

# Lorenzo BALZOTTI

## Curriculum Vitae

### PERSONAL INFORMATION

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Lorenzo Balzotti  
Postdoc Researcher  
Sapienza, University of Rome  
Department of Statistical Sciences  
Piazzale Aldo Moro, 5, 00185  
Rome, Italy

Google Scholar: <https://scholar.google.com/citations?hl=it&user=tF9YpYYAAAAJ>

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### RESEARCH ACTIVITY AT QUALIFIED INSTITUTIONS

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Feb 2025 - current **Postdoc in Computer Science**

Sapienza University of Rome, Department of Statistical Sciences

*Algorithms for Graphs and Knowledge Graphs for the Cloud Continuum*

Jan 2024 - Dec 2024 **Postdoc in Computer Science**

Sapienza University of Rome, Department of Computer, Control and Management Engineering

*Algorithms and Methods for Processing Knowledge Graphs for the Adaptability of Applications in the Cloud Continuum*

Dec 2022 - Nov 2023 **Postdoc in Computer Science**

Sapienza University of Rome, Department of Statistical Sciences

*Big Data Networks*

### EDUCATION

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Jan 2023

**PhD in Mathematical Models for Engineering**

Sapienza University of Rome, Department of Basic and Applied Sciences for Engineering (SBAI)

Thesis: “Non-Crossing Shortest Paths in Planar Graphs with Applications to Max Flow, and Path Graphs”

Advisor: Prof. Paolo Giulio Franciosa

Jan 2019

**Master’s Degree in Applied Mathematics**

110 cum laude, Sapienza University of Rome

Thesis: “Un nuovo algoritmo per il riconoscimento dei grafi Vertex Path Tree”

Advisor: Prof. Claudia Malvenuto

Co-Advisor: Prof. Nicola Apollonio

Oct 2015            **Bachelor's Degree in Mathematics**  
110 cum laude, Sapienza University of Rome  
Thesis: "Tempo di mescolamento in catene di Markov"  
Advisor: Prof. Alessandra Faggionato

## CONFERENCES

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1. **Contributed talk** at *17th International Computer Science Symposium in Russia*, June 29–July 1, 2022, online
2. **Contributed talk** at *13th International Conference on Algorithms and Complexity*, 14 – 16 June, 2024, Larnaca, Cyprus
3. **Contributed talk** at *SEBD 2024 / 32nd Symposium on Advanced Database Systems*, 23-26 June 2024, Villasimius, Italy
4. **Contributed talk** at *ACM KDD 2024*, 25-29 August 2024, Barcelona, Spain

## PROJECTS

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1. Progetti Medi Sapienza, person in charge: Capparelli Stefano, Project Title: "Strutture algebro-geometriche e combinatorie relative a grafi, quiver, grassmanniane, codici e partizioni di interi", Department of Basic and Applied Sciences for Engineering, year: 2020, grant: €11.000,00
2. Progetti Medi Sapienza, person in charge: Pepe Valentina, Project Title: "Strutture algebro-geometriche e combinatorie relative a grafi, quiver, grassmanniane, codici e algebre di Lie, e questioni didattiche", Department of Basic and Applied Sciences for Engineering, year: 2021, grant: €13.900,00

## LANGUAGES

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- Italian (Mothertongue)
- English (Good Knowledge)

## COMPUTER SKILLS

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C, C++, Python, Matlab, R,  $\text{\LaTeX}$

## RESEARCH INTERESTS

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- Graph algorithms and applications
- Knowledge graphs
- Cloud continuum
- Explainable Artificial Intelligence
- Computational complexity

# Publications

## Articles

1. Lorenzo Balzotti, and Paolo G. Franciosa. “Non-Crossing Shortest Paths Lengths in Planar Graphs in Linear Time”. *Discrete Applied Mathematics* 346: 183-191 (2024) <https://doi.org/10.1016/j.dam.2023.12.011>
2. Lorenzo Balzotti, and Paolo G. Franciosa. “How Vulnerable is an Undirected Planar Graph with respect to Max Flow”. *Networks* 83(3): 570-586 (2024) <https://doi.org/10.1002/net.22205>
3. Nicola Apollonio and Lorenzo Balzotti. “Two new characterizations of path graphs”. *Discrete Mathematics*, 346.12 (2023): 113596., <https://doi.org/10.1016/j.disc.2023.113596>
4. Lorenzo Balzotti, and Paolo G. Franciosa. “Non-crossing Shortest Paths in Undirected Unweighted Planar Graphs in Linear Time”. *Journal of Graph Algorithms and Applications*, 26 (2022), pp. 589–606, <https://doi.org/10.7155/jgaa.00610>

