



Filippo Bistaffa

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Summary of CV

This section describes briefly a summary of your career in science, academic and research; the main scientific and technological achievements and goals in your line of research in the medium -and long- term. It also includes other important aspects or peculiarities.

I received the Ph.D. degree in computer science from the University of Verona, Italy, in 2016. I am currently a Marie Skłodowska-Curie Fellow at IIIA-CSIC, as part of a H2020-MSCA-IF-2016-funded project entitled "Collectiveware: Highly-parallel algorithms for collective intelligence". My research focuses on multi-agent systems, a theoretic model used to describe and solve problems in many real-world scenarios, including collective energy purchasing and ridesharing. The complex dynamics among the large number of entities in these systems usually result in very hard optimisation problems. My research aims at dealing with this complexity, both from a theoretical perspective (proposing novel algorithms and models) and from a practical one, using Graphics Processing Units (GPUs) to speed-up the execution of algorithms used to compute the solutions.



Filippo Bistaffa

Surname(s): **Bistaffa**
 Name: **Filippo**
 NIE: **Y5654893N**
 ORCID: **0000-0003-1658-6125**
 Date of birth: **29/06/1987**
 Gender: **Male**
 Nationality: **Italy**
 Country of birth: **Italy**
 Aut. region/reg. of birth: **Veneto**
 Contact province: **Barcelona**
 City of birth: **Bovolone**
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 Contact city: **Cerdanyola**
 Email: **filippo.bistaffa@iiia.csic.es**
 Personal web page: **https://filippobistaffa.github.io**

Current professional situation

Employing entity: Instituto de Investigación en Inteligencia Artificial **Type of entity:** State agency

Professional category: Marie Skłodowska-Curie Fellow

Start date: 16/06/2017

Type of contract: Grant-assisted student (pre or post-doctoral, others) **Dedication regime:** Full time

Primary (UNESCO code): 330411 - Computing systems design

Performed tasks: Main researcher for project "Collectiveware: Highly-Parallel Algorithms for Collective Intelligence" (H2020-MSCA-IF-2016 HPA4CF)

Previous positions and activities

| | Employing entity | Professional category | Start date |
|--|----------------------|-----------------------|------------|
| | University of Verona | Research associate | 01/01/2016 |

Employing entity: University of Verona

Type of entity: University

Professional category: Research associate

Start-End date: 01/01/2016 - 30/06/2017

Duration: 1 year - 6 months



Education

University education

1st and 2nd cycle studies and pre-Bologna degrees

- 1 **University degree:** Higher degree
Name of qualification: M.Sc. Engineering and Computer Science
Degree awarding entity: University of Verona
Date of qualification: 22/03/2012
Average mark: Excellent

- 2 **University degree:** Middle degree
Name of qualification: B.Sc. Computer Engineering
Degree awarding entity: University of Pavia
Date of qualification: 15/09/2009
Average mark: Excellent

Doctorates

Doctorate programme: Computer Science
Degree awarding entity: University of Verona **Type of entity:** University
Date of degree: 22/04/2016
European doctorate: Yes
Thesis title: Constraint Optimisation Techniques for Real-World Applications
Thesis director: Alessandro Farinelli

Language skills

| Language | Listening skills | Reading skills | Spoken interaction | Speaking skills | Writing skills |
|----------|------------------|----------------|--------------------|-----------------|----------------|
| Spanish | B2 | B2 | B2 | B2 | B2 |
| English | C2 | C2 | C2 | C2 | C2 |
| Italian | C2 | C2 | C2 | C2 | C2 |

Teaching experience



General teaching experience

- 1 Name of the course:** Algorithms (Programming Laboratory II)
University degree: Bioinformatics
Start date: 01/10/2015 **End date:** 30/06/2016
Entity: University of Verona **Type of entity:** University
Faculty, institute or centre: Department of Computer Science
- 2 Name of the course:** Algorithms (Programming Laboratory II)
University degree: Bioinformatics
Start date: 01/10/2013 **End date:** 30/06/2014
Entity: University of Verona **Type of entity:** University
Faculty, institute or centre: Department of Computer Science

Experience supervising doctoral thesis and/or final year projects

Project title: Forming Groups for Social Ridesharing with Time Constraints (MSc Thesis)
Entity: University of Verona **Type of entity:** University
Student: Francesco Donato
Date of reading: 15/03/2015

Scientific and technological experience

Scientific or technological activities

R&D projects funded through competitive calls of public or private entities

- 1 Name of the project:** Collectiveware: Highly-parallel algorithms for collective intelligence
Entity where project took place: Instituto de Investigación en Inteligencia Artificial **Type of entity:** State agency
Name principal investigator (PI, Co-PI....): Juan A. Rodríguez-Aguilar
Nº of researchers: 1
Funding entity or bodies:
Marie Skłodowska-Curie Fellowship (European Commission) **Type of entity:** Public Research Body
Start-End date: 16/06/2017 - 16/06/2019
Total amount: 158.121,6 €
- 2 Name of the project:** Development of AI models and techniques for sustainable commuting
Entity where project took place: University of Verona **Type of entity:** University
City of entity: Verona, Veneto, Italy
Name principal investigator (PI, Co-PI....): Alessandro Farinelli
Nº of researchers: 1

