



Alessandra Tappini

Curriculum Vitae (December 6, 2021)

Current Position

Since February 2020, I am a post-doc research fellow at the University of Perugia, Department of Engineering (DI), Perugia, Italy.

Previous Positions

From 2016 to 2020, I have been a Ph.D. student at the University of Perugia, Department of Engineering (DI), Perugia, Italy.

Education

April 9, 2020 **Ph.D. in Industrial and Information Engineering**, *University of Perugia*, Department of Engineering (DI), Perugia, Italy.

Thesis: *Hybrid Graph Planarity Testing and Drawing*.

Advisor: Prof. Giuseppe Liotta.

External reviewers: Prof. William J. Lenhart and Prof. Ignaz Rutter.

Committee: Prof. Andrea Monteriù, Prof. Renzo Perfetti, and Prof. Marco Sasso.

February 19, 2016 **Master Degree (Laurea Magistrale) in Computer and Automation Engineering**, *University of Perugia*, Department of Engineering (DI), Perugia, Italy.

Final mark: *110/110 cum laude*

Thesis: *Visual analysis of large networks: Design and experimental validation of techniques for the reduction of the visual complexity*.

Advisor: Prof. Giuseppe Liotta.

Awards and Honors

September, 2021 **Best Paper Award** - Track 2: Experimental, applied, and network visualization aspects - *29th International Symposium on Graph Drawing and Network Visualization*. A User Study on Hybrid Graph Visualizations. Emilio Di Giacomo, Walter Didimo, Fabrizio Montecchiani, and Alessandra Tappini.

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- 2020 Special mention for the Best Italian Ph.D. Thesis in Theoretical Computer Science Award, advertised by the Italian Chapter of the European Association for Theoretical Computer Science (IC-EATCS). Ph.D. Thesis: *Hybrid Graph Planarity Testing and Drawing*.
- September, **Best Poster Award** - *27th International Symposium on Graph Drawing and Network Visualization*. Packing Trees into 1-planar Graphs. Felice De Luca, Emilio Di Giacomo, Seok-Hee Hong, Stephen Kobourov, William J. Lenhart, Giuseppe Liotta, Henk Meijer, Alessandra Tappini, and Stephen Wismath.
- September, **Best Paper Award** - Track 1: Combinatorial and algorithmic aspects - *26th International Symposium on Graph Drawing and Network Visualization*. Pole Dancing: 3D Morphs for Tree Drawings. Elena Arseneva, Prosenjit Bose, Pilar Cano, Anthony D'Angelo, Vida Dujmovic, Fabrizio Frati, Stefan Langerman, and Alessandra Tappini.

Experience Abroad

- November 2018 - **University of Tübingen (Germany) - Wilhelm Schickard Institut für Informatik**, *Visiting PhD student*.
- March 2019 During this period I joined the Algorithmik group, led by Prof. Michael Kaufmann.
- July 2018, **University of Passau (Germany)**, *Visiting PhD student*.
- February 2019 During these periods I collaborated with Prof. Ignaz Rutter and joined the Theoretical Computer Science group.
- April-June 2016 **Oxford (UK)**, *Traineeship in GlamOre Ltd*.
Design and development of an "e-recruitment and e-collaboration" web platform.

Research Interests

My research focuses on the design and development of graph algorithms and software systems for the visual analysis of complex data sets, with particular attention to the reduction of the visual complexity of such networks. My research interests span across the following fields:

- Graph drawing and its applications;
- Theoretical computer science;
- Network visualization and visual analytics;
- Human-computer interaction;
- Computational geometry.

Seminars

- December 4, 2018 Seminar on *Hybrid Representations of Graphs*. University of Tübingen, Germany.
- July 25, 2018 Seminar on *Hybrid Representations of Graphs*. University of Passau, Germany.

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Attended Conferences and Workshops