## Proceedings

5. Donatella Firmani, Francesco Leotta, Jerin George Mathew, Jacopo Rossi, Lorenzo Balzotti, Hui Song, Dumitru Roman, Rustem Dautov, Erik Johannes Husom, Sagar Sen, Vilija Balionyte-Merle, Andrea Morichetta, Schahram Dustdar, Thijs Metsch, Valerio Frascolla, Ahmed Khalid, Giada Landi, Juan Brenes, Ioan Toma, Róbert Szabó, Christian Schaefer, Cosmin Udriou, Alexandre Ulisses, Verena Pietsch, Sigmund Akselsen, Arne Munch-Ellingsen, Irena Pavlova, Hong-Gee Kim, Changsoo Kim, Bob Allen, Sunwoo Kim and Eberechukwu Paulson. “INTEND: Intent-Based Data Operation in the Computing Continuum”. *CAiSE Research Projects Exhibition 2024*: 43-50 <https://ceur-ws.org/Vol-3692/paper6.pdf>
6. Rustem Dautov, Hui Song, Dumitru Roman, Erik Johannes Husom, Sagar Sen, Vilija Balionyte-Merle, Donatella Firmani, Francesco Leotta, Jerin George Mathew, Jacopo Rossi, Lorenzo Balzotti, Andrea Morichetta, Schahram Dustdar, Thijs Metsch, Valerio Frascolla, Ahmed Khalid, Giada Landi, Juan Brenes, Ioan Toma, Róbert Szabó, Christian Schaefer, Seonghyun Kim, Cosmin Udriou, Alexandre Ulisses, Verena Pietsch, Sigmund Akselsen, Arne Munch-Ellingsen, Irena Pavlova, Dessislava Petrova-Antonova, Hong-Gee Kim, Changsoo Kim, Bob Allen, Sunwoo Kim, Paulson Eberechukwu: “INTEND: Human-Like Intelligence for Intent-Based Data Operations in the Cognitive Computing Continuum”. *RuleML+RR (Companion) 2024* <https://ceur-ws.org/Vol-3816/paper54.pdf>
7. Lorenzo Balzotti, and Paolo G. Franciosa. “Non-crossing Shortest Paths in Undirected Unweighted Planar Graphs in Linear Time”. In: Kulikov, A.S., Raskhodnikova, S. (eds) *Computer Science – Theory and Applications. CSR 2022. Lecture Notes in Computer Science*, vol 13296. Springer, Cham. [https://doi.org/10.1007/978-3-031-09574-0\\_6](https://doi.org/10.1007/978-3-031-09574-0_6)
8. Lorenzo Balzotti, and Paolo G. Franciosa. “How Vulnerable is an Undirected Planar Graph with respect to Max Flow”. in *Algorithms and Complexity: 13th International Conference, CIAC 2023*, June 13–16, 2023, Springer. [https://dx.doi.org/10.1007/978-3-031-30448-4\\_7](https://dx.doi.org/10.1007/978-3-031-30448-4_7)
9. Lorenzo Balzotti, and Paolo G. Franciosa. “Non-Crossing Shortest Paths Lengths in Planar Graphs in Linear Time”. in *Algorithms and Complexity: 13th International Conference, CIAC 2023*, June 13–16, 2023, Springer. [https://dx.doi.org/10.1007/978-3-031-30448-4\\_6](https://dx.doi.org/10.1007/978-3-031-30448-4_6)

## PhD Thesis

10. Lorenzo Balzotti. “[Non-Crossing Shortest Paths in Planar Graphs with Applications to Max Flow, and Path Graphs](#)”. PhD Thesis (2023).

## Preprints

11. Lorenzo Balzotti. “[A New Algorithm to Recognize Path Graphs and Directed Path Graphs](#)”. arXiv preprint [arXiv:2012.08476](#) (2021). (minor revision to Discrete Mathematics & Theoretical Computer Science)