Vincenzo Nicosia
Curriculum Vitae et Studiorium [1]

PERSONAL INFORMATION

Nationality:	Italian, European
Languages:	Italian (mother tongue), English (full professional proficiency)
Office phone:	+44 (0)20 7882 3644
Email:	v.nicosia@qmul.ac.uk, katolaz@yahoo.it
Homepage:	http://www.maths.qmul.ac.uk/∼vnicosia/
Arxiv profile:	http://arxiv.org/a/nicosia_v_1
Facebook:	I am **not** on Facebook

RESEARCH INTERESTS

- Structural properties of complex networks, network growth, correlations

- Dynamical processes on networks, with focus on random walks, synchronization, opinion formation

- Structure and dynamics of multi-layer and time-varying graphs

- Spatial systems and spatial networks

- Applications of complex network theory to society, urban systems and the human brain

- Multi-layer networks approach to the analysis of relational data sets

EMPLOYMENT HISTORY

11/2015-present (current)	**Lecturer in Networks and Data Analysis**, School of Mathematical Sciences, Queen Mary University of London.
01/2013-10/2015	**Senior Research Assistant**, School of Mathematical Sciences, Queen Mary University of London. Research programme: "LASAGNE: multi-LAyer SpAtiotemporal Generalized NEtworks".
12/2011-12/2012	**Senior Research Assistant** Computer Laboratory, University of Cambridge (UK). Research programme: "Theory and applications of time-varying graphs".
12/2010-11/2011	**Research Assistant** in Theoretical Physics, Department of Physics and Astronomy, University of Catania (Italy). Research programme: "Analysis and modelling of complex networks from brain imaging techniques".
11/2009-10/2011	**Fixed-term Teaching Lecturer** in "Computer Science", Department of Physics and Astronomy, University of Catania (Italy).
06/2011-08/2011	**Visiting Researcher**, Computer Laboratory, University of Cambridge (UK) within the HPC-Europa2 research project.
12/2008-11/2010	**Research Assistant** in Applied Mathematics, Department of Mathematics and Computer Science and Scuola Superiore di Catania, University of Catania (Italy). Research programme: "Advanced numerical methods for complex systems".
2007-2008	**Senior SoftwareConsultant** at Erlang Solutions Ltd. (former Erlang Training and Consulting Ltd.), London (UK).
2005-2008	**Software Consultant**, Italian National Institute for Nuclear Physics (INFN), Project "NEMO".

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[1]Last update 16/07/2020

EDUCATION

12/10/2008	**Ph.D. in "Computer Science and Telecommunication Technologies"**, at Department of Computer Science and Telecommunication Technologies, University of Catania, Italy. Defended thesis: "Complex networks and community structures: analysis and applications to efficient peer–to–peer overlays".
28/01/2004	**MSc degree (Laurea) in "Computer Science", summa cum laude**, University of Catania, Italy. MSc thesis:"CRYME: a novel symmetric encryption scheme for data blocks".

PRIZES AND AWARDS

06/2014	"Best Lecturer Award", Mediterranean School of Complex Networks, Salina, Italy, 9-13 June 2014.
06/2013	Network Science Society "Young Scientist Prize", NetSci 2013, International Conference on Network Science, Copenhagen, Denmark, 3-7 June 2013.

GRANTS

2020-2021	" A prototype of a software tool to identify possible money laundering and fraud operations", EPSRC Impact Acceleration Award	40,000£
2019-2021	"Assessing spatial heterogeneity through random walks on graphs", EPSRC New Investigator Award (EP/S027920/1)	203,000£
2011	"Components in Time-Varying Graphs", HPC-Europa2 Grant covering the expenses for a Visiting Researcher position at the University of Cambridge	4,000£

ADMINISTRATIVE DUTIES

09/2019-present	Equality, Diversity and Inclusion Deputy Chair, School of Mathematical Sciences, QMUL.
2017-present	Fire Marshal, School of Mathematical Sciences, QMUL
2015-present	Member of the Council of the Complex Systems Society.
09/2018-08/2019	Programme Director, MSc Network Science, QMUL.
09/2018-08/2019	Teaching and Learning Seminar (BagLES) organiser, School of Mathematical Sciences, QMUL.
2014-2018	Member of the Athena SWAN Committee, School of Mathematical Sciences, QMUL.
2016-2019	Member of the Executive Committee of the Complex Systems Society.
09/2016-08/2018	Academic Selector and Publicity Manager, MSc Network Science, QMUL.
09/2017-08/2018	Academic Advisign Coordinator, School of Mathematical Sciences, QMUL.
07/2016-08/2018	Member of the EPSRC Early Career Forum Mathematics.
09/2016-08/2017	Co-organiser of the Teaching and Learning Seminar, School of Mathematical Sciences, QMUL.
05/2016-08/2017	Member of the College VP Research Consultation Group, QMUL.
09/2015-08/2017	Co-organiser of the QMUL "Complex Systems Seminar", held weekly at the School of Mathematical Sciences, QMUL.
04/2014-10/2014	Research staff representative in the School Research Committee, School of Mathematical Sciences, QMUL.

