Marco Grassia

Assistant Professor (RTDa) at the Department of Electrical, Electronics and Computer Engineering (DIEEI), University of Catania.

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Research Profile

My research lies at the intersection of Graph Machine Learning and Network Science, with a focus on Geometric Deep Learning and reinforcement-learning methods for combinatorial optimisation, robustness and inference on complex networks. I have applied these methods to network dismantling, astrophysics, food security and brain connectomics. Key results include a machine-learning framework for network dismantling published in *Nature Communications* (2021), a review of complex-network robustness in *Nature Reviews Physics* (2024, 500+ citations), and an ICLR 2026 paper. Some of my work has been cited in official documents by the United Nations, FAO and OECD.

Research output: 15 journal articles · 28 peer-reviewed conference papers · 4 preprints.

Research Activities

Research Positions

Mar. 2023 – Feb. 2028

RTDa Researcher — Università degli Studi di Catania

- Full-time Fixed-Term Researcher type A (RTDa) at DIEEI: three-year contract (Mar. 2023 – Feb. 2026), extended for two years (Mar. 2026 – Feb. 2028).
- Mar. 2023 – Feb. 2026, research activity: "Advanced machine learning and deep learning techniques on graphs for data analysis. Applications in astrophysics, specifically to modelling supernovae and explosive transient processes".
- National Centre HPC, Big Data and Quantum Computing, Spoke 3 ("Astrophysics & Cosmos Observations"); scientific director Prof. Antonio Zoccoli (INFN), local PI Prof. Giuseppe Mangioni.
- Since Mar. 2026: extension not tied to a project; research on Graph Machine Learning and Network Science, including network dismantling, evaluation and generation of graphs, fMRI-based visual brain decoding and functional connectomes.

May 2022 – Feb. 2023

Research Fellow — Università degli Studi di Catania

- Title: "Models and algorithms of Geometric Deep Learning for complex networks applied to computationally hard problems".
- Carried out at the Department of Electrical, Electronic and Computer Engineering (DIEEI).

Nov. 2021 – Jan. 2022

Research Fellow (Co.Co.Co.) — Consorzio COMETA

- Research in the context of the "Data Analysis and Network Science" project.
- Study of Geometric Deep Learning methods and tools applied to Network Science problems.

Research Appointments Abroad

Mar. 2025 – Jul. 2025 **Research Assignment** Tsinghua University, Beijing, China

- Research topic: "Machine learning-based network dismantling".
- Collaboration with Prof. Carlo Vittorio Cannistraci's group on the relationship between complex-network vulnerability and intrinsic geometry.
- Center for Complex Network Intelligence, Tsinghua University; duration: 4 months, carried out remotely.

Mar. 2021 – Jul. 2021 **Remote Research Internship** Tsinghua University

- Center for Complex Network Intelligence (CCNI), Tsinghua University, Beijing, China.
- Research on network-dismantling approaches leveraging network geometry, in collaboration with Prof. Carlo Vittorio Cannistraci.

Jul. 2018 – Aug. 2018 **Machine Learning Intern** Nokia Bell Labs, Dublin, Ireland

- Internship at the Analytics Research Group, supervised by Dr. Alessandra Sala and Dr. Juho Lauri.
- Machine Learning for optimising NP-hard graph problems; results presented at DSO@IJCAI 2020 and published in the *Journal of Heuristics* (2023).

Selected Research Contributions

Selected Publications

2026 Adler, T., **M. Grassia**, Z. Liao, G. Mangioni, and C. V. Cannistraci (2026). "Latent Geometry-Driven Network Automata for Complex Network Dismantling." In: *International Conference on Learning Representations*. ICLR, rank ICORE A*.

2026 **Grassia**, **M.**, S. P. Cosentino, G. Mangioni, and M. L. Pumo (2026). "Unveiling core-collapse supernova progenitors: characterization and physical insights through explainable artificial intelligence." In: *Scientific Reports* 16.1, p. 32393.

2026 **Grassia**, **M.**, V. d'Andrea, K. Finc, M. De Domenico, and G. Mangioni (2026). "Machine-enhanced reconstruction of functional connectomes unravels discriminative brain sub-systems in health and disease." In: *Scientific Reports* 16.1.