- September 2021 **GD 2021**, *29th International Symposium on Graph Drawing and Network Visualization*, Tübingen, Germany.
- September 2021 **SWGD 2021**, *First Summer Workshop on Graph Drawing*, Castiglione del Lago (PG), Italy.
- September 2020 **GD 2020**, *28th International Symposium on Graph Drawing and Network Visualization*, Vancouver, Canada, *online event*.
- March-April 2020 **WALCOM 2020**, *14th International Conference and Workshops on Algorithms and Computation*, Singapore, *online event*.
- March 2020 **EuroCG 2020**, *36th European Workshop on Computational Geometry*, Würzburg, Germany, *online event*.
- January 2020 **SOFSEM 2020**, *46th International Conference on Current Trends in Theory and Practice of Computer Science*, Limassol, Cyprus.
- September 2019 **GD 2019**, *27th International Symposium on Graph Drawing and Network Visualization*, Průhonice (Prague), Czech Republic.
- March 2019 **BWGD 2019**, *BICI Workshop on Graph Drawing 2019*, Bertinoro, Italy.
- September 2018 **GD 2018**, *26th International Symposium on Graph Drawing and Network Visualization*, Barcelona, Spain.
- March 2018 **BWGD 2018**, *BICI Workshop on Graph Drawing 2018*, Bertinoro, Italy.
- September 2017 **GD 2017**, *25th International Symposium on Graph Drawing and Network Visualization*, Boston, USA.
- March 2017 **BWGD 2017**, *BICI Workshop on Graph Drawing 2017*, Bertinoro, Italy.
- July 2016 **IISA 2016**, *7th International Conference on Information, Intelligence, Systems and Applications*, Chalkidiki, Greece.

Summer Schools

- September 2019 **PhD School of the 27th International Symposium on Graph Drawing and Network Visualization**, *Charles University*, Prague (Czech Republic).
- September 2018 **Recent Trends in Graph Drawing and Network Visualization**, *Universitat Politècnica de Catalunya (UPC)*, Barcelona (Spain).
- May 2018 **Intensive Research Program in Discrete, Combinatorial and Computational Geometry**, *Universitat Autònoma de Barcelona (UAB) - Centre de Recerca Matemàtica*, Barcelona (Spain).
Inspiring Lectures II: Challenges in Combinatorial and Discrete Geometry.
- September 2017 **3rd IEEE Italy Section PhD Summer School - Smarter Engineering for Industry 4.0 (SmE4I4.0)**, *Università degli Studi di Perugia*, Perugia (PG).

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- May 2017 **International School on Mathematics "Guido Stampacchia" - Graph Theory, Algorithms and Applications, 4th Edition**, *Ettore Majorana Foundation and Centre for Scientific Culture*, Erice (TP).
- May-June 2016 **Oxford Venture Idea Exploration Workshop**, *Saïd Business School*, Oxford (UK).
A six weeks workshop exploring an entrepreneurial idea with hands-on learning to accelerate the start-up process.
- July 2011 **3rd International Summer School & Conference on Measuring and Managing Corporate Sustainability**, *Polytechnic Institute of NYU*, New York (USA).

Scientific Review Activity

International journals: Computational Geometry: Theory and Applications, Computational Intelligence, Discrete Applied Mathematics, Discrete Mathematics and Theoretical Computer Science, IEEE Access, Information Processing Letters, Journal of Experimental Algorithmics, Journal of Graph Algorithms and Applications, Theoretical Computer Science.

International conferences: CIAC (2021), EuroCG (2020), GD (2017, 2018, 2019, 2020, 2021), IEEE VIS (2021), ISAAC (2021), WADS (2021), WALCOM (2018, 2019, 2020, 2021, 2022), WG (2019, 2020).

Teaching Experience

- A.A. **Computer Science**, *ITS Umbria Academy*, <http://www.itsumbria.it>.
2021/2022 Role: Teacher (50 hours).
- A.A. **Fundamentals of Computer Science**, *University of Perugia, Department of Engineering (DI), Perugia, Italy*.
2020/2021 Degree: Undergraduate Course in Computer and Electronic Engineering.
Role: Tutor (50 hours).
- A.A. **Computer Science**, *ITS Umbria Academy*, <http://www.itsumbria.it>.
2020/2021 Role: Teacher (30 hours).
- A.A. **C Programming**, *ITS Umbria Academy*, <http://www.itsumbria.it>.
2020/2021 Role: Teacher (20 hours).

Publications

Journals

- 2021 **(k,p)-planarity: A Relaxation of Hybrid Planarity**, *Emilio Di Giacomo, William J. Lenhart, Giuseppe Liotta, Timothy W. Randolph, and Alessandra Tappini*, *Theoretical Computer Science*, Elsevier, 2021, 896: 19-30.
- 2021 **Packing Trees into 1-planar Graphs**, *Felice De Luca, Emilio Di Giacomo, Seok-Hee Hong, Stephen Kobourov, William J. Lenhart, Giuseppe Liotta, Henk Meijer, Alessandra Tappini, and Stephen Wismath*, *J. Graph Algorithms Appl.*, 2021, 25(2): 605-624.

