

Curriculum vitae

Sergi Valverde

ResearcherID: J-3275-2012
Scopus Author ID: 7006393703
ORCID ID: 0000-0002-2150-9610

Current professional situation

1) **Institution:** Consejo Superior de Investigaciones Científicas (CSIC)
Department./Section./Unit: Institute of Evolutionary Biology (CSIC-UPF)
Address: Psg. Marítim de la Barceloneta 37-49, 08003, Barcelona
Email: sergi.valverde@ibe.upf-csic.es
Website: <http://www.ibe.upf-csic.es/valverde>
Mobile: +34 659 28 03 93
Speciality (UNESCO codes): 22
Professional category: CSIC Tenured Scientist
Dedication: Full Time

Research interests

Evolution, Networks, Complex Systems.

Curriculum Summary

Sergi Valverde, Ph.D., is a CSIC tenured scientist at the Institute of Evolutionary Biology (IBE), head of the Evolution of Networks Laboratory, and a member of the European Center for Living Technology (ECLT). The Universitat Politècnica de Catalunya (UPC) granted him a Ph.D. in Applied Physics after he had earned a Bachelor of Science in Informatics Engineering. Over the course of a number of post-doctoral positions, he has focused on complex networks and mathematical biology, with a particular emphasis on the theoretical elements of evolutionary theory and ecology. More than 70 peer-reviewed articles and more than 60 public lectures in network science, ecological networks, collective intelligence, and technological and cultural evolution support this research endeavor. Valverde, an active member of the scientific community, serves on the board of the Catalan network for the study of complex systems (Complexitat.cat) and was elected to the Council of the Complex Systems Society (CSS) for 2016-2018. He participated in the 3 main IST FET FP6 projects in Complex Systems (PACE, ECAgents, and DELIS) and directed 3 national projects on technological evolution funded by the Spanish Ministry of Economy and Competitiveness.

Education

Degree	Institution	Date
Informatics Engineering	Universitat Politècnica Catalunya	13/07/1999
PhD Applied Physics	Universitat Politècnica Catalunya	19/01/2006

Director of Thesis: Ricard V. Solé

Experience and job history / Former academic positions

Position	Institution	Date
Research Engineer	El Periodico de Catalunya	1996 - 1999
Research Engineer	Ubisoft Entertainment	1999 - 2004
Phd Student	Universitat Pompeu Fabra	2004 - 2006
Postdoctoral Researcher	Universitat Pompeu Fabra	2006 - 2007
Postdoctoral Researcher	Université Paul Sabatier	2007 - 2009
Visiting Professor	Universitat Pompeu Fabra	2008 - 2018
Tenured Scientist	CSIC	2018 - Current

Languages (R = regular, B = good, C = correctly)

Language	Speaking	Reading	Writing
Spanish	C	C	C
Catalan	C	C	C
English	C	C	C

Research projects

(national and/or international)

Project title: DYNAMICALLY EVOLVING, LARGE-SCALE INFORMATION SYSTEMS (DELIS)

Funding organization: Complex Systems Initiative, 6th Framework Program, European Union

Participant organizations: Universitaet Paderborn, University of London, Consorzio Universita Industria, Université Paris XI, Politechnika Wroclawska, Univerzita Karlova V Praze, Universitat Pompeu Fabra, Universitaet Karlsruhe, Max-Planck Gesellschaft Zur Foerderung Der Wissenschaft.

Duration, from: 01/01/2004 **until:** 31/12/2007

Quantity of the subsidy: 4.500.000,00 **euros**

Responsible researcher: FRIEDHELM MEYER AUF DER HEIDE

Number of participant researchers: 20

Project title: EMBODIED AND COMUNICATING AGENTS (ECAGENTS)

Funding organization: Complex Systems Initiative, 6th Framework Program, European Union

Participant organizations: Université Libre de Bruxelles, Institute for Advanced Studies, Collegium Budapest, Universitat Pompeu Fabra, University of Goteborg, Humboldt Universitat, Universita La Sapienza, University of Tokyo

Duration, from: 01/01/2004 **until:** 31/12/2007
Quantity of the subsidy: 4.300.000,00 **euros**
Responsible researcher: STEFANO NOLFI
Number of participant researchers: 20

Project title: PROGRAMMABLE ARTIFICIAL CELL EVOLUTION (PACE)

Funding organization: Complex Systems Initiative, 6th Framework Program, European Union
Participant organizations: Ruhr-Universitaet Bochum, Ca' Foscari University of Venice, University of Copenhagen, Chalmers University of Technology, Universitat Pompeu Fabra, University of Zurich, Vilnius University, ProtoLife s.r.l., University of Southern Denmark
Duration, from: 01/01/2004 **until:** 31/12/2007
Responsible researcher: STEFANO NOLFI
Number of participant researchers: 20

Project title: ORIGINS OF INNOVATION IN TINKERED NETWORKS

Funding organization: James McDonnell Foundation
Participant organizations: Universitat Pompeu Fabra
Duration, from: 01/01/2006 **until:** 31/12/2010
Quantity of the subsidy: 460.000 **euros**
Responsible researcher: RICARD V. SOLÉ
Number of participant researchers: 2

Project title: SOCIAL INSECT NESTS AS 3D NETWORKS: MORPHOGENESIS AND STRUCTURAL DESIGNS(MESOMORPH)

Funding organization: Agence Nationale de la Recherche, Biologie Systémique programme
Participant organizations: Université Paul Sabatier
Duration, from: 01/01/2007 **until:** 31/12/2009
Quantity of the subsidy: 500.000 **euros**
Responsible researcher: GUY THERAULAZ
Number of participant researchers: 8
Project title: FIS2009-12365 - Computación. Replicación y rotura de simetría en sistemas protocelulares

Funding organization: Ministerio de Ciencia e Innovación
Participant organizations: Universitat Pompeu Fabra
Duration, from: 01/01/2010 **until:** 31/12/2013
Quantity of the subsidy: 89.540 **euros**
Responsible researcher: RICARD V. SOLÉ
Number of participant researchers: 7

Project title: FIS2013-44674-P - Detección de Tecnologías Emergentes en Redes de Innovación
Funding organization Ministerio de Economía y Competitividad

Participant organizations: Universitat Pompeu Fabra
Duration, from: 01/01/2013 **until:** 31/12/2016
Quantity of the subsidy: 12,000 euros
Responsible researcher: SERGI VALVERDE
Number of participant researchers: 1

Project title: FIS2016-77447-R - Predicción de Innovación Tecnológica en Redes de Culturómica
Funding organization Ministerio de Economía y Competitividad

Participant organizations: Universitat Pompeu Fabra
Duration, from: 30/12/2016 **until:** 01/12/2019
Quantity of the subsidy: 34,000 euros
Responsible researcher: SERGI VALVERDE
Number of participant researchers: 1

Project title: PID2020-117822GB-100 - Estructura y Evolución del Conectoma Tecnológico
Funding organization: Agencia Estatal de Investigación

Participant organizations: Consejo Superior de Investigaciones Científicas
Duration, from: 01/09/2019 **until:** 31/08/2024
Quantity of the subsidy: 75,000 euros
Responsible researcher: SERGI VALVERDE
Number of participant researchers: 1

Publications

Key (A: Article, R:Review, CL:Book Chapter, L: Book). The full listing of publication with citation counts is available in Google Scholar: <http://scholar.google.com/citations?user=hA2laXkAAAAJ&hl=en>

Subject Areas: Biochemistry, Genetics and Molecular Biology, Chemical Engineering, Computer Science, Agricultural and Biological Sciences, Engineering, Immunology and Microbiology, Physics and Astronomy, Materials Science, Medicine, Environmental Science, Earth and Planetary Sciences, Arts and Humanities, Mathematics, Multidisciplinary, Energy.