2024 Artime, O., **M. Grassia**, M. De Domenico, J. P. Gleeson, H. A. Makse, G. Mangioni, M. Perc, and F. Radicchi (2024). "Robustness and resilience of complex networks." In: *Nature Reviews Physics* 6.2, pp. 114–131. Review. Individual contribution: implementation and benchmarking of the dismantling algorithms, released as an open-source framework (see Software).

2023 Carchiolo, V., **M. Grassia**, A. Longheu, M. Malgeri, and G. Mangioni (2023). "Efficient Node PageRank Improvement via Link-building using Geometric Deep Learning." In: *ACM Transactions on Knowledge Discovery from Data* 17.3, pp. 1–22.

2022 **Grassia, M.**, G. Mangioni, S. Schiavo, and S. Traverso (2022). "Insights into countries' exposure and vulnerability to food trade shocks from network-based simulations." In: *Scientific Reports* 12.1, pp. 1–16.

2021 **Grassia, M.**, M. De Domenico, and G. Mangioni (2021). "Machine learning dismantling and early-warning signals of disintegration in complex systems." In: *Nature Communications* 12.1, p. 5190. Graph machine-learning method (graph neural networks) for network dismantling; official code in the Software section.

Research Impact and Recognition

2022 – 2026 **Policy citations** UN, FAO, OECD, IFPRI, UCL

Work on food security and network robustness cited in seven policy documents: the UN *World Social Report 2024*, two FAO reports (2022, 2026), two OECD reports (2024, republished by the Netherlands Ministry of Foreign Affairs, and 2025), an IFPRI discussion paper (CGIAR, 2024), and a report by the UCL Institute for Innovation and Public Purpose (2024).

2024 – present **Cross-disciplinary impact** Scopus

The review "Robustness and resilience of complex networks" (*Nature Reviews Physics*) is cited by works from 23 Scopus subject areas, including Engineering (273), Mathematics (264), Physics and Astronomy (239) and Computer Science (199) (Scopus, October 2026; areas overlap).

2022 **Best Paper Award** International Symposium on Intelligent Distributed Computing (IDC) 2022

Award for "Correlation between researchers' centrality and h-index: a case study".

Bibliometric Indicators

Indicators updated September 2026.
Google Scholar — h-index 13 · i10-index 13 · 1 418 citations
Scopus — h-index 10 · 1 001 citations

Teaching Activities

Overview: 415 h of lecturing in BSc and MSc courses since A.Y. 2021/2022, plus 12 h of doctoral-level teaching and 12 h of seminars.

University Teaching

Oct. 2025 – present **Lecturer, "Advanced Programming Languages"** Università degli Studi di Catania

- 3 ECTS, 29h per academic year; MSc in Computer Engineering (LM-32). Shared with the MSc in Computer Science (LM-18) in A.Y. 2025/2026; since A.Y. 2026/2027 the C++ part (2 ECTS, 22h) is shared with "Advanced Programming and AI Coding" (LM-32).
- Advanced performance-oriented C++ programming, memory management, standard libraries, and modern software-development techniques.

Oct. 2023 – present

Lecturer, "Fondamenti di Programmazione" Università degli Studi di Catania

- BSc Computer Engineering (L-8), with 319 cumulative lecturing hours across multiple modules and sections since A.Y. 2023/2024; classes of over one hundred enrolled students per section.

Mar. 2023 – Oct. 2023

Lecturer, Fondamenti di Informatica Università degli Studi di Catania
30h (16h lectures, 14h exercise sessions) in the second semester, after starting as contract lecturer (next entry); BSc in Computer Engineering (L-8), section P-Z.

Mar. 2022 – Mar. 2023

Lecturer (Fixed-term Contract) Università degli Studi di Catania
Co-teaching of Fondamenti di Informatica; BSc Computer Engineering (L-8). A.Y. 2021/2022: section J-Pr, 3 ECTS/29h, shared with Electronic Engineering (L-8). A.Y. 2022/2023: section P-Z, 8h in the first semester, then continued as RTDa (previous entry).

PhD Teaching and Seminars

Apr. 2025

"Deep Learning on Graphs" Free University of Bolzano
12h of in-person teaching in English for the Computer Science PhD programme; Geometric Deep Learning, Graph Neural Networks, graph-learning tasks and applications.

Nov. 2020

Advanced Python Seminar Università degli Studi di Catania
6h within Advanced Programming Languages (LM-32), A.Y. 2020/2021.

