Filippo Bistaffa

Academic Curriculum Vitae

Current Position

- **Position:** Postdoctoral Research Fellow, Dept. of Multi-Agent Systems, IIIA-CSIC (Barcelona).
  Project: Enhanced data management techniques for real time logistics planning (LOGISTAR).
  Funding: H2020 (5,000,000 euro).
  Duration: 1 June 2018–31 May 2021.
- **Role:** As part of this project I am in charge of designing and implementing optimisation solution techniques for collaborative transportation and logistics (co-loading).
- **Webpage:** `https://filippobistaffa.github.io`.
- **Contact:** `filippo[dot]bistaffa[at]iiia[dot]csic[dot]es`.

Previous Research Projects

- **Position:** Marie Skłodowska-Curie Fellow, Dept. of Multi-Agent Systems, IIIA-CSIC (Barcelona).
  Project: Collectiveware: highly-parallel algorithms for collective intelligence (HPA4CF).
  Funding: H2020-MSCA-IF-2016 (158,121 euro).
  Duration: 16 June 2017–15 June 2019.
- **Position:** Research Associate, Dept. of Computer Science, University of Verona (Italy).
  Project: Development of AI techniques for sustainable commuting.
  Funding: University of Verona (29,000 euro).
  Duration: 1 January 2016–15 June 2017

Education

- **Ph.D. (Doctor Europæus) Computer Science** (April 2016), University of Verona.
  Thesis: Constraint Optimisation Techniques for Real-World Applications.
  Supervisor: Prof. Alessandro Farinell.
  Special mention: AI*IA Premio NeoDottori di Ricerca "Marco Cadoli" 2017.
- **M.Sc. Engineering and Computer Science** (March 2012), University of Verona.
  Thesis: Stable Coalition Formation in the Energy Market Using Graphical Model Based Approach.
  Supervisor: Prof. Alessandro Farinelli.
  Grade: 110/110 cum laude.
- **B.Sc. Computer Engineering** (September 2009), University of Pavia.
  Thesis: Implementazione di Lossy Link su Kernel Linux 2.6.
  Supervisor: Prof. Giuseppe Rossi.
  Grade: 110/110 cum laude.

Fellowships & Awards

- Marie Skłodowska-Curie Individual Fellowship (H2020-MSCA-IF-2016).
  13% funded proposals out of 832 under "Information Science and Engineering" descriptor.
- Juan de la Cierva Formacion (FJC-2016, renounced due to incompatibility with the above fellowship).
  1st place in "Computation and Information Technology Sciences" ranking.
- AI*IA "Marco Cadoli" Special Mention for Ph.D. Thesis.

On-Going Patent Applications

- Title: *"Procedure, system, computer program, and computer system to optimise the performance of online ridesharing"* (original title in Spanish: *"Procedimiento, sistema, programa informático, y sistema informático para optimizar el rendimiento de una red de compartición de viajes en línea"*).
  Patent reference: P201930873 (Spanish patent request filed on the 8th of October 2019).

Teaching Experience

- Lecturer – "Constrained Optimisation for Multi-Agent Systems".
  2019 ACAI / HAISS Summer School, Crete, Greece (90 attendees).
- Tutor – "Algorithms (Programming Laboratory II)", Bachelor Degree in Bioinformatics (2013–2016).
  Department of Computer Science, University of Verona, Verona, Italy ($\sim$ 40 students/year).

Journal Publications

[1] Ewa Andrejczuk, Filippo Bistaffa, Christian Blum, Juan A. Rodríguez-Aguilar, and Carles Sierra. Synergistic Team Composition: A Computational Approach to Foster Diversity in Teams. In *Knowledge-Based Systems*, volume 182, page 104799, 2019. DOI: `https://dx.doi.org/10.1016/j.knosys.2019.06.007`.

[2] Filippo Bistaffa and Alessandro Farinelli. A COP Model for Graph-Constrained Coalition Formation. In *Journal of Artificial Intelligence Research*, volume 62, pages 133–153, 2018. DOI: `http://dx.doi.org/10.1613/jair.1.11205`.

[3] Filippo Bistaffa, Georgios Chalkiadakis, Alessandro Farinelli, and Sarvapali D. Ramchurn. A Cooperative Game-Theoretic Approach to the Social Ridesharing Problem. In *Artificial Intelligence*, volume 246, pages 86–117, 2017. DOI: `http://dx.doi.org/10.1016/j.artint.2017.02.004`.