1. **Authors (by order of signature):** Solé, Ricard V.; Ferrer-Cancho, Ramon; Montoya, José M.; Valverde, Sergi
Title: «Selection, tinkering and emergence in complex networks»
In: *Complexity*
Key: A **Vol.:** 8 **Pages, initial:** 20 **final:** 33 **Date:** 2002
2. **Authors (by order of signature):** Solé, Ricard V.; Valverde, Sergi
Title: «Information transfer and phase transitions in a model of internet traffic»
In: *Physica A*
Key: A **Vol.:** 289 **Pages, initial:** 595 **final:** 605 **Date:** 2002
Place of publication Amsterdam
3. **Authors (by order of signature):** Valverde, Sergi; Ferrer-Cancho, Ramon; Solé, Ricard V. **Title:** «Scale free networks from optimal design»
In: *Europhysics Letters*
Key: A **Vol.:** 60 **Pages, initial:** 512 **final:** 517 **Date:** 2002
Publisher (if book):
Place of publication Petit-Lancy
4. **Authors (by order of signature):** Valverde, Sergi; Solé, Ricard V.
Title: «Self-organized critical traffic in parallel computer networks»
In: *Physica. A*
Key: A **Vol.:** 312 **Pages, initial:** 636 **final:** 648 **Date:** 2002
Place of publication Amsterdam
5. **Authors (by order of signature):** Buhl, Jerome; Gautrais, Jacques; Solé, Ricard V.; Valverde, Sergi;
Deneubourg, Jean-Louis; Theraulaz, Guy
Title: «Efficiency and robustness in ant networks of galleries»
In: *European Physical Journal: Special Topics*
Key: A **Vol.:** 42 **Pages, initial:** 123 **final:** 129 **Date:** 2004
Place of publication France
6. **Authors (by order of signature):** Solé, Ricard V.; Valverde, Sergi
Title: «Information theory of complex networks: on evolution and architectural constraints»
In: *Lecture Notes in Physics*
Key: A **Vol.:** 650 **Pages, initial:** 189 **final:** 207 **Date:** 2004
Place of publication Berlin
7. **Authors (by order of signature):** Valverde, Sergi; Solé, Ricard V.
Title: «Internet's critical path horizon»
In: *European Physical Journal: Special Topics*
Key: A **Vol.:** 38 **Pages, initial:** 245 **final:** 252 **Date:** 2004
Place of publication France

8. **Authors (by order of signature):** Valverde, Sergi; Solé, Ricard V.
Title: «Logarithmic growth dynamics in software networks »
In: *Europhysics Letters*
Key: A **Vol.:** 72 **Pages, initial:** 858 **final:** 864 **Date:** 2005
Place of publication Petit-Lancy
9. **Authors (by order of signature):** Buhl, Jerome; Gautrais, Jacques; Reeves, Nicolas; Solé, Ricard V.;
Valverde, Sergi; Kuntz, Pascale; Theraulaz, Guy
Title: «Topological patterns in street networks of self-organized urban settlements»
In: *European Physical Journal: Special Topics*
Key: A **Vol.:** 49 **Pages, initial:** 513 **final:** 522 **Date:** 2006
Place of publication France
10. **Authors (by order of signature):** Solé, Ricard V.; Valverde, Sergi
Title: «Are network motifs the spandrels of cellular complexity?»
In: *Trends in ecology & evolution*
Key: A **Vol.:** 21 **Pages, initial:** 419 **final:** 422 **Date:** 2006
Place of publication Amsterdam
11. **Authors (by order of signature):** Valverde, Sergi; Theraulaz, Guy; Gautrais, Jacques; Fourcassié, Vincent; Solé, Ricard V.
Title: «Self-organization patterns in wasp and open source communities»
In: *IEEE Intelligent Systems*
Key: A **Vol.:** 21 **Pages, initial:** 36 **final:** 40 **Date:** 2006
Place of publication New York
12. **Authors (by order of signature):** Corominas-Murtra, Bernat; Valverde, Sergi; Rodriguez-Caso, Carlos; Solé, Ricard V.
Title: «K-scaffold subgraphs in complex networks »
In: *Europhysics Letters*
Key: A **Vol.:** 77 **Pages, initial:** 18004 **Date:** 2007
Place of publication Petit-Lancy
13. **Authors (by order of signature):** Solé, Ricard V.; Valverde, Sergi
Title: «Spontaneous emergence of modularity in cellular networks »
In: *Journal of the Royal Society interface*
Key: A **Vol.:** 5 **Pages, initial:** 129 **final:** 133 **Date:** 2007
Place of publication London
14. **Authors (by order of signature):** Valverde, Sergi; Solé, Ricard V.; Packard, Norman; Bedau, Mark
Title: «Topology and evolution of technology innovation networks»
In: *Physical Review. E, Statistical, Nonlinear, and Soft Matter Physics*
Key: A **Num:** 5 **Vol.:** 76 **Pages, initial:** 056118 **Date:** 2007
Place of publication United States
15. **Authors (by order of signature):** Valverde, Sergi; Solé, Ricard V.
Title: «Hierarchical small-worlds in software architecture»
In: *Dynamics of Continuous, Discrete and Impulsive Systems Series B: Applications and Algorithms*
Key: A **Vol.:** 14 **Pages, initial:** 1 **final:** 14 **Date:** 2007
Place of publication Canada
16. **Authors (by order of signature):** Valverde, Sergi; Solé, Ricard V.

Title: «Self-Organization versus hierarchy in open source social networks»

In: *Physical Review. E, Statistical, Nonlinear, and Soft Matter Physics*

Key: A **Num:** 4 **Vol.:** 76 **Pages, initial:** 046118 **Date:** 2007

Place of publication United States

17. **Authors (by order of signature):** Mestres, Jordi; Gregori-Puigjané, Elisabet; Valverde, Sergi; Solé, Ricard V.

