C++, Objective C, Fortran

R, Gephi, Swarm, NetLogo, Repast

UNIX major flavours

My Erdős Number is 3, by the route Erdős-Chung Graham-Vespignani detailed below:

1. Y. Alavi et al., *Highly Irregular Graphs*, JGT, 1987

2. D.V. Krioukov et al., *The Workshop on Internet Topology (WIT) Report*, ACM SIGCOMM CCR, 2007

3. P. Jensen et al., *Detecting Global Bridges in Networks*, JCN, 2015