

## Luis M. Rocha

Professor

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### (a) Professional Preparation

Instituto Superior Técnico, Lisbon, Portugal	Mechanical Engineering	B.S.	1988
Instituto Superior Técnico, Lisbon, Portugal	Systems Engineering	M.S.	1990
State University of New York, Binghamton	Systems Science	Ph.D.	1997
Los Alamos National Laboratory, NM, USA	Complex Systems	PostDoc	1998

### (b) Appointments

2018-Present	<u>Advisory Council Member</u> Indiana University Network Science Institute
2017-Present	<u>Director</u> NSF-NRT Interdisciplinary Training Program in Complex Networks and Systems
2017-Present	<u>Visiting Professor</u> , Center for Theoretical Physics, Aix-Marseille University, France
2016-2018	<u>Visiting Professor</u> , Neuroscience & Clinical Sciences, Fundação Champalimaud, Portugal
2013-Present	<u>Professor</u> , School of Informatics & Computing, Indiana University
2008-Present	<u>Director</u> , Complex Networks & Systems track, Informatics PhD Program, Indiana University
2002-Present	<u>Principal Investigator</u> , Instituto Gulbenkian de Ciencia, Portugal
2005-2015	<u>Director</u> , Computational Biology Collaboratorium, and co-director of Ph.D Program in Computational Biology, Instituto Gulbenkian de Ciencia, Portugal
2004-2013	<u>Associate Professor</u> , School of Informatics & Computing, Indiana University
1998-2002	<u>Team Leader</u> of the Complex Systems Modeling Team, Los Alamos National Laboratory
1999-2004	<u>Technical Staff Member</u> , Los Alamos National Laboratory
1995-1997	<u>Adjunct Professor</u> , State University of New York, Binghamton, Dep. of Systems Science
1990-1991	<u>Graduate Research Assistant</u> , Laboratorio Nacional de Engenharia Civil, Portugal

### (c) Publications

#### Most related to proposed project

1. I. B. Wood, P.L. Varela, J. Bollen, L.M. Rocha, and M.J. Sá [2017] "Human Sexual Behavior is driven by culture and collective moods." *Scientific reports* **7** (1): 17973. PMC5740080.
2. A. Gates, A. and L.M. Rocha [2016]. "Control of complex networks requires both structure and dynamics". *Scientific Reports*. **6**, 24456. PMC4834509.
3. R.B. Correia, L. Li, L.M. Rocha [2016]. "Monitoring potential drug interactions and reactions via network analysis of Instagram user timeliness". *Pac. Symp. Biocomp.* **21**:492-503.
4. T. Simas and L.M. Rocha [2015]. "Distance Closures on Complex Networks." *Network Science* **3**(2):227-268.
5. A. Abi-Haidar, J. Kaur, A. Maguitman, P. Radivojac, A. Retchsteiner, K. Verspoor, Z. Wang, and L.M. Rocha [2008]. "Uncovering protein-protein interactions in abstracts and text using linear models and word proximity networks ". *Genome Biology*. **9**(Suppl 2):S1.

#### Other relevant and significant publications

1. Correia, R.B., A. Gates, X. Wang, L.M. Rocha [2018]. "CANA: A python package for quantifying control and canalization in Boolean Networks." *Frontiers in Physiology: Systems Biology*. **9**: 1046. DOI: 10.3389/fphys.2018.01046.
2. G.L. Ciampaglia, P. Shiralkar, L.M. Rocha, J. Bollen, F. Menczer, A. Flammini [2015]. "Computational fact checking from knowledge networks." *PloS ONE*. **10**(6):e0128193.

3. A. Kolchinsky, M.P. van den Heuvel, A. Griffa, P. Hagmann, L.M. Rocha, O. Sporns and J. Goñi [2014]. "Multi-scale Integration and Predictability in Resting State Brain Activity". *Front. Neuroinformatics*. **8**:66.
4. M. Marques-Pita and L.M.Rocha [2013]. "Canalization and control in automata networks: body segmentation in *Drosophila melanogaster*." *PLOS One*, **8**(3): e55946.
5. A. Abi-Haidar and L.M. Rocha [2011]. "Collective Classification of Textual Documents by Guided Self-Organization in T-Cell Cross-Regulation Dynamics". *Evolutionary Intelligence*. **4**(2):69-80.