SYNTHETIC BIBLIOMETRIC INFORMATION

ISI Web of Knowledge	citations: 1,744, h-index: 20, i-10 index: 36
Scopus	citations: 2,689, h-index: 24, i-10 index: 45
Google Scholar	citations: 4,645, h-index: 32, i-10 index: 52
ResearchGate	citations: 3,524, h-index: 28, reads: 17,400+

PAPERS IN PREPARATION AND PRE-PRINTS

8. V. Nicosia, "Functional Geometric Graphs", in preparation.

7. V. Nicosia, "Passage times of random walks on graphs with coloured nodes", in preparation.

6. A. Santoro, V. Nicosia, "Spectral Embedding of Multiplex Networks", in preparation.

5. A. Santoro, V. Nicosia, "Maximal edge overlap of multi-layer network ensembles", in preparation.

4. S. Ferreira-Sousa, V. Nicosia, "Quantifying spatial heterogeneity through random walks on graphs", in preparation.

3. V. Nicosia, V. Latora, M. Barthelemy, "Universality in the formation of urban street patterns", in preparation.

2. A. Bassolas, S. Sousa, V. Nicosia, "Disproportionate incidence of COVID-19 in African Americans correlates with dynamic segregation", submitted, arxiv:2020.04130

1. M. Bonaventura, V. Latora, V. Nicosia, P. Panzarasa, "The advantages of interdisciplinarity in modern science", arxiv:1712.07910

BOOKS

1. V. Latora, V. Nicosia, G. Russo, "Complex Networks: Principles, Methods and Applications", Cambridge University press, ISBN: 9781107103184 (2017).

BOOK CHAPTERS

2. V. Nicosia, J. Tang, C. Mascolo, M. Musolesi, G. Russo, V. Latora, "Graph metrics for temporal networks", in Petter Home and Jari Saramaki (Editors). Temporal Networks. Springer. (2013).

1. J. Tang, I. Leontiadis, S. Scellato, V. Nicosia, C. Mascolo, M. Musolesi, V. Latora, "Applications of Temporal Graph Metrics to Real-World Networks", in Petter Home and Jari Saramaki (Editors). Temporal Networks. Springer. (2013).

EDITED BOOKS

1. S. Fortunato, G. Mangioni, R. Menezes, V. Nicosia (Eds.) "Complex Networks: Results of the 1st International Workshop on Complex Networks", Springer Studies in Computational Intelligence, Vol. 207, 2009,, XVIII, 226 p. 92 illus., Hardcover ISBN: 978-3-642-01205-1.

PAPERS IN INTERNATIONAL JOURNALS

48. A. Santoro, V. Nicosia, "Optimal percolation in correlated multilayer networks with overlap", **Phys. Rev. Research**, in press (2020).

47. A. Santoro, V. Nicosia, "Algorithmic complexity of multilayer networks", **Phys. Rev. X** 10, 021069 (2020).

46. D. Fano Yela, F. Thalmann, V. Nicosia, D. Stowell, M. Sandler "Efficient on-line computation of visibility graphs", **Phys. Rev. Research** 2, 023069 (2020).

45. R. Flanagan, L. Lacasa, V. Nicosia, "On the spectral properties of Feigenbaum graphs", **J. Phys. A** 53, 025702 (2019).

44. A. Santoro, V. Latora, G. Nicosia, V. Nicosia "Pareto optimality in multilayer network growth", **Phys. Rev. Lett.** 121, 128302 (2018).

43. L. Lacasa, I. Perez-Marino, J. Miguez, V. Nicosia, E. Roldan, A. Lisica, S. W. Grill J. Gomez-Gardenes "Multiplex decomposition of non-Markovian dynamics and the hidden layer reconstruction problem", **Phys. Rev. X** 8, 031038 (2018).

42. Vanesa Avalos-Gaytán, Juan A. Almendral, I. Leyva, F. Battiston, V. Nicosia, V. Latora, S. Boccaletti "Emergent explosive synchronization in adaptive complex networks", **Phys. Rev. E** 97, 042301 (2018).

41. N. Musmeci*, V. Nicosia*, T. Aste, T. Di Matteo, V. Latora, "The multiplex dependency structure of financial markets", **Complexity** 2017, Article ID 9586064 doi:10.1155/2017/9586064 (2017)

40. S. Ellwood*, C. Newman*, R. Montgomery*, V. Nicosia*, C. Buesching, A. Markham, C. Mascolo, N. Trigoni, B. Pasztor, V. Dyo, V. Latora, D. McDonald "An Active Radio Frequency Identification system capable of identifying co-locations and social-structure: validation with a wild free-ranging animal", **Methods Ecol. Evol.** doi:10.1111/2041-210X.12839 (2017). **Featured in: Phys.org, EurekAlert, Science Newsline**

39. F. Battiston, V. Nicosia, V. Latora, M. San Miguel "Layered social influence promotes multicultirality in the Axelrod model", **Sci. Rep.** 7, 1809, doi:10.1038/s41598-017-02040-4 (2017).