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- 2021 **Simultaneous FPQ-Ordering and Hybrid Planarity Testing**, *Giuseppe Liotta, Ignaz Rutter, and Alessandra Tappini*, Theoretical Computer Science, Elsevier, 2021, 874: 59-79.
- 2021 **Ortho-polygon Visibility Representations of 3-connected 1-plane Graphs**, *Giuseppe Liotta, Fabrizio Montecchiani, and Alessandra Tappini*, Theoretical Computer Science, Elsevier, 2021, 863: 40-52.
- 2020 **Hybrid Graph Visualizations with ChordLink: Algorithms, Experiments, and Applications**, *Lorenzo Angori, Walter Didimo, Fabrizio Montecchiani, Daniele Pagliuca, and Alessandra Tappini*, IEEE Transactions on Visualization and Computer Graphics, 2020, in press.
- 2020 **Graph Planarity by Replacing Cliques with Paths**, *Patrizio Angelini, Peter Eades, Seok-Hee Hong, Karsten Klein, Stephen Kobourov, Giuseppe Liotta, Alfredo Navarra, and Alessandra Tappini*, Algorithms, 2020, 13(8): 194.
- 2019 **Greedy Rectilinear Drawings**, *Patrizio Angelini, Michael Bekos, Walter Didimo, Luca Grilli, Philipp Kindermann, Tamara Mchedlidze, Roman Prutkin, Antonios Symvonis, and Alessandra Tappini*, Theoretical Computer Science, Elsevier, 2019, 795: 375-397.
- 2019 **Pole Dancing: 3D Morphs for Tree Drawings**, *Elena Arseneva, Prosenjit Bose, Pilar Cano, Anthony D'Angelo, Vida Dujmovic, Fabrizio Frati, Stefan Langerman, and Alessandra Tappini*, J. Graph Algorithms Appl., 2019, 23(3): 579-602.
- 2019 **NodeTrix Planarity Testing with Small Clusters**, *Emilio Di Giacomo, Giuseppe Liotta, Maurizio Patrignani, Ignaz Rutter, and Alessandra Tappini*, Algorithmica, Springer, 2019, 81(9): 3464-3493.

Conferences

- 2021 **A User Study on Hybrid Graph Visualizations**, *Emilio Di Giacomo, Walter Didimo, Fabrizio Montecchiani, and Alessandra Tappini*, In: Purchase, H., Rutter, I. (eds.) Proceedings of the 29th International Symposium on Graph Drawing and Network Visualization (GD 2021). LNCS, Springer (to appear).
- 2021 **Quasi-upward Planar Drawings with Minimum Curve Complexity**, *Carla Binucci, Emilio Di Giacomo, Giuseppe Liotta, and Alessandra Tappini*, In: Purchase, H., Rutter, I. (eds.) Proceedings of the 29th International Symposium on Graph Drawing and Network Visualization (GD 2021). LNCS, Springer (to appear).
- 2020 **Storyline Visualizations with Ubiquitous Actors**, *Emilio Di Giacomo, Walter Didimo, Giuseppe Liotta, Fabrizio Montecchiani, and Alessandra Tappini*, In: Auber, D., Valtr, P. (eds.) Proceedings of the 28th International Symposium on Graph Drawing and Network Visualization (GD 2020). LNCS, Springer (pp. 324-332).