Nov. 2019

Advanced Python Seminar Università degli Studi di Catania
6h within Advanced Programming Languages (LM-32), A.Y. 2019/2020.

Professional Teaching

Sep. 2023 – Dec. 2023

Corporate Course Instructor FreeMind Foundry S.R.L.
50h of lectures for the ".NET Training Program (2023)", aimed at junior software developers; JavaScript, TypeScript and Angular.

Supervision and Mentoring

2023 – present

PhD Co-supervision Università degli Studi di Catania
Co-supervisor of two PhD students working on Geometric Deep Learning, visual brain decoding and biomedical applications, and Network Science in economic and social domains.

2023 – present

Collaboration in PhD research supervision Università degli Studi di Catania
Mentoring on graph characterization/generation with Geometric Deep Learning and on supernova characterization with advanced Deep Learning.

2020 – present

Bachelor and Master Thesis Supervision Università degli Studi di Catania
16 BSc and MSc theses supervised or co-supervised.

2022 – 2023

Scuola Superiore Thesis Co-supervision Università degli Studi di Catania
One Second-Level Diploma thesis at the Scuola Superiore di Catania.

Education and Training

2018 – 2021 **PhD in Computer Science** Università degli Studi di Catania

- Doctorate in Engineering of Systems, Energy, Computer Science and Telecommunications, XXXIV cycle.
- Additional certification: "International Doctor".
- Thesis: "Learning NP-hard problems on networks using Geometric Deep Learning".

2016 – 2018 **MSc in Computer Engineering (LM-32)** Università degli Studi di Catania
110/110 *cum laude*. Thesis conducted during an Erasmus+ Internship at Nokia Bell Labs, Dublin: "Accelerate NP-hard problem computations on graphs using Machine Learning".

2013 – 2016 **BSc in Computer Engineering (L-8)** Università degli Studi di Catania
110/110 *cum laude*. Thesis: "Augmented Reality: perspectives and applications in the tourism sector".

Academic Service

Conference and Workshop Organization

May 2026 **Session Chair** CompleNet 2026
Chair of the Contributed Talks session "Network Evolution and Geometry" and Lightning Talks session "Methods: Metrics, Algorithms and Geometry", Zaragoza, Spain.

Jul. 2025 **Local Organizer** MSCx 2025
X Mediterranean School of Complex Networks, Ortigia (SR), Italy. Website.

Jun. 2025 **Co-organizer** MIX-NEXT 2025 @ NetSci 2025
Remote co-organisation of the MIX-NEXT 2025 satellite workshop on multiscale/multilayer networks, robustness and interconnected systems. Website.

Sep. 2024 **Co-organizer** MIX-NEXT 2024 @ CCS 2024
Satellite workshop at the Conference on Complex Systems 2024, Exeter, UK. Website.

Apr. 2024 **Program Committee Member** CompleNet 2024
15th International Conference on Complex Networks, Exeter, UK.

Jan. 2024 **Co-organizer** NetPlace Panel @ NetSciX 2024
Panel and roundtable "Redefining scientific communication: from the scientific community to the society", Venice.

Nov. 2023 **Session Chair** COMPLEXNETWORKS 2023
12th International Conference on Complex Networks and their Applications, Menton, France.

Jul. 2023 **Co-organizer** MIX-NEXT 2023 @ NetSci 2023
Satellite workshop on Network Science for Multidimensional Data Analysis, Vienna.

Jun. 2023 **Local Organizer** MSCx 2023
VIII Mediterranean School of Complex Networks, Catania, Italy.

Apr. 2023 **Program Committee Member** CompleNet 2023
14th Conference on Complex Networks, Aveiro, Portugal.

Associations, Editorial Activities and Peer Review

2024 – present **NetPlace – Advisory Board** Network Science Society
Advisory Board member since July 2026; previously (2024 – 2026) organiser and CTO, responsible for scientific events and the association's technological and digital platforms. Website.

2022 – 2023 **Guest Editor** Future Internet
Special issue "Graph Machine Learning and Complex Networks".

2022 **Guest Editor** Future Internet
Special issue "Advances in AI and ML for Social Networking".

Journals Nature Communications; IEEE Transactions on Network Science and Engineering; Environmental Research Letters; IEEE Transactions on Emerging Topics in Computing; Scientific Reports; IMA Journal of Applied Mathematics; Machine Learning; Information.