38. V. Nicosia*, P. S. Skardal*, V. Latora, A. Arenas "Collective Phenomena Emerging from the Interactions between Dynamical Processes in Multiplex Networks", **Phys. Rev. Lett.** 118, 138302 (2017).

37. F. Battiston, V. Nicosia, V. Latora "The new challenges of multiplex networks: measures and models", **EPJ Special Topics** 226(3), 401-416 (2017).

36. F. Battiston, V. Nicosia, M. Chavez, V. Latora "Multilayer motif analysis of brain networks", **Chaos** 27, 047404 (2017).

35. F. Battiston, V. Nicosia, V. Latora, "Efficient exploration of multiplex networks", **New J. Phys.**, 18(4), 043035 (2016).

34. A. Fiasconaro, E. Strano, V. Nicosia, S. Porta, V. Latora, "Spatio-temporal analysis of micro economic activities in Rome reveals patterns of mixed-use urban evolution", **PLoS ONE**, doi:10.1371/journal.pone.0151681 (2016).

33. V. Ciotti, M. Bonaventura, V. Nicosia, P. Panzarasa, V. Latora, "Homophily and missing links in citation networks", **EPJ Data Science**, 5:7 doi:10.1140/epjds/s13688-016-0068-2 (2016).

32. F. Battiston*, J. Iacovacci*, V. Nicosia, G. Bianconi, V. Latora, "Emergence of multiplex communities in collaboration networks", **PLoS ONE**, doi: 10.1371/journal.pone.0147451 (2016).

31. M. Diakonova, V. Nicosia, V. Latora, M. San Miguel, "Irreducibility of multilayer network dynamics: the case of the voter model", **New J. Phys.**, 18, 023010 (2016).

30. F. Battiston, A. Cairoli, V. Nicosia, A. Baule, V. Latora, "Interplay between consensus and coherence in a model of interacting opinions", **Physica D**, in press (2015).

29. L. Lacasa, V. Nicosia, V. Latora, "Network structure of multivariate time series", **Sci. Rep.** vol 5, 15508, doi:10.1038/srep15508 (2015).

28. V. Nicosia, V. Latora, "Measuring and modelling correlations in multiplex networks", **Phys. Rev. E** 92, 032805 (2015).

27. A. Fiasconaro, M. Tumminello, V. Nicosia, V. Latora, R. Mantegna, "Hybrid recommendation methods in complex networks", **Phys. Rev. E** 92, 012811 (2015).

26. M. De Domenico*, V. Nicosia*, A. Arenas, V. Latora "Structural reducibility of multi-layer networks", **Nat. Commun.** 6, 6864 (2015).

25. A. Cardillo, G. Petri, V. Nicosia, R. Sinatra, J. Gomez-Gardenes, V. Latora, "Evolutionary dynamics of time-resolved social interactions", **Phys. Rev. E** 90, 052825 (2014).

24. V. Nicosia, G. Bianconi, V. Latora, M. Barthélemy, "Non-linear growth and condensation in multiplex networks", accepted for publication in **Phys. Rev. E** 90, 042807 (2014).

23. V. Nicosia, M. De Domenico, V. Latora, "Characteristic exponents of complex networks", **Europhys. Lett.** 106, 58005 (2014).

22. F. Battiston, V. Nicosia, V. Latora, "Structural measures for multiplex networks", **Phys. Rev. E** 89, 032804 (2014).

21. M. Cavallaro, D. Asprone, V. Latora, G. Manfredi, V. Nicosia "Assessment of Urban Ecosystem Resilience through Hybrid Social–Physical Complex Networks", **Computer-Aided Civil and Infrastructure Engineering**, 29(8), 608–625 (2014).

20. M. Bonaventura, V. Nicosia, V. Latora, "Characteristic times of biased random walks on complex networks", **Phys. Rev. E** 89, 012803 (2014).

19. F. De Vico Fallani, V. Nicosia, V. Latora, M. Chavez, "Non-parametric resampling of random walks for spectral network clustering", **Phys. Rev. E** 89, 012802 (2014).

18. V. Nicosia, T. Machida, R. Wilson, E. Hancock, N. Konno, V. Latora, S. Severini, "Co-evolution of networks and quantum dynamics: a generalization of preferential attachment", **J. Stat. Mech.** P08016 (2013).