**(d) Synergistic activities**

1. Fulbright Scholar 2016-Present: U.S. Department of State Bureau of Educational and Cultural Affairs
2. Training Faculty: NSF IGERT on "The Dynamics of Brain-Body-Environment Systems in Behavior and Cognition." Commitment to interdisciplinary graduate training: Director of Complex Systems PhD track (2008-present), Indiana University. Director of interdisciplinary FLAD Computational Biology Collaboratorium and direction of associated PhD Program in Computational Biology at the Instituto Gulbenkian de Ciencia in Portugal.
3. Involvement and Commitment to Complex Networks and Systems: Formed the *Complex Systems Modeling Team* at the Los Alamos National Laboratory (1999-2004), Member of the *Santa Fe Institute* research community (1996-2004), faculty member of the *Center for Complex Networks and Systems*, School of Informatics & Computing, Indiana University (2006-Present), member of the advisory council of the *Indiana University Network Science Institute* (2018- Present), member of the advisory council of the *Complex Systems Society* (2018-Present). Chaired the *Artificial Life X* conference and member of the organizing committees of RECOMB 2010 and ECAL07, and several other conferences and workshops in the field. In program committees of key conferences in field such as Complex Networks 2015-2018 and Conference on Complex Systems 2016-2018. In review committees of major centers such as the *Center for the Study of Complex Systems* (CSCS) at the University of Michigan (2018) and the *Biocomputational Evolution in Action CONSortium* (BEACON) NSF Science & Technology Center at Michigan State University (2017).
4. Teaching excellence: Trustees Award for Teaching Excellence 2006 and 2015. School of Informatics & Computing, Indiana University. Course Development: "Biologically-inspired computing" (Undergraduate 2005-15, Graduate, 2005-12), "Advanced Complex Systems Seminar" (Graduate, 2012-16), Introduction to Informatics (Graduate, 2008-15).
5. Selected invited talks and keynotes: Universidad Nacional del Sur, Bahia Blanca, Argentina, 2018. Network Medicine (NetMed18): Personalized Medicine in the Era of Big Data; Week of Complexity Sciences 2018, Universidad Nacional Autonoma de México, Mexico City; Controlling Complex Systems 2017; Humboldt-Universität zu Berlin, Germany (2017); Institute for Scientific Interchange, Turin, Italy (2016); Mathematical Biosciences Institute, Ohio State University (2016); Santa Fe Institute, New Mexico (2015); University of Tokyo, Japan (2015); National Academies Keck Futures Initiative, Collective Behavior: From Cells to Societies, Irvine, California (2014); European Conference on Complex Systems, Lucca, Italy (2014); Fundação Champalimaud, Lisbon, Portugal (2014); Institut des Systèmes Complexes, Paris, France (2013); Aalto Complex Networks Factory, Aalto University, Finland (2012); The Gulbenkian Alan Turing Centenary Symposium, Lisbon, Portugal (2012); AMS Sectional Meeting, University of Nebraska at Lincoln (2012); Lehigh University, Bethlehem, Pennsylvania (2011); Columbia University, New York (2010); Carnegie Mellon University (2010); University of Barcelona (2008); Social Data Mining and Knowledge Building Workshop, Institute for Pure & Applied Mathematics, University of California at Los Angeles (2007); European Conference on Artificial Life (2007); Joint Statistical Meetings, complex networks session (2006); National Science Foundation: workshop on Dynamic Data-Driven Applications Systems (2005); Center for the Study of Complex Systems, University of Michigan, Ann Arbor, Michigan (2005); University of Illinois at Urbana-Champaign (2004); Stanford University (2002); NASA Goddard Space Flight Center (2001);