Title: «Data completeness: The achilles hell of drug-target networks»

In: *Nature biotechnology*

Key: A **Vol.:** 26 **Pages, initial:** 983 **final:** 984 **Date:** 2008

Place of publication New York

18. **Authors (by order of signature):** Perna, Andrea; Jost, Christian; Coturier, Etienne; Valverde, Sergi; Douady, Stephane; Theraulaz, Guy

Title: «The structure of gallery networks in the nests of termite *Cubitermes* sp. revealed by X-ray tomography »

In: *Die Naturwissenschaften*

Key: A **Vol.:** 95 **Pages, initial:** 877 **final:** 884 **Date:** 2008

Place of publication Germany

19. **Authors (by order of signature):** Perna, Andrea; Jost, Christian; Valverde, Sergi; Gautrais, Jacques; Theraulaz, Guy; Kuntz, Pascale

Title: «The Topological Fortress of Termites»

In: *Lecture Notes in Computer Science / Artificial Intelligence*

Key: A **Vol.:** 5151 **Pages, initial:** 165 **final:** 173 **Date:** 2008

Place of publication Berlin

20. **Authors (by order of signature):** Perna, Andrea; Valverde, Sergi; Gautrais, Jacques; Jost, Christian; Solé, Ricard V.; Kuntz, Pascale; Theraulaz, Guy

Title: «Topological efficiency in three-dimensional gallery networks of termite nests»

In: *Physica. A*

Key: A **Vol.:** 387 **Pages, initial:** 6235 **final:** 6244 **Date:** 2008

Place of publication Amsterdam

21. **Authors (by order of signature):** Solé, Ricard V.; Rosas Casals, Marti; Corominas-Murtra, Bernat; Valverde, Sergi

Title: «Robustness of the European power grids under intentional attacks»

In: *Physical Review. E. Statistical Physics, Plasmas, Fluids, and Related Interdisciplinary Topics*

Key: A **Vol.:** 77 **Pages, initial:** 026102 **Date:** 2008

Place of publication New York

22. **Authors (by order of signature):** Valverde, Sergi

Title: «Crossover from endogenous to exogenous activity in open-source software development »

In: *Europhysics Letters*

Key: A **Num.:** 2 **Vol.:** 77 **Pages, initial:** 20002 **Date:** 2008

Place of publication Petit-Lancy

23. **Authors (by order of signature):** Challet, Damien; Valverde, Sergi

Title: «Fat Tails, Long Memory, Maturity and Ageing in Open-Source Software»

In: *PHYSICOMNET 2008 The 1st Workshop on Physics-Inspired Paradigms in Wireless Communications and Networks*

Key: CL **Date:** 2008

24. **Authors (by order of signature):** Corominas-Murtra, Bernat; Valverde, Sergi; Solé, Ricard V.
Title: «The ontogeny of scale-free syntax networks: phase transitions in early language»
In: *Advances in Complex Systems*
Key: A **Vol.:** 12 **Pages, initial:** 371 **final:** 392 **Date:** 2009
Place of publication New York
25. **Authors (by order of signature):** Mestres, Jordi; Gregori-Puigjané, Elisabet; Valverde, Sergi; Solé, Ricard V.
Title: «The topology of drug-target interaction networks: implicit dependence on drug properties and target families»
In: *Molecular BioSystems*
Key: A **Num.:** 9 **Vol.:** 5 **Pages, initial:** 1051 **final:** 1057 **Date:** 2009
Place of publication United Kingdom
25. **Authors (by order of signature):** Valverde, Sergi; Corominas-Murtra, Bernat; Perna, Andrea; Kuntz, Pascale; Theraulaz, Guy; Solé, Ricard V.
Title: «Percolation in insect nest networks: evidence for optimal wiring»
In: *Physical Review. E, Statistical, Nonlinear, and Soft Matter Physics*
Key: A **Num.:** 6 **Vol.:** 79 **Pages, initial:** 066106 **Date:** 2009
Place of publication United States
26. **Authors (by order of signature):** Valverde, Sergi; Solé, Ricard V.
Title: «Motifs in Graphs »
In: *Encyclopedia of Complexity and Systems Science*
Key: CL **DOI.:**10.1007/978-0-387-30440-3_339 **Pages, initial:** 5692 **final:** 5702 **Date:** 2009
Publisher (if book): Springer New York
27. **Authors (by order of signature):** Valverde, Sergi
Title: *Evolution of Technology Innovation Networks en el libro de la Exposición Culturas del Cambio: Átomos Sociales y Vidas Electrónicas*
Key: CL **Date:** 2009
Publisher (if book): Centro de Arte Santa Monica
Place of publication: Barcelona
28. **Authors (by order of signature):** Solé, Ricard; Corominas Murtra, Bernat; Valverde, Sergi; Steels, Luc
Title: «Language networks: Their structure, function, and evolution»
In: *Complexity*
Key: A **Num.:** 6 **Vol.:** 15 **Pages, initial:** 20 **final:** 26 **Date:** 2010
Place of publication Hoboken
29. **Authors (by order of signature):** Corominas Murtra, Bernat; Valverde, Sergi; Solé, Ricard V.
Title: «Emergence of Scale-Free Syntax Networks»
In: *Evolution of Communication and Language in Embodied Agents*
Key: CL **Pages, initial:** 83 **final:** 101 **Date:** 2010
Publisher (if book): Springer
Place of publication: Berlin Heidelberg
30. **Authors (by order of signature):** Horta, Ricard; Rosas-Casals, Marti; Valverde, Sergi
Title: «Discerning Electricity Consumption Patterns from Urban Allometric Scaling»
In: *IEEE COMPENG 2010 PROCEEDINGS*
Key: CL **Pages, initial:** 49 **final:** 51 **Date:** 2010
Publisher (if book): IEEE

31. **Authors (by order of signature):** Flores, Cesar O.; Meyer, Justin R.; Valverde, Sergi; Farr, Lauren; Weitz, Joshua S.
Title: «Statistical structure of host-phage interactions»
In: *Proceedings of the National Academy of Sciences of the United States of America*
Key: A Num.: 28 Vol.: 108 Pages, initial: 288 final: 297 Date: 2011
Place of publication Washington
32. **Authors (by order of signature):** Solé, Ricard V.; Valverde, Sergi; Rodríguez-Caso, Carlos **Title:** «Convergent evolutionary paths in biological and technological networks»
In: *Evolution*
Key: A Num.: 3 Vol.: 4 Pages, initial: 415 final: 426 Date: 2011
Place of publication Lawrence, Kansas.
33. **Authors (by order of signature):** Antó JM, Pinart M, Akdis M, Auffray C, Bachert C, Valverde, Sergi, [et.al.]
Title: «Understanding the complexity of IgE-related phenotypes from childhood to young adulthood: a Mechanisms of the Development of Allergy (MeDALL) seminar»
In: *The Journal of Allergy and Clinical Immunology*
Key: A Num.: 4 Vol.: 129 Pages, initial: 943 final: 954 Date: 2012
Place of publication St. Louis
34. **Authors (by order of signature):** Flores, Cesar; Valverde, Sergi; Weitz, Joshua S.
Title: «Multi-scale structure and geographics drivers of cross-infection within marine bacteria and phages»
In: *The ISME Journal: Multidisciplinary Journal of Microbial Ecology*
Key: A Num.: 3 Vol.: 7 Pages, initial: 520 final: 532 Date: 2012
Place of publication United Kingdom
35. **Authors (by order of signature):** Solé, Ricard V.; Valverde, Sergi
Title: «Before the endless forms: embodied model of transition from singles cells to aggregates »
In: *PLoS ONE*
Key: A Num.: 4 Vol.: 8 Date: 2012
Place of publication United States
36. **Authors (by order of signature):** Solé, Ricard V.; Valverde, Sergi; Rosas-Calas, Marti; Kauffman, Stuart; Farmer, Doyne; Eldredge, Niles
Title: «The evolutionary ecology of technological innovations»
In: *Complexity*
Key: A Num.: 4 Vol.: 18 Pages, initial: 15 final: 27 Date: 2012
Place of publication Amsterdam
37. **Authors (by order of signature):** Valverde, Sergi; Solé, Ricard V.; Santiago, Elena
Title: «Evolved modular epistasis in artificial organisms»
In: *Proceedings of Artificial Life XII, MIT Press*
Key: CL Date: 2012
38. **Authors (by order of signature):** Solé, Ricard V.; Valverde, Sergi
Title: «Macroevolution in silico: scale, constraints and universals»
In: *Palaeontology*
Key: A Num.: 6 Vol.: 56 Pages, initial: 1327 final: 1340 Date: 2013
Place of publication London
39. **Authors (by order of signature):** Valverde, Sergi; Solé, Ricard V.