Conferences International Conference on Complex Networks (CompleNet) 2022–2024.

Invited Talks and Lectures

Jun. 2024 **Invited Speaker** MSCx 2024, Grado (GO), Italy
"Deep Learning on Graphs" — Network Science, Geometric Deep Learning, GNNs, pooling, link prediction, dismantling and applications to heterogeneous, temporal and brain networks.

Jun. 2022 **Invited Lecturer** MSCx 2022, Catania, Italy
"Network Analysis with Python" — 1h of hands-on teaching on graph-tool, NetworkX, igraph and an introduction to PyTorch Geometric.

Research Software and Open Source Contributions

2021 – present **Network Dismantling** GitHub
Open-source framework with ready-to-use implementations of state-of-the-art network-dismantling algorithms, released alongside the *Nature Reviews Physics* review (2024); includes GDM and CoreGDM.

2021 **GDM** GitHub
Official implementation of the Graph Dismantling Machine published in *Nature Communications* (2021).

2021 **wsGAT** GitHub
Official implementation of wsGAT, an extension of Graph Attention Network layers for link prediction on weighted and signed graphs.

Publications

Journal Articles

2026 De Domenico, M., V. d'Andrea, **M. Grassia**, G. Mangioni, and B. Di Camillo (2026). "A digital twin should make a risky claim." In: *Nature Physics*. DOI: 10.1038/s41567-026-03411-3. Comment.

2026 Ghavasieh, A., **M. Grassia**, and M. De Domenico (2026). "Influence of the reinsertion algorithm on the performance of the Vertex Entanglement method." In: *Communications Physics* 9.1, p. 6. DOI: 10.1038/s42005-025-02429-y.

2026 **Grassia**, **M.**, S. P. Cosentino, G. Mangioni, and M. L. Pumo (2026). "Unveiling core-collapse supernova progenitors: characterization and physical insights through explainable artificial intelligence." In: *Scientific Reports* 16.1, p. 32393. DOI: 10.1038/s41598-026-60907-x.

2026 **Grassia**, **M.**, V. d'Andrea, K. Finc, M. De Domenico, and G. Mangioni (2026). "Machine-enhanced reconstruction of functional connectomes unravels discriminative brain sub-systems in health and disease." In: *Scientific Reports* 16.1. DOI: 10.1038/s41598-026-47391-z.

2024 Artime, O., **M. Grassia**, M. De Domenico, J. P. Gleeson, H. A. Makse, G. Mangioni, M. Perc, and F. Radicchi (2024). "Robustness and resilience of complex networks." In: *Nature Reviews Physics* 6.2, pp. 114–131. DOI: 10.1038/s42254-023-00676-y. Review. Individual contribution: implementation and benchmarking of the dismantling algorithms, released as an open-source framework (see Software).

2024 Carchiolo, V., **M. Grassia**, M. Malgeri, and G. Mangioni (2024). "Geometric Deep Learning sub-network extraction for Maximum Clique Enumeration." In: *PLOS ONE* 19.1, e0296185. DOI: 10.1371/journal.pone.0296185.

2023 Carchiolo, V., **M. Grassia**, A. Longheu, M. Malgeri, and G. Mangioni (2023). "Efficient Node PageRank Improvement via Link-building using Geometric Deep Learning." In: *ACM Transactions on Knowledge Discovery from Data* 17.3, pp. 1–22. DOI: 10.1145/3551642.

2023 Lauri, J., S. Dutta, **M. Grassia**, and D. Ajwani (2023). "Learning fine-grained search space pruning and heuristics for combinatorial optimization." In: *Journal of Heuristics* 29.2-3, pp. 313–347. DOI: 10.1007/s10732-023-09512-z.

2022 Carchiolo, V., C. Cavallo, **M. Grassia**, M. Malgeri, and G. Mangioni (2022). "Link Prediction in Time Varying Social Networks." In: *Information* 13.3, p. 123. DOI: 10.3390/info13030123.

2022 Carchiolo, V., **M. Grassia**, M. Malgeri, and G. Mangioni (2022). "Co-Authorship Networks Analysis to Discover Collaboration Patterns among Italian Researchers." In: *Future Internet* 14.6, p. 187. DOI: 10.3390/fi14060187.