17. V. Nicosia, G. Bianconi, V. Latora, M. Barthélemy, "Growing multiplex networks", **Phys. Rev. Lett.** 111, 058701 (2013).

16. C. Brown, V. Nicosia, S. Scellato, A. Noulas, C. Mascolo, "Social and place-focused communities in location-based online social networks", **Eur. Phys. J. B** 86(6), 290 (2013).

15. V. Nicosia, M. Valencia, M. Chavez, A. Diaz-Guilera, V. Latora, "Remote synchronization reveals network symmetries and functional modules", **Phys. Rev. Lett.** 110, 174102 (2013).

14. V. Nicosia*, P. Vertes*, W. Schafer, V. Latora, E. Bullmore, "Phase transition in the economically modeled growth of a cellular nervous system", **Proc. Natl. Acad. Sci. USA** 110 (19), 7880-7885 (2013).

13. J. Gomez-Gardenes*, V. Nicosia*, R. Sinatra, V. Latora, "Motion-induced synchronization in metapopulations of mobile agents", **Phys. Rev. E** 87, 032814 (2013).

12. V. Latora, V. Nicosia, P. Panzarasa, "Social cohesion, structural holes, and a tale of two measures", **J. Stat. Phys.** 151 (3-4), 745 (2013).

11. V. Nicosia, J. Tang, M. Musolesi, G. Russo, C. Mascolo, V. Latora, "Components in time-varying graphs", **Chaos** 22, 023101 (2012).

10. E. Strano, V. Nicosia, V. Latora, S. Porta, M. Barthélemy, "Elementary processes governing the evolution of road networks", **Sci. Rep.** 2, 296 (2012).
    Featured in: Scientific American, Nature Asia.

9. V. Nicosia, R. Criado, M. Romance, G. Russo, V. Latora, "Controlling centrality in complex networks", **Sci. Rep.** 2, 218 (2012).

8. V. Nicosia, F. Bagnoli, V. Latora, "Impact of network structure on a model of diffusion and competitive interaction", **Europhys. Lett.** 94, 68009 (2011).

7. R. Sinatra, J. Gomez Gardenes, R. Lambiotte, V. Nicosia and V. Latora, "Maximal entropy random walks in complex networks with limited information", **Phys. Rev. E** 83, 030103(R) (2011).

6. F. De Vico Fallani*, V. Nicosia*, R. Sinatra*, L. Astolfi, F. Cincotti, D. Mattia, C. Wilke, A. Doud, V. Latora, B. He, F. Babiloni "Defecting or Not Defecting: How to 'Read' Human Behavior during Cooperative Games by EEG Measurements", **PLoS ONE**, 5(12), e14187 (2010).

5. V. Carchiolo, M. Malgeri, G. Mangioni, V. Nicosia, "An adaptive overlay network inspired by social behaviour", **Journal of Par. and Distr. Comp.** 70(3), 282 (2010).

4. V. Nicosia, G. Mangioni, V. Carchiolo, M. Malgeri, "Extending the definition of modularity to directed graphs with overlapping communities", **J. Stat. Mech.** P03024 (2009).

3. V. Carchiolo, A. Longheu, M. Malgeri, G. Mangioni, V. Nicosia,"The Dilemma of Trust: a Social Network Based Approach" **Scalable Computing: Practice and Experience Journal, SWPS** 9 (1) (2008).

2. V. Carchiolo, M. Malgeri, G. Mangioni, V. Nicosia,"Emerging structures of P2P networks induced by social relationships", **Comp. Comm.** 31 (3), 620 (2008).

1. V. Carchiolo, M. Malgeri, G. Mangioni, V. Nicosia, "Fast Information Retrieval in a Self–Organising Peer–to–Peer network", **Journal of Computers** 2 (5), 75 (2007).

PROCEEDINGS OF PEER-REVIEWED INTERNATIONAL CONFERENCES

22. D. Asprone, M. Cavallaro, V. Latora, G. Manfredi, V. Nicosia. "Urban network resilience analysis in case of earthquakes", In Proceedings of the 11th International Conference on Structural Safety and Reliability ICOSSAR'13, New York, USA (2013).

21. D. Karamshuk, A. Noulas, S. Scellato, V. Nicosia, C. Mascolo "Geo-Spotting: Mining Online Location-based Services for Optimal Retail Store Placement." In Proceedings of 19th ACM International Conference on Knowledge Discovery and Data Mining, KDD2013, Chicago USA (2013).

20. C. Brown, V. Nicosia, S. Scellato, A. Noulas, and C. Mascolo. "The importance of being placefriends: Discovering location-focused online communities". In Proceedings of ACM WOSN '12, Helsinki, Finland (2012).