Title: «Networks and the City»

In: *Architectural design*

Key: A **Num.:** 4 **Vol.:** 83 **Pages, initial:** 112 **final:** 119 **Date:** 2013

Place of publication: London

40. **Authors (by order of signature):** Weitz JS, Poisot T, Meyer JR, Flores CO, Valverde S, Sullivan MB, Hochberg ME

Title: «Phage-bacteria infection networks»

In: *Trends in microbiology*

Key: A **Num.:** 2 **Vol.:** 21 **Pages, initial:** 82 **final:** 91 **Date:**

2013 **Place of publication:** Oxford

41. **Authors (by order of signature):** Solé, R.V., Valverde, S., Rodriguez-Caso, C, Sardanyes, J. **Title:** «Can a minimal replicating construct be identified as the embodiment of cancer?»

In: *Bioessays*

Key: A **Num.:** 36 **Vol.:** 5 **Pages, initial:** 503 **final:** 512 **Date:**

2014

42. **Authors (by order of signature):** Hillung, J., Cuevas, J.M., Valverde, S., Elena, S.F.

Title: «Experimental evolution of an emerging plant virus in host genotypes that differ in their susceptibility to infection»

In: *Evolution*

Key: A **DOI:**10.1111/evo.12458 **Date:** 2014

43. **Authors (by order of signature):** Valverde, S.

Title: «Evolution of patent citation networks»

In: *Proceedings Workshop on Complexity in Engineering (COMPENG' 2014)*

Key: A **Date:** 2014

Publisher (if book): IEEE

44. **Authors (by order of signature):** Gautrais, J., Buhl, J., Valverde, S., Kuntz, P., Theraulaz, G. **Title:** «The role of colony size on tunnel branching morphogenesis in ant nests »

In: *PLoS ONE*

Key: A **Num.:** 10 **Vol.:** 9 **Pages, initial:** e109436 **Date:** 2014

Place of publication: United States

45. **Authors (by order of signature):** Flores, C. O., Poisot, T., Valverde, S., Weitz, J. S.

Title: «BiMat: a MATLAB package to facilitate the analysis of bipartite networks»

In: *Methods in Ecology and Evolution*

Key: A **Num.:** 107 **Vol.:** 12 **Date:** 2015

46. **Authors (by order of signature):** Valverde, S., Solé, R.V

Title: «Punctuated Equilibrium in the large scale evolution of programming languages »

In: *Journal of the Royal Society Interface*

Key: A **Num.:** 107 **Vol.:** 12 **Date:** 2015

Place of publication: United Kingdom

47. **Authors (by order of signature):** Valverde, S., Ohse, S., Turalska, M., Garcia-Ojalvo, J., West B. J.

Title: « Structural Determinants of Criticality in Biological Networks »

In: *Frontiers in Fractal Physiology*

Key: A **Num.:** 127 **Vol.:** 6 **Date:** 2015

48. **Authors (by order of signature):** Valverde, S., Solé, R.V

Title: «A Cultural Diffusion Model for the Rise and Fall of Programming Languages»

In: *Journal of Human Biology*

Key: A **Num.:** 3 **Vol.:** 87 **Pages, initial:** 224 **Date:** 2015

Place of publication: United States

49. **Authors (by order of signature):** Solé, R.V., Amor, D. R., Valverde, S.

Title: «On singularities and black holes in combination-driven models of technological innovation networks »

In: PLOS One

Key: A **Num.:** 1 **Vol.:** 11 **Pages, initial:** e0146180 **Date:** 2016

50. **Authors (by order of signature):** Valverde, S., Garcia-Ojalvo, J.

Title: «Hacia una teoría unificada de la criticalidad biológica»

In: Investigación y Ciencia

Key: A **Num.:** 474 **Date:** 2016

Place of publication: Spain

51. **Authors (by order of signature):** Duran-Nebreda, S., Bonforti, A., Montañez, R., Valverde, S., Solé, R. V.

Title: «Emergence of proto-organisms from bistable stochastic differentiation and adhesion»

In: *Journal of Royal Society Interface*

Key: A **Num.:** 13 **Pages, Initial:** 20150108 **Date:** 2016

52. **Authors (by order of signature):** Valverde, S.

Title: « Major Transitions in Information Technology »

In: *Phil. Trans. Royal Soc. B*

Key: A **Num.:** 1701 **Vol.:** 371 **Pages, initial:** 20150450 **Date:** 2016

53. **Authors (by order of signature):** Valverde, S., Elena, S. F., Solé, R. V.

Title: « Spatially-induced nestedness in a neutral model of phage-bacteria networks »

In: *Virus Evolution* **Date:** 2017

54. **Authors (by order of signature):** Valverde, S.

Title: « Breakdown of Modularity in Complex Networks »

In: *Frontiers Fractal Physiology* **Date:** 2017

55. **Authors (by order of signature):** Valverde, S., Piñero, J., Corominas-Murtra, B., Montoya, J. M., Joppa, L., Solé, R. V.

Title: « The architecture of mutualistic networks as an evolutionary spandrel »

In: *Nature Ecology and Evolution*

Key: A **Vol.:** 2 **Pages:** 94-99 **Date:** 2018

56. **Authors (by order of signature):** Corominas-Murtra, B., Sánchez-Fibla, M., Valverde, S., Solé, R. V.

Title: « Chromatic Transitions in the Emergence of Syntax Networks »

In: *Royal Society Open Science*

Key: A **Num.:** 12 **Vol.:** 5 **Pages, Initial:** 181286 **Date:** 2018

57. **Authors (by order of signature):** Solé, R. V., Valverde, S.

Title: « Evolving complex networks: how tinkering shapes structure »

In: *Philosophical Transactions of the Royal Society B*

Key: A **Num.:** 375 **Vol.:** 1796 **Pages, Initial:** 20190325 **Date:** 2020

58. **Authors (by order of signature):** Solé, R. V., Valverde, S.

Title: « Evolving complex networks: how tinkering shapes structure »

In: *Philosophical Transactions of the Royal Society B*

Key: A **Num.:** 375 **Vol.:** 1796 **Pages, Initial:** 20190325 **Date:** 2020

59. **Authors (by order of signature):** Valverde, S., Vidiella, B.; Montañez, R.; Fraile, A.; Sacristán, A.; García-Arenal, F.

Title: « Coexistence of nestedness and modularity in host-pathogen infection networks »

In: *Nature Ecology and Evolution*

Key: A **Num.:** 4 **Vol.:** 4 **Pages:** 568-577 **Date:** 2020

60. **Authors (by order of signature):** Ferrando-Bernal, M., Morcillo-Suarez, C.; de-Dios, T.; Gelabert, P.; Civit, S.; Díaz-Carvajal, A.; Ollich-Castanyer, I.; Allentoft, M. E.; Valverde, S., Lalueza-Fox, C.