2022 **Grassia**, **M.**, G. Mangioni, S. Schiavo, and S. Traverso (2022). "Insights into countries' exposure and vulnerability to food trade shocks from network-based simulations." In: *Scientific Reports* 12.1, pp. 1–16. DOI: 10.1038/s41598-022-08419-2.

2021 Carchiolo, V., **M. Grassia**, A. Longheu, M. Malgeri, and G. Mangioni (2021). "A Network-Based Analysis of a Worksite Canteen Dataset." In: *Big Data and Cognitive Computing* 5.1, p. 11. DOI: 10.3390/bdcc5010011.

2021 **Grassia**, **M.**, M. De Domenico, and G. Mangioni (2021). "Machine learning dismantling and early-warning signals of disintegration in complex systems."

In: *Nature Communications* 12.1, p. 5190. DOI: 10.1038/s41467-021-25485-8. Graph machine-learning method (graph neural networks) for network dismantling; official code in the Software section.

2021 **Grassia**, **M.**, G. Mangioni, S. Schiavo, and S. Traverso (2021). "(Unintended) Consequences of export restrictions on medical goods during the Covid-19 pandemic." In: *Journal of Complex Networks* 10.1, cnab045. DOI: 10.1093/comnet/cnab045.

2019 Carchiolo, V., **M. Grassia**, A. Longheu, M. Malgeri, and G. Mangioni (2019). "Network robustness improvement via long-range links." In: *Computational Social Networks* 6.1, p. 12. DOI: 10.1186/s40649-019-0073-2.

Conference Papers

2027 Moradi, M., M. Moradi, **M. Grassia**, and G. Mangioni (2027). "A Saliency-Driven Graph-Based Metric for fMRI-Based Visual Brain Decoding Evaluation." In: *Pattern Recognition*. Lecture Notes in Computer Science. Springer Nature Switzerland, pp. 248–263. DOI: 10.1007/978-3-032-31438-3_17. ICPR 2026, rank ICORE B.

2026 Adler, T., **M. Grassia**, Z. Liao, G. Mangioni, and C. V. Cannistraci (2026). "Latent Geometry-Driven Network Automata for Complex Network Dismantling." In: *International Conference on Learning Representations*. ICLR, rank ICORE A*.

2026 Moradi, M., M. Moradi, **M. Grassia**, and G. Mangioni (2026). "Brain-Grasp: Graph-Based Saliency Priors for Improved FMRI-Based Visual Brain Decoding." In: *ICASSP 2026 - 2026 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. IEEE, pp. 20466–20470. DOI: 10.1109/icassp55912.2026.11464921. ICASSP 2026, rank CORE 2023 B.

2026 Moradi, M., M. Moradi, **M. Grassia**, and G. Mangioni (2026). "Graph-Based Analysis of Attentional Fidelity in Brain-To-Image Reconstruction." In: *2026 IEEE International Conference on Image Processing (ICIP)*. IEEE, pp. 1–6. DOI: 10.1109/icip61757.2026.11630481. ICIP 2026, rank ICORE B.

2025 **Grassia**, **M.**, S. P. Cosentino, M. L. Pumo, and G. Mangioni (2025). "Machine Learning Supernovae's Progenitor Characterization." In: *2025 33rd Euromicro International Conference on Parallel, Distributed, and Network-Based Processing (PDP)*. IEEE, pp. 439–442. DOI: 10.1109/pdp66500.2025.00068.

2025 Moradi, M., M. Moradi, **M. Grassia**, and G. Mangioni (2025). "Graph-Based Evaluation of Visual Brain Decoding from fMRI Data." In: *2025 International Symposium on Multimedia (ISM)*. IEEE, pp. 244–251. DOI: 10.1109/ism66958.2025.00055.

2025 Moradi, M., M. Moradi, **M. Grassia**, and G. Mangioni (2025). "How Well is Human Attention Preserved in fMRI-Based Visual Brain Decoding?" In: *Proceedings of the 16th Biannual Conference of the Italian SIGCHI Chapter*. ACM, pp. 1–8. DOI: 10.1145/3750069.3750086.