19. C. Brown, V. Nicosia, S. Scellato, A. Noulas, and C. Mascolo. "Where online friends meet: Social communities in location-based networks". In Proceedings of ICWSM '12, Dublin, Ireland (2012)

18. L. Fichera, D. Marletta, V. Nicosia, C. Santoro. "Flexible Robot Strategy Design Using Belief-Desire-Intention Model". In Proceedings of Eurobot 2010 International Conference, EUROBOT2010. Rapperswil-Jona, Switzerland, May 27-30 (2010).

17. R. Massari, V. Nicosia, C. Santoro, "Path Planning of a Mobile Robot in a Tight Constrained Environment: the 'Eurobot 2010' UNICT-TEAM Experience", Proceedings of the 4th italian workshop on Planning and Scheduling - PlanSIG 2010. Brescia, GLASGOW: PlanSIG Group, vol. 1, p. 0, ISBN/ISSN: 1368-5708 (December 2010)

16. J. Tang, M. Musolesi, C. Mascolo, V. Latora, V. Nicosia "Analysing Information Flows and Key Mediators through Temporal Centrality Metrics", Proceedings of 3rd ACM Workshop on Social Network Systems (2010).

15. L. Fichera, D. Marletta, V. Nicosia, C. Santoro "A Methodology to Extend Imperative Languages with AgentSpeak Declarative Constructs", Proceedings of 11th Workshop nazionale "Dagli Oggetti agli Agenti", WOA 2010. Rimini, September 5-7, 2010., AACHEN: CEUR-WS.org, vol. 621, p. 0, ISBN/ISSN: 1613-0073 (2010)

14. V. Carchiolo, M. Malgeri, G. Mangioni, V. Nicosia, "Using genetic algorithms to discover overlapping communities in complex networks", 10th Experimental Chaos Conference, Catania, Italy, June 3-6, (2008).

13. V. Carchiolo, A. Longheu, G. Mangioni, V. Nicosia, "Adaptive E-learning: an Architecture based on PROSA P2P Network", in New Frontiers in Applied Artificial Intelligence (IEA/AIE). Appeared in Springer LNCS nr. 5027/2008, pages 777–786, ISBN: 978-3-540-69045-0, doi:10.1007/978-3-540-69052-8_81 (2008).

12. V. Carchiolo, A. Longheu, M. Malgeri, G. Mangioni, V. Nicosia,"An approach to trust based on social networks" International Conference on Web Information Systems Engineering – Nancy (FR) – Appeared in Springer LNCS nr. 4831/2007, pages 50–61, ISBN: 978-3-540-76992-7, doi:10.1007/978-3-540-76993-4_5 (2007)

11. V. Carchiolo, M. Malgeri, G. Mangioni, V. Nicosia,"On Robustness and Self–Adaptiveness of a Socially Inspired P2P Network" IEEE International Symposium on Computer and Information Sciences – Ankara (TR) – pages 1–6, ISBN: 978-1-4244-1363-8, doi:10.1109/ISCIS.2007.4456882 (2007)

10. V. Carchiolo, A. Longheu, M. Malgeri, G. Mangioni, V. Nicosia,"Applying Social Behaviours to Model Trusting" International Symposium on Intelligent and Distributed Systems – Craiova (RO) – Appeared in Springer Studies in Computational Intelligence, Vol. 78, ISBN: 978-3-540-74929-5 (2007).

9. V. Nicosia, "Towards Hard Real-Time Erlang" – ACM SIGPLAN Erlang Workshop – Frieburg (D) pages 29–36, ISBN: 978-1-59593-675-2 (2007).

8. M. Fargetta, V. Nicosia, "The Agreement Utopia" ETNGRID – WETICE – Paris (FR) – pages 308–313, ISBN: 0-7695-2879-1 (2007).

7. V. Nicosia, C. Santoro, C. Spampinato, "Experiences from Using Erlang for Autonomous Robots" Erlang User Conference 2006 – Stockholm (SW) (2006).

6. V. Carchiolo, M. Malgeri, G. Mangioni, V. Nicosia,"Evaluating The Dynamic Behaviour of PROSA P2P Network" International Symposium on Parallel and Distributed Processing and Applications 2006 – ISPA06 – Appeared in Springer LNCS nr. 4330/2006, pages 904–915, ISBN 978-3-540-68067-3, doi:10.1007/11946441 (2006).

5. V. Carchiolo, M. Malgeri, G. Mangioni, V. Nicosia,"Efficient Searching and Retrieval of Documents in PROSA" Databases, Information Systems and Peer-To-Peer Computing 2006 – DBISP2P06 – Appeared in Springer LNCS nr.4125/2007, pages 298–309, ISBN 978-3-540-71660-0, doi:10.1007/978-3-540-71661-7 (2006).

4. V. Carchiolo, M. Malgeri, G. Mangioni, V. Nicosia,"Exploiting Social Networks Dynamics for P2P Resource Organisation" International Symposium on Computer and Information Sciences 2006 – ISCIS06 – Appeared in Springer LNCS nr. 4263/2006, pages 726–734, ISBN 978-3-540-47242-1, doi:10.1007/11902140_76 (2006).