Title: « Mapping co-ancestry connections between the genome of a Medieval individual and modern Europeans »

In: *Scientific Reports*

Key: A **Num.:** 10 **Vol.:** 1 **Pages:** 1-11 **Date:** 2020

61. **Authors (by order of signature):** Valverde, S.,

Title: « The long and winding road: Accidents and tinkering in software standardization »

In: *Métode Science Studies Journal*

Key: A **Num.:** 11 **Pages:** 91-97 **Date:** 2021

62. **Authors (by order of signature):** Valverde, Sergi; Ares, Saúl; Balsa-Canto, Eva; Banga, Julio R.; Elena, Santiago F.; Iranzo, Jaime; Manrubia, Susanna C.

Title: « Evolutionary Systems Biology »

In: *Origins, (Co) Evolution and Diversity of Life (Volume 2). CSIC Scientific Challenges: Towards 2030*

Key: CL **Pages, initial:** 110 **final:** 125 **Date:** 2021

Publisher (if book): Consejo Superior de Investigaciones Cientificas

Place of publication: España

63. **Authors (by order of signature):** Gomez-Marin, A., Martínez, L. M., Márquez, C., Valverde, S., Hernández-García, E., López, C., Mirasso, C. R., Castillo, M., Rocon, E., Criado-Boado, F.

Title: « Cognition, collective behaviours and consciousness »

In: *Brain, Mind & Behaviour (Volume 5). CSIC Scientific Challenges: Towards 2030*

Key: CL **Pages, initial:** 41 **final:** 57 **Date:** 2021

Publisher (if book): Consejo Superior de Investigaciones Cientificas

Place of publication: España

64. **Authors (by order of signature):** Vidiella, B.; Fontich, E.; Valverde, S., Sardanyés, J.

Title: « Habitat loss causes long extinction transients in small trophic chains »

In: *Theoretical Ecology*

Key: A **Num.:** 14 **Pages:** 641-661 **Date:** 2021

65. **Authors (by order of signature):** Bentley, R. A.; Carrignon, S.; Ruck, D.J.; Valverde, S., O'Brien, M.J.

Title: « Neutral models are a tool, not a syndrome »

In: *Nature Human Behaviour*

Key: A **Num.:** 5. **Vol.:** 7 **Pages:** 807-808 **Date:** 2021

66. **Authors (by order of signature):** Núria Galiana, Miguel Lurgi, Vinicius AG Bastazini, Jordi Bosch, Luciano Cagnolo, Kevin Cazelles, Bernat Claramunt-López, Carine Emer, Marie-Josée Fortin, Ingo Grass, Carlos Hernández-Castellano, Frank Jauker, Shawn J Leroux, Kevin McCann, Anne M McLeod, Daniel Montoya, Christian Mulder, Sergio Osorio-Canadas, Sara Reverté, Anselm Rodrigo, Ingolf Steffan-

Dewenter, Anna Traveset, Sergi Valverde, Diego P Vázquez, Spencer A Wood, Dominique Gravel, Tomas Roslin, Wilfried Thuiller, José M Montoya

Title: « Ecological network complexity scales with area »

In: *Nature Ecology and Evolution*

Key: A **Date:** 2022 **DOI:** <https://doi.org/10.1038/s41559-021-01644-4>

67. **Authors (by order of signature):** Duran-Nebreda, S., Valverde, S.,

Title: « Rashevsky's dream: a physico-mathematical foundation of history and culture »

In: *Métode Science Studies Journal*

Key: A **Date:** 2022 **DOI:** <https://doi.org/10.7203/metode.13.21763>

68. **Authors (by order of signature):** Duran-Nebreda, S., O'Brien, M.J., Bentley, R. A., Valverde, S.,

Title: « Dilution of expertise in the rise and fall of collective innovation »

In: *Humanities and Social Sciences Communications*

Key: A **Num.:** 1 **Vol.:**9 **Pages:** 365 **Date:** 2022 **DOI:** <https://doi.org/10.1057/s41599-022-01380-5>

69. **Authors (by order of signature):** Vidiella, B., Carrignon, S., Bentley, R. A.; O'Brien, M.J., Valverde, S.

Title: « A cultural evolutionary theory that explains both gradual and punctuated change »

In: *Journal of the Royal Society Interface*

Key: A **Num.:** 196 **Vol.:**19 **Pages:** 20220570 **Date:** 2022 **DOI:**

<https://doi.org/10.1098/rsif.2022.0570>

70. **Authors (by order of signature):** Toro-Delgado, E., Hernández-Roldán, J., Dincă, V., Vicente J. C., Shaw, M. R., Quicke, D. Lj, Vodă, R., Albrecht, M., Fernández-Triana, J., Vidiella, B., Valverde, S., Dapporto, L., Hebert, P. D. N., Talavera, G., Vila, R..

Title: « Butterfly-parasitoid-hostplant interactions in Western Palaearctic Hesperidae: a DNA barcoding reference library »

In: *Zoological Journal of the Linnean Society*

Key: A **Num.:** 2 **Vol.:**196 **Pages:** 757-774 **Date:** 2022

Stays abroad

(continuous stays exceeding one month)

Institution: Santa Fe Institute

Place: Santa Fe **Country:** USA **Date:** 01/09/2006 - 20/11/2006

Duration (weeks): 11

Key: Research Collaboration

Institution: Université Paul Sabatier

Place: Toulouse **Country:** France **Date:** 01/01/2007 - 01/06/2009

Duration (weeks): 125

Subject: Swarm Intelligence

Key: Postdoc

Institution: Santa Fe Institute

Place: Santa Fe **Country:** USA **Date:** 01/03/2007 - 17/05/2007

Duration (weeks): 10

Key: Research Collaboration

Talks & Presentations

1. **Authors:** Valverde, Sergi

Title: Complexity in Computer Networks

Congress: The Global Internet: Measurement, modeling & Analysis

Place of celebration: Leiden **Date:** 2000

2. **Authors:** Valverde, Sergi

Title: Origins of Software Complexity

Congress: Software Complexity Workshop Conference (IST2004)

Place of celebration: Den Haag **Date:** 2004

3. **Authors:** Valverde, Sergi

Title: Universal Properties of Bipartite Software Graphs

Congress: Workshop on Software and Complex Systems, 9th IEEE Int. Conf. Eng. Compl. Comp. Syst.

Place of celebration: Florence **Date:** 2004

4. **Authors:** Valverde, Sergi

Title: Network Motifs in Computational Networks: A Case Study in Software Architecture

Congress: Nordic Workshop on Networks

Place of celebration: Copenhagen **Date:** 2004

5. **Authors:** Valverde, Sergi

Title: Information Theory of Class Graphs: On Evolution and Architectural Constraints

Congress: Workshop on Complexity and Self-Properties

Place of celebration: Brussels **Date:** 2005

6. **Authors:** Valverde, Sergi

Title: Xarxes tecnològiques: del Software a Internet

Congress: Curs Evolució de Xarxes Complexes

Place of celebration: Barcelona **Date:** 2005

7. **Authors:** Valverde, Sergi

Title: Noise and Reliable Computation: Von Neumann Revisited

Congress: Workshop on Evolution, Information and Computation: From Living to Non-Living Matter