2025 Moradi, M., M. Moradi, **M. Grassia**, and G. Mangioni (2025). "Saliency Matters: From Nodes to Objects." In: *Graph-Based Representations in Pattern Recognition*. Lecture Notes in Computer Science. Springer Nature Switzerland, pp. 214–223. DOI: 10.1007/978-3-031-94139-9_20.

2025 Moradi, M., M. Moradi, **M. Grassia**, and G. Mangioni (2025). "What is Wrong with Visual Brain Decoding? A Saliency-based Investigation." In: *2025 International Joint Conference on Neural Networks (IJCNN)*. IEEE, pp. 1–8. DOI: 10.1109/ijcnn64981.2025.11228904. IJCNN 2025, rank ICORE B.

2024 **Grassia**, **M.** and G. Mangioni (2024). "Edge Dismantling with Geometric Reinforcement Learning." In: *Complex Networks XV*. Springer Proceedings in Complexity. Springer Nature Switzerland, pp. 195–202. DOI: 10.1007/978-3-031-57515-0_15.

2023 Arciprete, A., V. Carchiolo, D. Chiavetta, **M. Grassia**, M. Malgeri, and G. Mangioni (2023). "Geometric Deep Learning Graph Pruning to Speed-Up the Run-Time of Maximum Clique Enumerarion Algorithms." In: *Complex Networks and Their Applications XI*. Studies in Computational Intelligence. Springer International Publishing, pp. 415–425. DOI: 10.1007/978-3-031-21127-0_34.

2023 Carchiolo, V., **M. Grassia**, M. Malgeri, and G. Mangioni (2023). "Correlation Between Researchers' Centrality and H-Index: A Case Study." In: *Intelligent Distributed Computing XV*. Studies in Computational Intelligence. Springer International Publishing, pp. 133–143. DOI: 10.1007/978-3-031-29104-3_15.

2023 **Grassia**, **M.** and G. Mangioni (2023). "CoreGDM: Geometric Deep Learning Network Decycling and Dismantling." In: *Complex Networks XIV*. Springer Proceedings in Complexity. Springer Nature Switzerland, pp. 86–94. DOI: 10.1007/978-3-031-28276-8_8.

2022 Carchiolo, V., **M. Grassia**, M. Malgeri, and G. Mangioni (2022). "Analysis of the Co-authorship Sub-networks of Italian Academic Researchers." In: *Complex Networks & Their Applications X*. Studies in Computational Intelligence. Springer International Publishing, pp. 321–327. DOI: 10.1007/978-3-030-93409-5_27.

2022 Carchiolo, V., **M. Grassia**, M. Malgeri, and G. Mangioni (2022). "Network Topology to Predict Bibliometrics Indices: A Case Study." In: *Information Integration and Web Intelligence*. Lecture Notes in Computer Science. Springer Nature Switzerland, pp. 166–180. DOI: 10.1007/978-3-031-21047-1_16.

2022 Carchiolo, V., **M. Grassia**, M. Malgeri, and G. Mangioni (2022). "Preliminary Characterization of Italian Academic Scholars by Their Bibliometrics." In: *Intelligent Distributed Computing XIV*. Vol. 1026. Studies in Computational Intelligence. Springer International Publishing, pp. 343–354. DOI: 10.1007/978-3-030-96627-0_31.

2022 Cavallaro, L., **M. Grassia**, G. Fiumara, G. Mangioni, P. De Meo, V. Carchiolo, O. Bagdasar, and A. Liotta (2022). "Relations Between Entropy and Accuracy Trends in Complex Artificial Neural Networks." In: *Complex Networks & Their Applications X*. Studies in Computational Intelligence. Springer International Publishing, pp. 452–460. DOI: 10.1007/978-3-030-93413-2_38.

2022 **Grassia**, **M.** and G. Mangioni (2022). "wsGAT: Weighted and Signed Graph Attention Networks for Link Prediction." In: *Complex Networks & Their Applications X*. Studies in Computational Intelligence. Springer International Publishing, pp. 369–375. DOI: 10.1007/978-3-030-93409-5_31.

2021 Carchiolo, V., **M. Grassia**, A. Longheu, M. Malgeri, and G. Mangioni (2021). "Food Recommendation in a Worksite Canteen." In: *Proceedings of the 6th International Conference on Complexity, Future Information Systems and Risk*. SCITEPRESS - Science and Technology Publications, pp. 117–124. DOI: 10.5220/0010502401170124.