3. V. Carchiolo, M. Malgeri, G. Mangioni, V. Nicosia, "Social behaviours applied to P2P Systems: an efficent algorithm for resources organisation", Cooperative P2P Systems, WETICE 2006, Manchester (UK). ISBN: 0-7695-2623-3 (2006).

2. V. Carchiolo, M. Malgeri, G. Mangioni, V. Nicosia, "Self-organisation of resources in PROSA P2P Network", Workshop on Self–managed and Self–organising Systems, ICAC 2006, Dublin (IRL). Appeared in Springer LNCS nr. 3996/2006, pages 171–174, ISBN 978-3-540-34739-2, doi:10.1007/11767886_13 (2006).

1. V. Carchiolo, M. Malgeri, G. Mangioni, V. Nicosia, "PROSA: P2P Resource Organisation By Social Acquaintances", Agents and P2P Computing workshop, AAMAS 2006, Giappone. Appeared on Springer LNCS nr. 4461/2008, pages 135–142, ISBN 978-3-540-79704-3, doi:10.1007/978-3-540-79705-0_12 (2006).

RECENT INVITED TALKS

12. "Measuring complexity", invited talk at the 1st Complex Systems@Purdue, 14/05/2019, Purdue University (IN, USA)

11. "Functional geometric graphs and spatial heterogeneity", 2nd UK Network Science Workshop, 26/10/2018, Greenwich (UK).

10. "Universality in the formation of urban street patterns", Invited talk at the Satellite on Big Data, Spatial Systems, and Quantitative Geography, CCS 2018, 27/09/2018, Thessaloniki (GR).

9. "Complex networks all around us", Invited talk at Brainhack Networks, 09/06/2018, Paris (FR).

8. "Small sub-graphs in multi-layer networks", Invited talk at the Network Micro-structures Workshop, UCL, 24/05/2018, London (UK).

7. "Probing network structure through random walks", Invited talk at the UK Network Science Workshop, 11/05/2018, Bristol (UK).

6. "Taming complexity? Big data and smart models", Invited talk at the Data Science for Big Networks Workshop, 25/01/2018, London (UK).

5. "The role of random walks in network science", School of Mathematical Science Annual Lecture, 22/02/2017, London (UK).

4. "Simple models of opinion dynamics on networks", Invited talk at the European Agent Systems Society School, 26/07/2016, Catania (IT).

3. "Phase transitions in network growth", Invited talk at the School on Complex Networks and Applications to Neuroscience, 29/09/2015, São Paulo (BR).

2. "Compressibility of multi-layer networks", Keynote talk at the Multiplex Networks 2014 Workshop, European Conference on Complex Systems 2014, 22-26/09/2014, Lucca (IT).

1. "Elementary processes governing the evolution of street patterns", Invited talk, Networking Transportation Networkers workshop, Applied Mathematics Research Centre, Coventry University, 25-26/09/2013, Coventry (UK).

RECENT SEMINARS

13. "Dynamic approaches to measure heterogeneity in spatial networks", 4th Symposium on Spatial Networks, University of Oxford, 19/09/2019, Oxford (UK).

12. "Irreducibility of multi-layer network dynamics", Leeds Applied Nonlinear Dynamics Seminar, University of Leeds, 12/02/2018, Leeds (UK).

11. "Taming complexity? Big data and smart models", Big Data: theory and applications seminar, Scuola Superiore di Catania, 06/05/2016, Catania (IT).

10. "Smart models for multidimensional networks", London Institute of Mathematicsl Sciences, 31/03/2016, London (UK).

9. "Multiplex networks: definition, usage and open questions", Department of Statistical Science, University College London, 25/11/2015, London (UK).

8. "Multi-layer networks: the new frontier of complexity", Department of Mathematics and Computer Science, University of Catania, 27/02/2015, Catania (IT).

7. "Role of graph symmetries in the remote synchronisation of phase oscillators", Leeds Applied Nonlinear Dynamics Seminar, University of Leeds, 02/12/2014, Leeds (UK).

6. "Phase transitions in network growth: from street patterns to neural networks", Complex Systems Simulation Seminar Series, University of Southampton, 26/11/2014, Southampton (UK).

5. "Reducibility of multiplex networks", Seminar on Complex Systems, School of Mathematical Sciences, Queen Mary University of London, 30/09/2014, London (UK).

4. "Characterising and modelling correlations in multiplex networks", IFISC Departmental Seminar, Institute for Cross-Disciplinary Physics and Complex Systems, University of Balearic Islands, 13/05/2014, Palma (ES).

3. "Remote synchronization reveals network symmetries and functional modules", Complexity and Network Group Seminar, Imperial College, 28/05/2013, London (UK).