Place of celebration: Venice **Date:** 2005

8. **Authors:** Valverde, Sergi

Title: Complejidad Tecnológica

Congress: Maratón científico: Sistemas Complejos, Virus, Hormigas y Cerebros

Place of celebration: Madrid **Date:** 2007

9. **Authors:** Valverde, Sergi

Title: Hierarchy and Emergence in Open-source Networks

Congress: DELIS Final Workshop and Review Meeting

Place of celebration: Barcelona **Date:** 2008

10. **Authors:** Valverde, Sergi **Title:** Into the Turing's Nest

Congress: Selection, Tinkering and Emergence in Complex Networks (Santa Fe Business Meeting)

Place of celebration: Googleplex (California) **Date:** 2008

11. **Authors:** Valverde, Sergi

Title: Complex Networks: The Architecture of Life

Congress: 2a Edició Festival: Punto y Raya

Place of celebration: Barcelona **Date:** 2009

12. **Authors:** Valverde, Sergi

Title: Evolution of Technology Innovation Networks
Congress: CHANGING CULTURES: CULTURES OF CHANGE, ATACD Project
Place of celebration: Barcelona **Date:** 2009

13. **Authors:** Valverde, Sergi

Title: Percolation and Modularity in Insect Nest Networks
Congress: Workshop on Principles of Innovation in Swarm-made Architectures
Place of celebration: Venice **Date:** 2009

14. **Authors:** Valverde, Sergi

Title: Community Structure in a Patient-Phenotype Network
Congress: MeDALL Kick-off meeting
Place of celebration: Barcelona **Date:** 26/01/2011

15. **Authors:** Valverde, Sergi

Title: Networks of Innovation: from Patents to Open-source Software
Congress: I Jornada Complexitat.CAT
Place of celebration: Barcelona **Date:** 02/05/2011

16. **Authors:** Valverde, Sergi

Title: Hierarchy vs Self-organization in Open Source Networks
Congress: European Conference Complex Systems 2011
Place of celebration: Vienna **Date:** 15/09/2011

17. **Authors:** Valverde, Sergi

Title: Hierarchy vs Self-organization in Open Source Networks
Congress: Reunión del nodo español FuturICT
Place of celebration: Barcelona **Date:** 05/10/2011

18. **Authors:** Valverde, Sergi

Congress: SFI Workshop : Power Grids as Complex Networks
Place of celebration: Santa Fe, New Mexico **Date:** 17/05/2012-19/05/2012

19. **Authors:** Valverde, Sergi

Title: Hierarchy vs Self-organisation in Complex Networks
Host: Emergent Technologies & Design at the Architectural Association (AA)
Place of celebration: London **Date:** 06/06/2012

20. **Authors:** Valverde, Sergi

Title: Networks of Innovation
Congress: BioDesign Research Lab Lectures
Place of celebration: Barcelona **Date:** 29/11/2012

21. **Authors:** Valverde, Sergi

Title: Evolution of Patent Citation Networks
Congress: European Conference of Complex Systems (ECCS 2013)
Place of celebration: Barcelona **Date:** 16/09/2013-20/09/2013
Web: http://barabasilab.neu.edu/success_eccs2013

22. **Authors:** Valverde, Sergi

Title: Networks in Action: Communication, Computation and Evolution
Host: UPF-DTIC Research Seminars
Place of celebration: Barcelona **Date:** 12/06/2014.
Web: http://www.dtic.upf.edu/~afaridi/DTIC_Seminars/Abstracts.html#Jun12

23. **Authors:** Valverde, S.

Title: Evolution of Patent Citation Networks

Congress: Workshop on Complexity in Engineering (COMPENG 2014)

Place of celebration: Barcelona **Date:** 16/06/2014-17/06/2014

Web: <http://www.compeng2014.org>

24. **Authors:** Valverde, Sergi

Title: Phage-bacteria Infection Networks: From Nestedness to Modularity

Congress: Workshop on Virus Dynamics and Evolution

Place of celebration: Barcelona **Date:** 4/07/2014

Web: <http://www.crm.cat/en/Activities/Pages/ActivityFoldersAndPages/Curs%202013-2014/WKVirusDynamics/WKVirusDynamics.aspx>

25. **Authors:** Valverde, Sergi

Title: Innovation as a Complex System: Technological evolution and Emergence of Computational Creativity

Congress: Interactivos?14. Rethinking collective behaviour and action (Medialab-Prado)

Place of Celebration: Madrid

Web: <http://medialab-prado.es/article/lainnovacioncomounsistemacomplejoevoluciontecnologicayemergenciadelacreatividadcomputacional>

26. **Authors:** Valverde, Sergi

Title: Major Transitions in Technological Evolution

Workshop: Major Transitions in Natural, Synthetic and Artificial Evolution

Place of Celebration: Santa Fe Institute (USA) **Date:** 09/12/2014

Web: <http://www.santafe.edu/gevent/detail/science/1917/>

27. **Authors:** Valverde, Sergi

Title: Modelling the Evolution of Programming Languages: Network Methods in Cultural Evolution

Host: Complexity and Socio-Ecological Dynamics Research Group, Department of Humanities (UPF)

Place of Celebration: Barcelona **Date:** 06/03/2015

Web: <http://www.upf.edu/cases/actualitat/150306.html>

28. **Authors:** Valverde, Sergi

Title: Complex Networks: The Architecture of Life

Congress: II Jornades Breyting

Place of Celebration: Vidreres **Date:** 12/04/2015

Web: <http://www.jornadesbreyting.com/project/xarxes-complexes-larquitectura-de-la-vida/>

29. **Authors:** Valverde, Sergi

Title: Visualising the Evolution of Programming Languages

Congress: 6th Leonardo Satellite Symposium at NetSci2015

Place of Celebration: Zaragoza **Date:** June 1, 2015

Web: <http://artshumanities.netsci2015.net>

30. **Authors:** Valverde, Sergi

Title: Leyes Universales de los Ecosistemas Complejos

Congress: V Jornada UX / UOC #juxuoc

Place of Celebration: Sala Mobile World Capital, Barcelona **Date:** October 8, 2015. **Web:**

<http://mosaic.uoc.edu/jornadaux/>

31. **Authors:** Valverde, Sergi

Title: Mapping the Space of Programming Languages

Congress: Innovation as search on a landscape of possibilities
Place of Celebration: Santa Fe Institute, Santa Fe (NM) **Date:** October 15, 2015.
Web: <http://www.santafe.edu/gevent/detail/science/2024/>

32. **Authors:** Valverde, Sergi
Title: Major Transitions in Information Technology
Congress: Netsci 2016
Place of Celebration: Seoul, South Korea **Date:** May 30, 2016

33. **Authors:** Valverde, Sergi
Title: Major Transitions in Information Technology
Place of Celebration: Tempe, Arizona **Date:** April 19, 2017
Web: <https://campus.asu.edu/content/major-transitions-information-technology>

34. **Authors:** Valverde, Sergi
Title: Evolution of mutualistic networks by speciation-divergence dynamics
Congress: CCS'17 (Conference on Complex Systems)
Place of Celebration: Cancún, Mexico **Date:** April 19, 2017. **Web:**
<http://ccs17.unam.mx>

36. **Authors:** Valverde, Sergi
Title: 2001: A Vision of the Future Technology
Place of Celebration: Centro de Cultura Contemporànea de Barcelona (CCCB), Barcelona
Year: 2018
Web: <http://www.cccb.org/es/actividades/ficha/2001-una-odisea-en-el-espacio-una-mirada-desde-la-ciencia-actual/230318>