2020 Carchiolo, V., **M. Grassia**, A. Longheu, M. Malgeri, and G. Mangioni (2020). "A network-based analysis to understand food-habits of a multi-company canteen's customers." In: *Proceedings of the 22nd International Conference on Information Integration and Web-based Applications & Services*. ACM, pp. 352–356. DOI: 10.1145/3428757.3429093.

2020 Carchiolo, V., **M. Grassia**, A. Longheu, M. Malgeri, and G. Mangioni (2020). "Group Cohesion Assessment in Networks." In: *Complex Networks XI*. Springer Proceedings in Complexity. Springer International Publishing, pp. 16–25. DOI: 10.1007/978-3-030-40943-2_2.

2020 Carchiolo, V., **M. Grassia**, A. Longheu, M. Malgeri, and G. Mangioni (2020). "Strategies Comparison in Link Building Problem." In: *Intelligent Distributed Computing XIII*. Studies in Computational Intelligence. Springer International Publishing, pp. 197–202. DOI: 10.1007/978-3-030-32258-8_23.

2019 Carchiolo, V., **M. Grassia**, A. Longheu, M. Malgeri, and G. Mangioni (2019). "A PageRank Inspired Approach to Measure Network Cohesiveness." In: *Internet and Distributed Computing Systems*. Lecture Notes in Computer Science. Springer International Publishing, pp. 349–356. DOI: 10.1007/978-3-030-34914-1_33.

2019 Carchiolo, V., **M. Grassia**, A. Longheu, M. Malgeri, and G. Mangioni (2019). "Long distance connections for ranking and robustness enhancement in networks." In: *The 7th International Conference on Complex Networks and Their Applications. 11 - 13 Dec., 2018, Cambridge (UK)*, pp. 162–164.

2019 **Grassia**, **M.**, J. Lauri, S. Dutta, and D. Ajwani (2019). "Learning Multi-Stage Sparsification for Maximum Clique Enumeration." In: *Data Science Meets Optimisation Workshop, International Joint Conference on Artificial Intelligence 2019*. Presented at the Data Science Meets Optimisation workshop at IJCAI 2020 (DSO@IJCAI).

2018 Carchiolo, V., **M. Grassia**, A. Longheu, M. Malgeri, and G. Mangioni (2018). "Climbing Ranking Position via Long-Distance Backlinks." In: *Internet and Distributed Computing Systems*. Lecture Notes in Computer Science. Springer International Publishing, pp. 100–108. DOI: 10.1007/978-3-030-02738-4_9.

2018 Carchiolo, V., **M. Grassia**, A. Longheu, M. Malgeri, and G. Mangioni (2018). "Exploiting Long Distance Connections to Strengthen Network Robustness." In: *Internet and Distributed Computing Systems*. Lecture Notes in Computer Science. Springer International Publishing, pp. 270–277. DOI: 10.1007/978-3-030-02738-4_23.

2018 Carchiolo, V., **M. Grassia**, A. Longheu, M. Malgeri, and G. Mangioni (2018). "Long Distance In-Links for Ranking Enhancement." In: *Intelligent Distributed Computing XII*. Studies in Computational Intelligence. Springer International Publishing, pp. 3–10. DOI: 10.1007/978-3-319-99626-4_1.

Preprints and Submitted Papers

2026 Romano, S., **M. Grassia**, P. Liò, and G. Mangioni (2026). *ProtoGuide: Prototype-Driven Guidance for Class-Conditional Graph Generation*. arXiv: 2609.15239.

2026 Widuranga, W., D. Rigoni, F. Bove, D. Righelli, S. Romano, R. Visone, M. V. Iorio, **M. Grassia**, G. Mangioni, P. Liò, and C. Taccioli (2026). *LLMsFold: Integrating Large Language Models and Biophysical Simulations for De Novo Drug Design*. DOI: 10.64898/2026.03.02.709055.

2025 Romano, S., **M. Grassia**, and G. Mangioni (2025). *Beyond MMD: Evaluating Graph Generative Models with Geometric Deep Learning*. arXiv: 2512.14241. Submitted to IEEE Transactions on Network Science and Engineering.

2021 **Grassia**, **M.**, M. De Domenico, and G. Mangioni (2021). *mGNN: Generalizing the Graph Neural Networks to the Multilayer Case*. arXiv: 2109.10119.