[4] Filippo Bistaffa, Alessandro Farinelli, Jesús Cerquides, Juan A. Rodríguez-Aguilar, and Sarvapali D. Ramchurn. Algorithms for Graph-Constrained Coalition Formation in the Real World. In *ACM Transactions on Intelligent Systems and Technology*, volume 8, issue 4, 2017. DOI: `http://dx.doi.org/10.1145/3040967`.

[5] Filippo Bistaffa, Nicola Bombieri, and Alessandro Farinelli. An Efficient Approach for Accelerating Bucket Elimination on GPUs. In *IEEE Transactions on Cybernetics*, volume 47, issue 11, 2017. DOI: `http://dx.doi.org/10.1109/TCYB.2016.2593773`.

[6] Alessandro Farinelli, Manuele Bicego, Filippo Bistaffa, and Sarvapali D. Ramchurn. A Hierarchical Clustering Approach to Large-Scale Near-Optimal Coalition Formation with Quality Guarantees. In *Engineering Applications of Artificial Intelligence*, volume 59, pages 170–185, 2017. DOI: http://dx.doi.org/10.1016/j.engappai.2016.12.018.

[7] Michele Roncalli, Filippo Bistaffa, and Alessandro Farinelli. Decentralized Power Distribution in the Smart Grid with Ancillary Lines. In *Mobile Networks and Applications*, pages 1–9, 2017. DOI: http://dx.doi.org/10.1007/s11036-017-0893-y.

Conference Publications

[8] Ewa Andrejczuk, Filippo Bistaffa, Christian Blum, Juan A. Rodríguez-Aguilar, and Carles Sierra. Heterogeneous Teams for Homogeneous Performance. In *International Conference on Principles and Practice of Multi-Agent Systems*, PRIMA, pages 89–105, 2018. DOI: http://dx.doi.org/10.1007/978-3-030-03098-8_6.

[9] Filippo Bistaffa and Alessandro Farinelli. A COP Model for Graph-Constrained Coalition Formation (Extended Abstract). In *International Joint Conference on Artificial Intelligence*, IJCAI, pages 5553–5557, 2018. DOI: http://dx.doi.org/10.24963/ijcai.2018/783.

[10] Ewa Andrejczuk, Filippo Bistaffa, Christian Blum, Juan A. Rodríguez-Aguilar, and Carles Sierra. Solving the Synergistic Team Composition Problem (Extended Abstract). In *International Conference on Autonomous Agents and Multiagent Systems*, AAMAS, pages 1853–1854, 2018. URL: https://dl.acm.org/citation.cfm?id=3238001.

[11] Filippo Bistaffa, Juan A. Rodríguez-Aguilar, Jesús Cerquides, and Christian Blum. A Simulation Tool for Large-Scale Online Ridesharing (Demonstration). In *International Conference on Autonomous Agents and Multiagent Systems*, AAMAS, pages 1797–1799, 2018. URL: https://dl.acm.org/citation.cfm?id=3237981.

[12] Filippo Bistaffa, Nicola Bombieri, and Alessandro Farinelli. CUBE: A CUDA approach for Bucket Elimination on GPUs. In *European Conference on Artificial Intelligence*, ECAI, pages 125–132, 2016. DOI: http://dx.doi.org/10.3233/978-1-61499-672-9-125.

[13] Filippo Bistaffa, Georgios Chalkiadakis, Alessandro Farinelli, and Sarvapali D. Ramchurn. Recommending Fair Payments for Large-Scale Social Ridesharing. In *ACM Conference on Recommender Systems*, RecSys, pages 139–146, 2015. DOI: http://dx.doi.org/10.1145/2792838.2800177.

[14] Filippo Bistaffa, Alessandro Farinelli, and Sarvapali D. Ramchurn. Sharing Rides with Friends: a Coalition Formation Algorithm for Ridesharing. In *AAAI Conference on Artificial Intelligence*, AAAI, pages 608–614, 2015. URL: http://www.aaai.org/ocs/index.php/AAAI/AAAI15/paper/view/9622.

[15] Filippo Bistaffa, Alessandro Farinelli, and Nicola Bombieri. Optimising Memory Management for Belief Propagation in Junction Trees Using GPGPUs. In *IEEE International Conference on Parallel and Distributed Systems*, ICPADS, pages 526–533, 2014. DOI: http://dx.doi.org/10.1109/padsw.2014.7097850.