37. **Authors:** Valverde, Sergi
Title: Major Transitions in Information Technology
Activity: Workshop Genetic Improvement of Software
Place of Celebration: Dagstuhl (Germany)
Date: January 28th, 2018 – February 2th, 2018
Web: <https://www.dagstuhl.de/de/seminars/seminar-calendar/seminar-details/18052>

38. **Authors:** Valverde, Sergi
Title: Uncovering universal properties of evolutionary landscapes
Activity: Biosciences Seminar Series
Place of Celebration: University of Birmingham, United Kingdom.
Date: February 8th, 2018

39. **Authors:** Valverde, Sergi
Title: The Architecture of Collective Intelligence
Activity: Talk within the round table “Collective Intelligence with Audrey Dussutour, Sergi Valverde and Ricard Solé”, “Biennial Ciutat i Ciència”.
Place of Celebration: Biblioteca Francesca Bonnemaison, Barcelona.
Date: February 11th, 2019
Web: <https://www.biennialciutaticiencia.barcelona/ca/intelligencia-collectiva>

40. **Authors:** Valverde, Sergi
Title: Culturomics
Activity: Workshop at the “Biennial Ciutat i Ciència”
Place of Celebration: Centre Cívic Vil·la Urània, Barcelona.

Date: March 6th, 2019

Web: <https://www.biennalciutatificiencia.barcelona/ca/programa>

41. **Authors:** Valverde, Sergi

Title: Architecture of Mutualistic Networks as Spandrel

Congress: 10th International Conference on Complex Networks (Complenet'19).

Place of Celebration: Tarragona, Spain

Date: March 18th-21th,2019

Web: <https://complenet19.weebly.com>

42. **Authors:** Valverde, Sergi

Title: Emergence of Intelligence in Natural and Artificial Complex Systems

Activity: Moderator of the round table with Nuria Conde, Oriol Pujol, Ian Couzin and Marina Vegué.

Place of Celebration: Institut d'Estudis Catalans (IEC), Barcelona, Spain.

Date: May 21th, 2019

Web: <http://jornada.complexitat.cat/2019/>

43. **Authors:** Valverde, Sergi

Title: The Brain and the Computer

Congress: Brainhack Networks

Place of Celebration: Burlington, Vermont, USA.

Date: May 25th-26th, 2019

44. **Authors:** Valverde, Sergi

Title: The Neuroscience of Videogames

Activity: Presenter of the lecture by Diego Redolar Ripoll "The Playful Brain". Lecture Series "Gameplay, The Permanent Game"

Place of Celebration: Centro de Cultura Contemporánea de Barcelona (CCCB), Barcelona.

Date: February 24th, 2020

Web: <https://www.cccb.org/en/activities/file/lecture-by-diego-redolar-ripoll/232806>

45. **Authors:** Valverde, Sergi

Title: Major Transitions in Information Technology

Activity: INET Complexity Economics Seminar

Place of Celebration: Institute for New Economic Thinking (INET), Oxford Martin School, University of Oxford, UK.

Date: February 26th, 2020

Web: <https://www.oxfordmartin.ox.ac.uk/events/major-transitions-in-information-technology-with-dr-sergi-valverde/>

46. **Authors:** Valverde, Sergi and Vidiella, Blai
Title: Hidden Dimensions: Coexistence of Nestedness and Modularity Reveals the Hypergraph Nature of Ecological Architecture
Congress: TOPONETS 2020 Satellite @ Netsci 2020
Place of Celebration: Rome, Italy.
Date: September 18th, 2020
Web: <https://sites.google.com/view/toponets2020/home-page>
47. **Authors:** Duran-Nebreda, Salva and Valverde, Sergi
Title: Colapso de Atari: El Ataque de los Clones
Activity: Charlas Culturales de Arcade Vintage
Place of Celebration: Ibi, Spain.
Date: 2020
Web: <https://www.youtube.com/watch?v=myDzDkTwtKs>
48. **Authors:** Valverde, Sergi
Title: Complexitat i Tecnologia: Promeses i Trampes del Desenvolupament Tecnològic
Place of Celebration: Casa de la Cultura de Girona, Girona, Spain
Date: October 21th, 2021
Web: <https://www.emporda.info/oci/agenda/complexitat-i-tecnologia-promeses-i-58625195.html>
49. **Authors:** Valverde, Sergi
Title: Evolving Complex Networks: How Tinkering Shapes Structure
Congress: Invited Speaker at the ReACT Satellite of the Conference on Complex Systems (CCS'21)
Place of Celebration: Lyon, France.
Date: October 27th, 2021.
Web: <https://liphlab.github.io/REACT2021/>
50. **Authors:** Valverde, Sergi
Title: The Social Perception of Reality
Activity: Roundtable discussion “Que es la realidad?” organized by Josep Ramoneda and Tomàs Marquès.
Place of Celebration: Palau Macaya, Barcelona, Spain.
Date: October, 2021.
Web: https://www.youtube.com/watch?v=AQj0q4hTS_s
51. **Authors:** Valverde, Sergi
Title: Biocreator: a distributed simulation for learning ecology and evolution
Congress: Selected Workshop in the EvoKE 2021 meeting
Place of Celebration: Barcelona, Spain.
Date: November 22th-24th, 2021.
Web: <https://evokeproject.org/evoke-2021/>
52. **Authors:** Valverde, Sergi
Title: Evolving networks: optimization vs tinkering.
Congress: Third Workshop on Nonlinear Dynamics in Biological Systems
Place of Celebration: Madrid, Spain.
Date: June 9th, 2022.
Web: <https://eventos.urjc.es/79221/detail/third-workshop-on-nonlinear-dynamics-in-biological-systems.html>

52. **Authors:** Valverde, Sergi

Title: The Evolution of Computing.

Congress: SFI Workshop “The Structure of Technology” organized by Ricardo Hausmann, James McNerney and Hyejin Youn.

Place of Celebration: Santa Fe Institute, New Mexico, USA

Date: June 14th-16th, 2022

Web: <https://www.santafe.edu/events/structure-technology>

53. **Authors:** Valverde, Sergi

Title: Hidden dimensions in ecology: from bipartite networks to hypergraphs

Activity: CBGP Seminars

Place of Celebration: Centro de Biotecnología y Genómica de Plantas, Madrid, Spain.

Date: October 7th, 2022

Web:

<https://www.etsiaab.upm.es/Centro?id=a73f654250e83810VgnVCM10000009c7648a&prefmt=articulo&fmt=detail>

54. **Authors:** Valverde, Sergi

Title: PONG: Vida y Muerte del Arcade

Activity: Charlas Culturales de Arcade Vintage

Place of Celebration: Ibi, Spain.