2. "Remote synchronization and symmetry", Statistical Mechanics study group, School of Mathematical Sciences, Queen Mary University of London, 29/11/2012, London (UK).

1. "Controlling centrality in complex networks", Cambridge Networks Network Seminar, King's College, 26/01/2012, Cambridge (UK).

CONFERENCE ABSTRACTS (ORAL PRESENTATIONS)

14. V. Nicosia, "Functional Geometric Graphs and spatial heterogeneity", Conference on Complex Systems, 24-28/09/2018, Thessaloniki (GR).

13. V. Nicosia, "Informtion-theoretic complexity of multiplex networks", International Conference on Network Science, 11-15/06/2018, Paris (FR).

12. V. Nicosia, "Network structure of multivariate time series", CSS 2016, Conference on Complex Systems, 19-22/09/2016, Amsterdam (NL).

11. V. Nicosia, "Irreducibility of multilayer network dynamics: the case of the voter model", CSS 2016, Conference on Complex Systems, 19-22/09/2016, Amsterdam (NL).

10. V. Nicosia, "Non-linear growth, correlations and condensation in multiplex networks", ECCS 2014, European Conference on Complex Systems, 22-26/09/2014, Lucca (IT).

9. V. Nicosia, "Growing Multiplex Networks", ECCS 2013, European Conference on Complex Systems, 16-20/09/2013, Barcelona (ES).

8. V. Nicosia "Phase-transition in the growth of a neural network", NetSci 2013, International Conference on Network Science, 3-7/06/2013, Copenhagen (DK).

7. V. Nicosia, "Remote synchronization reveals network symmetries and functional modules", NetSci 2013, International Conference on Network Science, 3-7/06/2013, Copenhagen (DK).

6. V. Nicosia, "Metrics for temporal graphs", Workshop on Mathematics of Large Technological Evolving Networks, Jesus College, University of Cambridge, 19/09/2012, Cambridge (UK).

5. V. Nicosia, "Components in time-varying graphs", International Seminar on Analysis of Dynamics Social and Technological Networks, Schloss Dagstuhl, 09/11/2011, Dagstuhl (Germany).

4. V. Nicosia, "Evolution of street patterns: 200 years of history do matter (or not?)", Workshop on Evolution of Complex Transportation Networks, Strathclyde University, 29/08/2011, Glasgow (UK).

3. V. Nicosia, "Controlling centrality in weighted complex networks", Conference on Application of Network Theory, NORDITA, 09/04/2011, Stockholm (Sweden).

2. V. Nicosia, "Competitive co-evolution of species in complex networks", International Conference Net Works: From theory to applications of complex networked systems, Institute for Biocomputation and Physics of Complex Systems, 09/06/2010, Zaragoza (Spain).

1. V. Nicosia, "Modularity for community detection: history, perspectives and open issues", Workshop on Complex Networks – Equilibrium and Vulnerability Analysis with Applications, University of Catania, 12/03/2008, Catania (Italy).

RECENT OUTREACH ACTIVITIES

4. "Taming complexity (...using maths)", School of Mathematical Sciences Taster Lectures Series, Queen Mary University of London, 06/04/2016, London (UK).

3. "Networks all around us: taming complexity with smart models", PhD Opportunities Day, School of Mathematical Sciences, Queen Mary University of London, 13/02/2016, London (UK).

2. "Networks in real life: from cities to the brain", Royal Institution Masterclasses in Mathematics, Queen Mary University of London, 01/03/2014, London (UK).

1. "Applied mathematics and complex networks", School of Mathematical Sciences, Queen Mary University of London, 11/07/2012, London (UK).

TEACHING EXPERIENCE

02/2019-03/2019	<u>Lecturer</u> of "Graphs Algorithms and Models", advanced module for the London Taught Course Centre programme [10 hours lectures]
2018/19	<u>Lecturer</u> of "Graphs and Networks", MSc in Network Science and MSc in Mathematics, School of Mathematical Sciences, Queen Mary University of London [24 hours lectures + 24 hours tutorials per year]
2014-2019	<u>Lecturer</u> of "Topics in Scientific Computing", MSc in Network Science and MSc in Mathematics, School of Mathematical Sciences, Queen Mary University of London [24 hours lectures + 24 hours tutorials per year]
02/2018-03/2018	<u>Lecturer</u> of "Graphs Algorithms and Models", advanced module for the London Taught Course Centre programme [10 hours lectures]
07/2016	<u>Invited lecturer</u> of "Mathematical models of opinion dynamics", 18th European Agent Systems Summer School, Catania (IT) [4 hours lectures + tutorials].
09-10/2015	<u>Invited lecturer</u> to the "School on Complex Networks and Applications to Neurosciences", Sao Paulo (Brazil) [8 hours lectures + 2 hours tutorials]
06/2014	<u>Invited lecturer</u> of "Random Walks on complex networks" and "Correlations and modelling of multiplex networks", Mediterranean School of Complex Networks, Salina (IT) [4 hours]
02-05/2012	<u>Supervisor</u> of "Complexity Theory" at the Computer Laboratory, University of Cambridge (UK) [12 hours]
02/2012	<u>Invited lecturer</u> of "Epidemic spreading on complex networks", for the module "Analisys of online social networks", Computer Laboratory, University of Cambridge (UK) [2 hours]
03/2011-05/2011	<u>Demonstrator</u> for the "Complex Networks" module, taught by Prof. V. Latora at Scuola Superiore di Catania (Italy) [15 hours]
2009-2011	<u>Fixed-term Teaching Lecturer</u> of "Computer Programming" for first-year undergraduate students in Physics, University of Catania, Italy [45 hours of lectures plus 45 hours of laboratory per year]
2004-2009	Contract Professor of "Computer Programming", "Computer Networks", "Operating Systems", "Administration of Open Source Operating Systems" for high-school and post-high-school students [$\sim$ 300 hours in total]