[16] Filippo Bistaffa, Alessandro Farinelli, Jesús Cerquides, Juan A. Rodríguez-Aguilar, and Sarvapali D. Ramchurn. Anytime Coalition Structure Generation on Synergy Graphs. In *International Conference on Autonomous Agents and Multiagent Systems*, AAMAS, pages 13–20, 2014. URL: https://dl.acm.org/citation.cfm?id=2615737.

[17] Filippo Bistaffa and Alessandro Farinelli. A Fast Approach to Form Core-Stable Coalitions Based on a Dynamic Model. In *IEEE/WIC/ACM International Joint Conferences on Web Intelligence and Intelligent Agent Technologies*, WI/IAT, pages 122–129, 2013. DOI: http://dx.doi.org/10.1109/WI-IAT.2013.100.

[18] Filippo Bistaffa, Alessandro Farinelli, Meritxell Vinyals, and Alex Rogers. Coalitional Energy Purchasing in the Smart Grid. In *IEEE International Energy Conference & Exhibition*, ENERGYCON, pages 848–853, 2012. DOI: `http://dx.doi.org/10.1109/energycon.2012.6348270`.

[19] Filippo Bistaffa, Alessandro Farinelli, Meritxell Vinyals, and Alex Rogers. Decentralised Stable Coalition Formation Among Energy Consumers in the Smart Grid (Demonstration). In *International Conference on Autonomous Agents and Multiagent Systems*, AAMAS, pages 1461–1462, 2012. URL: `https://dl.acm.org/citation.cfm?id=2344061`.

Workshop Publications

[20] Filippo Bistaffa, Alessandro Farinelli, Jesús Cerquides, Juan A. Rodríguez-Aguilar, and Sarvapali D. Ramchurn. Anytime Coalition Structure Generation on Scale-Free and Community Networks. In *International Joint Workshop on Optimisation in Multi-Agent Systems and Distributed Constraint Reasoning*, OPTMAS-DCR, 2014.

[21] Filippo Bistaffa, Alessandro Farinelli, Meritxell Vinyals, and Alex Rogers. Stable Coalition Formation Among Energy Consumers in the Smart Grid. In *International Workshop on Agent Technologies for Energy Systems*, ATES, 2012.

Doctoral Consortium Publications

[22] Filippo Bistaffa. Parallel Algorithms for Hard Combinatorial Optimisation Problems in Multi-Agent Systems. In *International Conference on Autonomous Agents and Multiagent Systems*, AAMAS, pages 1717–1718, 2014. URL: `https://dl.acm.org/citation.cfm?id=2616142`.

Supervised Students

- Adriá Fenoy (Ph.D.), IIIA-CSIC, Barcelona, Spain, 2019–2022.
- Adriá Fenoy (M.Sc.), IIIA-CSIC, Barcelona, Spain, 2019.
- Carlos Mougan Navarro (M.Sc.), IIIA-CSIC, Barcelona, Spain, 2019.
- Francesco Donato (M.Sc.), Department of Computer Science, University of Verona, Verona, Italy, 2015.

Research Collaborations

- ECS Department at the University of Southampton, UK, June 2014–March 2015.
- IIIA-CSIC Research Institute, Barcelona, Spain, June 2013.

Professional Service

- Committee member for ACIA (Associació Catalana d'Intel·ligència Artificial) master thesis award.
- Reviewer for Artificial Intelligence (AIJ).
- Reviewer for IEEE Transactions on Cybernetics (IEEE CYB).
- Reviewer for Computers & Operations Research (COR).
- Reviewer for European Journal of Operational Research (EJOR).
- Reviewer for Autonomous Agents and Multi-Agent Systems (AGNT).
- PC member for AAAI Conference on Artificial Intelligence (AAAI).
- PC member for International Conference on Autonomous Agents and Multiagent Systems (AAMAS).
- PC member for International Joint Conference Conference on Artificial Intelligence (IJCAI).
- PC member and chair for European Conference on Artificial Intelligence (ECAI).
- PC member for Genetic and Evolutionary Computation Conference (GECCO).
- PC member for International Workshop on Optimisation in Multi-Agent Systems (OPTMAS).
- PC member for International Workshop on Teams in Multi-Agent Systems (TEAMAS).
- Reviewer for RoboCup International Symposium.