Date: February 18th, 2023

Teaching experience

2018 - 2019 Bachelor's (Degree) Programme in Biomedical Engineering (UPF)
22123 - *Evolutionary Algorithms*
22150 - *Modelling Complex Diseases*

Computational Biomedical Engineering Master (UPF)
32217 - *Complexity Science*

<https://sites.google.com/site/complexsci/>

Master's Degree in Bioinformatics, University of Valencia
Introduction to Complex Networks: Patterns & Models (Invited Professor)

2016 - 2018 Bachelor's (Degree) Programme in Biomedical Engineering (UPF)
22106 - *Mathematical Biomodelling I*
22123 - *Evolutionary Algorithms*
22150 - *Modelling Complex Diseases*
22117 - *Principles of Biological Design*

Computational Biomedical Engineering Master (UPF)
32217 - *Complexity Science*

<https://sites.google.com/site/complexsci/>

Master's Degree in Bioinformatics, University of Valencia
Introduction to Complex Networks: Patterns & Models (Invited Professor)

2015 - 2016 Bachelor's (Degree) Programme in Biomedical Engineering (UPF)

22106 - *Mathematical Biomodelling I*

22123 - *Evolutionary Algorithms*

22107 - *Introduction to the University and Biomedical Engineering*

22150 - *Modelling Complex Diseases*

22117 - *Principles of Biological Design*

Bachelor's (Degree) Programme in Human Biology, University Pompeu Fabra
20332 - *Basic Sciences 1*

Master's Degree in Bioinformatics, University of Valencia

Introduction to Complex Networks: Patterns & Models (Invited Professor)

2014 - 2015 Bachelor's (Degree) Programme in Biomedical Engineering (UPF)

22106 - *Mathematical Biomodelling I*

22123 - *Evolutionary Algorithms*

22107 - *Introduction to the University and Biomedical Engineering*

22117 - *Principles of Biological Design*

Bachelor's (Degree) Programme in Human Biology, University Pompeu Fabra
20332 - *Basic Sciences 1*

Master's Degree in Bioinformatics, University of Valencia

Introduction to Complex Networks: Patterns & Models (Invited Professor)

2013 - 2014 Bachelor's (Degree) Programme in Biomedical Engineering (UPF)

22106 - *Mathematical Biomodelling I*

22123 - *Evolutionary Algorithms*

22107 - *Introduction to the University and Biomedical Engineering*

22117 - *Principles of Biological Design*

Bachelor's (Degree) Programme in Human Biology, University Pompeu Fabra
20332 - *Basic Sciences 1*

2012 - 2013 Bachelor's (Degree) Programme in Biomedical Engineering (UPF)

22106 - *Mathematical Biomodelling I*

22123 - *Evolutionary Algorithms*

22107 - *Introduction to the University and Biomedical Engineering*

22117 - *Principles of Biological Design*

Bachelor's (Degree) Programme in Human Biology, University Pompeu Fabra
20332 - *Basic Sciences 1*

2011 - 2012 Bachelor's (Degree) Programme in Biomedical Engineering (UPF)

22107 - *Introduction to the University and Biomedical Engineering*

22117 - *Principles of Biological Design*

Bachelor's (Degree) Programme in Human Biology, University Pompeu Fabra
20332 - *Basic Sciences 1*

2010 - 2011 Bachelor's (Degree) Programme in Human Biology, University Pompeu Fabra

20332 - *Basic Sciences 1*

2009 - 2010 Bachelor's (Degree) Programme in Human Biology, University Pompeu Fabra
20332 - *Basic Sciences 1*

2008 - 2009 Bachelor's (Degree) Programme in Human Biology, University Pompeu Fabra
20332 - *Basic Sciences 1*

PhD Thesis supervision

Title: Topological Complexity of the Electricity Transmission Network Implications in the Sustainability Paradigm

Doctorate: Rosas Casals, Martí

University: Universitat Politècnica de Catalunya

Date: 01/01/2009

Title: An Unified Approach to the Emergence of Complex Communication

Doctorate: Corominas Murtra, Bernat

University: Universitat Pompeu Fabra **Date:**

01/01/2011

Participation on committees

Title: External evaluator for the European Project FOC (Forecasting Financial Crises)

Institution: European Union **Date:** 01/01/2011-31/12/2012.

Title: Artificial Life. Program Committee of the 13th Artificial Life Conference

Institution: The International Society for Artificial Life

Date: 19/09/2012

Title: Artificial Life. Program Committee of the 14th Artificial Life Conference

Institution: The International Society for Artificial Life

Date: 30/07/2014

Title: ECAL 2015. Program Committee of the 13th European Conference on Artificial Life

Institution: The International Society for Artificial Life **Date:** 20/07/2015

Title: Artificial Life. Program Committee of the 15th Artificial Life Conference

Institution: The International Society for Artificial Life **Date:** 2016

Title: Artificial Life. Program Committee of the 15th Artificial Life Conference

Institution: The International Society for Artificial Life **Date:** 2016

Title: Member of the CSS Council

Institution: Complex Systems Society (CSS) <http://cssociety.org/about-us/council> **Date:**

2016 - 2018

Event organization

Title: Workshop on Complexity in Energy Infrastructures: Models, Metrics, Metaphors (ECCS'11 Satellite Meeting)

Activity type: Organizer

Date: 15/09/2011

Title: Workshop on The Cultural Evolution of Technology: Evidence, Hypothesis and Theory (ECCS'15 Satellite Meeting)

Activity type: Organizer **Date:**
30/09/2015

Website: <http://www.ccs2015.org/satellite-the-cultural-evolution-of-technology-evidence-hypothesis-andtheory/>

Title: Workshop on The Cultural Evolution of Technology: Evidence, Hypothesis and Theory (ECCS'15 Satellite Meeting)

Activity type: Organizer **Date:**
30/09/2015

Website: <http://www.ccs2015.org/satellite-the-cultural-evolution-of-technology-evidence-hypothesis-andtheory/>

Title: Workshop on The Cultural Evolution of Technology: Evidence, Hypothesis and Theory (ECCS'15 Satellite Meeting)

Activity type: Organizer **Date:**
30/09/2015

Website: <http://www.ccs2015.org/satellite-the-cultural-evolution-of-technology-evidence-hypothesis-andtheory/>

Software

Title: Netlab

Description: Software for the analysis, modelling and visualisation of complex networks. This toolkit has been reused in many Complex Systems Lab publications during the last decade. Renderings produced with Netlab have been featured in popular media like New York Times Magazine (March 12th, 2006) and a special Nature issue on Ecological Complexity (vol. 442 no. 7100, July 20th 2006). See: <http://www.nature.com/nature/journal/v442/n7100/edsumm/e060720-01.html>

Title: Netlab Online

Description: A collection of online applications specifically developed for my courses on Complex Networks. Please check our website: <https://sites.google.com/site/introcomplexnetworks/>

Title: BiMat

Description: Open-source MATLAB library whose main function is the analysis of modularity and nestedness in bipartite ecological networks. BiMat has been developed in collaboration with Cesar Flores, Timothee Poisot and Joshua Weitz. Its main features include: modularity and nestedness calculation, diversity calculation using Shannon and Simpson's indexes, different null models for the creation of random bipartite networks, and statistics of the network. Please check our website: <http://bimat.github.io>

Title: Chimera

Description: Simulation platform for “programmable life systems” that combines evolutionary dynamics with realistic physical embodiment. Our system offers to possibility to design new functions on top of a realistic computational model that takes into account emergent properties. This tool can be adapted to simulate micro-fluidics experiments and testing hypothesis of tumour growth and angiogenesis.

Title: ProRally 2002

Company: Ubisoft Entertainment

Description: Racing videogame created by Ubisoft for the Playstation 2 and Nintendo Game Cube consoles. My role in these projects was to design and develop the physics engine and also to supervise the overall software architecture according to the best engineering practices.

Title: Red1 (El Periodico de Catalunya) **Company:**
Ediciones Primera Plana.

Description: Desktop publishing software used in the production of the newspaper 'El Periodico de Catalunya). Automatic machine translation used in the production of the catalan version of the newspaper.