OTHER RELEVANT ACADEMIC ACTIVITIES

- <u>Organiser</u> (forthcoming) of the "Spatial Networks" mini-symposium, BMC/BAMC 2020, Glasgow (2020).

- <u>Organiser</u> of the "Complex-Space 2019" Satellite Workshop, Conference on Complex Systems, Singapore (2019).

- <u>Co-organiser</u> of the "UK Network Science" workshop series (2018-2019).

- <u>Organiser</u> of the "CoSyDy Workshop on Phase transitions in socio-economic systems", QMUL (2016).

- <u>Organizer and Steering Committee member</u> of "CompleNet", a multidisciplinary conference for researchers and practitioners in the field of complex networks (2008-2010).

- <u>Co-Supervisor</u> of 15 MSc students in Computer Science (2006-2008), 4 MSc students in Theoretical Physics (2008-2011) and 2 MSc students in Mathematics (2013-2016).

- <u>International examiner</u> for the PhD dissertation "Navigability and Synchronization in Complex Networks", candidate Pau Erola, Department of Mathematics and Computer Science, University of Tarragona, Spain (2016).

- <u>External international referee</u> for 3 PhD thesis defenses in Computer Science (2008-2011), for three PhD dissertations in Physics (2016-2019), and one PhD dissertation in Mathematics (2016).

- <u>Reviewer</u> for the following international journals: "Nature Physics", "Nature Communications", "Proceedings of the National Academy of Sciences, USA", "Physical Review Letters", "Physical Review X", "Scientific Reports", "New Journal of Physics", "Journal of the Royal Society Interface", "Physical Review E", "EPL – Europhysics Letters", "Journal of Statistical Mechanics", "Chaos", "Journal of Statistical Physics", "European Physical Journal B", "European Physical Journal – Data Science", "Advances in Complex Systems", "Journal of Complex Networks", "Network Science", "IEEE/ACM Transactions on Networking", "Journal of Parallel and Distributed Computing", "Chaos, Solitons and Fractals", "Physica A", "PlosONE", "Networks and Heterogeneous Media", "IEEE Journal of Selected Areas in Communications", "International Journal of Simulation and Process Modelling", "International Journal of Modern Physics C", "Mathematical and Computer Modelling of Dynamical Systems".

- <u>Reviewer</u> for the European Research Council (ERC), UK Research and Innnovation (UKRI), the UK Engineering and Physical Sciences Research Council UK (EPSRC), the UK Economic and Social Research Council (ESRC), the Natural Sciences and Engineering Research Council of Canada (NSERC), the Austrian Science Fund (FWF), the Commonwealth Scholarship Commission (CSC).

- <u>Member of Program Committee</u> and reviewer for several international workshops and conferences, including NetSci (2018-2019), NetSci X(2016), Conference on Complex Systems CCS (2016-2019), International Conference on Computational Social Sciences (2018,2019), Complenet (2009-2010, 2015-2020), SAC (2009), IDC (2008, 2009), SPeL (2008), CIAWES (2008), SNS (2010).

OTHER RELEVANT SKILLS

- Excellent computer programming skills (C, C++, Python, golang, Perl, Erlang, Lisp, Haskell, Scheme, Java, PHP, Tcl/Tk, Bash)

- Excellent experience in parallel programming and High Performance Computing (HPC).

- More than 15 years of experience in development of software for the structural analysis of large-scale complex networks.

- More than 15 years of experience in numerical methods for complex systems, including ODE solving, non-linear systems solving, large matrix manipulation, agent-based modelling and simulation.

- More than 20 years of experience in using software for data analysis and visualization, such as GNU/R, INRIA Scilab, GNU/Octave (Matlab), Maxima (Mathematica/Maple), Gnuplot, Xmgrace.

- More than 20 years of experience in using TeX and LaTeX document formatting tools.