Conferences Attended

- International Conference on Autonomous Agents and Multiagent Systems (AAMAS), May 2019.
- AAAI Conference on Artificial Intelligence (AAAI), January 2019.
- International Joint Conference on Artificial Intelligence (IJCAI), July 2018. Oral presentation.
- International Conference on Autonomous Agents and Multiagent Systems (AAMAS), July 2018. Program demonstration, poster presentation.
- GPU Technology Conference Europe (GTC Europe), October 2017.
- European Conference on Artificial Intelligence (ECAI), September 2016. Oral presentation.
- ACM Conference on Recommender Systems (RecSys), September 2015. Oral presentation.
- AAAI Conference on Artificial Intelligence (AAAI), January 2015. Oral presentation.
- IEEE International Conference on Parallel and Distributed Systems (ICPADS), December 2014. Oral presentation.
- International Conference on Autonomous Agents and Multiagent Systems (AAMAS), May 2014. Oral presentation.
- International Joint Workshop on Optimisation in Multi-Agent Systems and Distributed Constraint Reasoning (OPTMAS-DCR), May 2014. Oral presentation.
- International Conference on Intelligent Agent Technology (IAT), November 2013. Oral presentation.
- International Conference on Autonomous Agents and Multiagent Systems (AAMAS), June 2012. Program demonstration, poster presentation, workshop attended.

Courses Attended

- ACM Europe Summer School on HPC Architectures for AI and Dedicated Applications, July 2019.
- Programming and Tuning Massively Parallel Systems Summer School (PUMPS), July 2015.
- Advanced School on Computer Vision and Pattern Recognition (VIPS), May 2015.
- Social Computing, University of Southampton, September–December 2014.
- Advanced Computer Architecture, University of Verona, March–June 2014.
- European Agent Systems Summer School (EASSS), July 2013.

Talks Given

- Seminary presentation: Constrained Optimisation for Multi-Agent Systems. July 2019. IIIA-CSIC.
- Oral presentation at the International Joint Conference on Artificial Intelligence (IJCAI) for the paper [9]. July 2018. Stockholm, Sweden.
- Seminary presentation: Constraint Optimisation Techniques for Real-World Applications. June 2017. Dept. of Computer Science, University of Verona.
- Oral presentation at the European Conference on Artificial Intelligence (ECAI) for the paper [12]. September 2016. The Hague, Netherlands.
- Ph.D. thesis defence. April 2016. Dept. of Computer Science, University of Verona.
- Departmental presentation for the admission to the final Ph.D. exam: Combinatorial Optimisation Problems in Large-Scale Multi-Agent Systems. October 2015. Dept. of Computer Science, University of Verona.
- Oral presentation at the ACM Conference on Recommender Systems (RecSys) for the paper [13]. September 2015. Vienna, Austria.
- Seminary presentation: Social Computing. June 2015. Dept. of Computer Science, University of Verona.
- Seminary presentation: Towards Optimal Solar Tracking. May 2015. Dept. of Computer Science, University of Verona.
- Tutorial presentation: Coalition Formation for Multi-Agent Systems. March 2015. ECS Department, University of Southampton.
- Oral presentation at the AAAI Conference on Artificial Intelligence (AAAI) for the paper [14]. January 2015. Austin, Texas, USA.
- Oral presentation at the IEEE International Conference on Parallel and Distributed Systems (ICPADS) for the paper [15]. December 2014. Hsinchu, Taiwan.
- Seminary presentation: Using GPGPUs to Speed-Up Computation: a Belief Propagation Example. November 2014. ECS Department, University of Southampton.
- Departmental presentation of Ph.D. thesis proposal: Combinatorial Optimisation Problems in Large-Scale Multi-Agent Systems. November 2014. Dept. of Computer Science, University of Verona.
- Oral presentation at the International Conference on Autonomous Agents and Multiagent Systems (AAMAS) for the paper [16]. May 2014. Paris, France.

- Oral presentation at the International Joint Workshop on Optimisation in Multi-Agent Systems and Distributed Constraint Reasoning (OPTMAS-DCR) for the paper [20]. May 2014. Paris, France.
- Oral presentation at the International Conference on Autonomous Agents and Multiagent Systems (AAMAS) for the paper [22]. May 2014. Paris, France.
- Seminary presentation: Game Theory for Computer Science. December 2013. Dept. of Computer Science, University of Verona.
- Oral presentation at the International Conference on Intelligent Agent Technology (IAT) for the paper [17]. November 2013. Atlanta, GA, United States of America.
- Departmental presentation of Ph.D. thesis proposal: Combinatorial optimisation problems in the collective energy purchasing domain. November 2013. Dept. of Computer Science, University of Verona.