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- 2020 **Packing Trees into 1-planar Graphs**, *Felice De Luca, Emilio Di Giacomo, Seok-Hee Hong, Stephen Kobourov, William J. Lenhart, Giuseppe Liotta, Henk Meijer, Alessandra Tappini, and Stephen Wismath*, In: WALCOM: Algorithms and Computation, 14th International Conference and Workshops (WALCOM 2020) LNCS, Springer (pp. 81-93).
- 2020 **Graph Planarity Testing with Hierarchical Embedding Constraints**, *Giuseppe Liotta, Ignaz Rutter, and Alessandra Tappini*, In: Proceedings of the 36th European Workshop on Computational Geometry (EuroCG 2020) LIPICS (pp. 34:1-34:7).
- 2020 **Simultaneous FPQ-Ordering and Hybrid Planarity Testing**, *Giuseppe Liotta, Ignaz Rutter, and Alessandra Tappini*, In: SOFSEM 2020 (46th International Conference on Current Trends in Theory and Practice of Computer Science), LNCS, Springer (pp. 617-626).
- 2019 **ChordLink: A New Hybrid Visualization Model**, *Lorenzo Angori, Walter Didimo, Fabrizio Montecchiani, Daniele Pagliuca, and Alessandra Tappini*, In: Archambault, D., Tóth, C.D. (eds.) Proceedings of the 27th International Symposium on Graph Drawing and Network Visualization (GD 2019). LNCS, Springer (pp. 276-290).
- 2019 **FPQ-choosable Planarity Testing**, *Giuseppe Liotta, Ignaz Rutter, and Alessandra Tappini*, In: Archambault, D., Tóth, C.D. (eds.) Proceedings of the 27th International Symposium on Graph Drawing and Network Visualization (GD 2019). LNCS, Springer (pp. 602-604).
- 2019 **Packing Trees into 1-planar Graphs**, *Felice De Luca, Emilio Di Giacomo, Seok-Hee Hong, Stephen Kobourov, William J. Lenhart, Giuseppe Liotta, Henk Meijer, Alessandra Tappini, and Stephen Wismath*, In: Archambault, D., Tóth, C.D. (eds.) Proceedings of the 27th International Symposium on Graph Drawing and Network Visualization (GD 2019). LNCS, Springer (pp. 605-607).
- 2019 **(k,p)-planarity: A Relaxation of Hybrid Planarity**, *Emilio Di Giacomo, William J. Lenhart, Giuseppe Liotta, Timothy W. Randolph, and Alessandra Tappini*, In: WALCOM: Algorithms and Computation, 13th International Conference and Workshops (WALCOM 2019) LNCS, Springer (pp. 148-159).
- 2018 **Ortho-polygon Visibility Representations of 3-connected 1-plane Graphs**, *Giuseppe Liotta, Fabrizio Montecchiani, and Alessandra Tappini*, In: Biedl, T., Kerren, A. (eds.) Proceedings of the 26th International Symposium on Graph Drawing and Network Visualization (GD 2018) LNCS, Springer (pp. 524-537).

- 2018 **Turning Cliques into Paths to Achieve Planarity**, *Patrizio Angelini, Peter Eades, Seok-Hee Hong, Karsten Klein, Stephen Kobourov, Giuseppe Liotta, Alfredo Navarra, and Alessandra Tappini*, In: Biedl, T., Kerren, A. (eds.) Proceedings of the 26th International Symposium on Graph Drawing and Network Visualization (GD 2018). LNCS, Springer (pp. 67-74).
- 2018 **Greedy Rectilinear Drawings**, *Patrizio Angelini, Michael Bekos, Walter Didimo, Luca Grilli, Philipp Kindermann, Tamara Mchedlidze, Roman Prutkin, Antonios Symvonis, and Alessandra Tappini*, In: Biedl, T., Kerren, A. (eds.) Proceedings of the 26th International Symposium on Graph Drawing and Network Visualization (GD 2018). LNCS, Springer (pp. 495-508).
- 2018 **Pole Dancing: 3D Morphs for Tree Drawings**, *Elena Arseneva, Prosenjit Bose, Pilar Cano, Anthony D'Angelo, Vida Dujmovic, Fabrizio Frati, Stefan Langerman, and Alessandra Tappini*, In: Biedl, T., Kerren, A. (eds.) Proceedings of the 26th International Symposium on Graph Drawing and Network Visualization (GD 2018). LNCS, Springer (pp. 371-384).
- 2018 **A Matrix Approach for Weighted Argumentation Frameworks**, *Stefano Bistarelli, Alessandra Tappini, and Carlo Taticchi*, In: Proceedings of the 31st International Florida Artificial Intelligence Research Society Conference (FLAIRS 2018) (pp. 507-512).
- 2017 **NodeTrix Planarity Testing with Small Clusters**, *Emilio Di Giacomo, Giuseppe Liotta, Maurizio Patrignani, and Alessandra Tappini*, In: Frati, F., Ma, K. (eds.) Proceedings of the 25th International Symposium on Graph Drawing and Network Visualization (GD 2017). LNCS, Springer (pp. 479-491).
- 2017 **Planar k-NodeTrix Graphs - A new Family of Beyond Planar Graphs**, *Emilio Di Giacomo, Giuseppe Liotta, Maurizio Patrignani, and Alessandra Tappini*, In: Frati, F., Ma, K. (eds.) Proceedings of the 25th International Symposium on Graph Drawing and Network Visualization (GD 2017). LNCS, Springer (pp. 609-611).
- 2016 **Partial Edge Drawing: Homogeneity is more Important than Crossings and Ink**, *Carla Binucci, Giuseppe Liotta, Fabrizio Montecchiani, and Alessandra Tappini*, 7th International Conference on Information, Intelligence, Systems and Applications, IISA 2016, Chalkidiki, Greece, 2016. IEEE.

Languages

Italian **Mothertongue**
 English **Advanced**