**Start-End date:** 01/01/2016 - 30/06/2017**Total amount:** 29.000 €

Scientific and technological activities

Scientific production

Publications, scientific and technical documents

- 1** Ewa Andrejczuk; Filippo Bistaffa; Christian Blum; Juan Rodríguez-Aguilar; Carles Sierra. Synergistic team composition: A computational approach to foster diversity in teams. Knowledge-Based Systems. Elsevier, 2019. Available on-line at: <<https://www.sciencedirect.com/science/article/pii/S0950705119302746?via%3Dihub>>.
DOI: 10.1016/j.knosys.2019.06.007
Type of production: Scientific paper **Format:** Journal
Corresponding author: No
- 2** Filippo Bistaffa; Alessandro Farinelli. A COP Model For Graph-Constrained Coalition Formation. Journal of Artificial Intelligence Research. 62, pp. 133 - 153. AAAI Press, 2018. Available on-line at: <<https://www.jair.org/index.php/jair/article/view/11205>>.
DOI: 10.1613/jair.1.11205
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
Impact source: Journal Citation Reports **Category:** Artificial Intelligence
Impact index in year of publication: 1.820 **Journal in the top 25%:** No
- 3** Filippo Bistaffa; Alessandro Farinelli; Georgios Chalkiadakis; Sarvapali D Ramchurn. A Cooperative Game-Theoretic Approach to the Social Ridesharing Problem. Artificial Intelligence. 246, pp. 86 - 117. Elsevier, 2017. Available on-line at: <<http://www.sciencedirect.com/science/article/pii/S0004370217300243>>.
DOI: 10.1016/j.artint.2017.02.004
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
Impact source: Journal Citation Reports **Category:** Artificial Intelligence
Impact index in year of publication: 3.034 **Journal in the top 25%:** Yes
- 4** Alessandro Farinelli; Manuele Bicego; Filippo Bistaffa; Sarvapali D. Ramchurn. A Hierarchical Clustering Approach to Large-scale Near-optimal Coalition Formation with Quality Guarantees. International Scientific Journal Engineering Applications of Artificial Intelligence. 59, pp. 170 - 185. Elsevier, 2017. Available on-line at: <<http://www.sciencedirect.com/science/article/pii/S0952197616302536>>.
DOI: 10.1016/j.engappai.2016.12.018
Type of production: Scientific paper **Format:** Journal
Corresponding author: No
Impact source: Journal Citation Reports **Category:** Artificial Intelligence
Impact index in year of publication: 2.819 **Journal in the top 25%:** Yes
- 5** Filippo Bistaffa; Alessandro Farinelli; Jesús Cerquides; Juan A. Rodríguez-Aguilar; Sarvapali D. Ramchurn. Algorithms for Graph-Constrained Coalition Formation in the Real World. ACM Transactions on Intelligent Systems and Technology. 8 - 4, ACM, 2017. Available on-line at: <<https://dl.acm.org/citation.cfm?doid=3055535.3040967>>.

DOI: 10.1145/3040967

Type of production: Scientific paper

Format: Journal

Corresponding author: Yes

Impact source: Journal Citation Reports

Category: Artificial Intelligence

Impact index in year of publication: 2.973

Journal in the top 25%: Yes

- 6** Filippo Bistaffa; Nicola Bombieri; Alessandro Farinelli. An Efficient Approach for Accelerating Bucket Elimination on GPUs. IEEE Transactions on Cybernetics. 47 - 11, pp. 3967 - 3979. IEEE, 2017. Available on-line at: <<http://ieeexplore.ieee.org/document/7536134/>>.

DOI: 10.1109/TCYB.2016.2593773

Type of production: Scientific paper

Format: Journal

Corresponding author: Yes

Impact source: Journal Citation Reports

Category: Artificial Intelligence

Impact index in year of publication: 8.803

Journal in the top 25%: Yes

- 7** Michele Roncalli; Filippo Bistaffa; Alessandro Farinelli. Decentralized Power Distribution in the Smart Grid with Ancillary Lines. Mobile Networks and Applications. pp. 1 - 9. Springer, 2017. Available on-line at: <<https://link.springer.com/article/10.1007/s11036-017-0893-y>>.

DOI: 10.1007/s11036-017-0893-y

Type of production: Scientific paper

Format: Journal

Corresponding author: No

Impact source: Journal Citation Reports

Category: Computer Science, Hardware & Architecture

Impact index in year of publication: 2.497

Journal in the top 25%: Yes

Works submitted to national or international conferences

- 1** **Title of the work:** Heterogeneous Teams for Homogeneous Performance

Name of the conference: International Conference on Principles and Practice of Multi-Agent Systems (Rank B)

Type of event: Conference

Corresponding author: No

City of event: Tokyo, Japan

Date of event: 29/10/2018

Type of contribution: Scientific book or monograph

Ewa Andrejczuk; Filippo Bistaffa; Christian Blum; Juan Rodríguez-Aguilar; Carles Sierra. pp. 89 - 105. 2018. Available on-line at: <https://link.springer.com/chapter/10.1007/978-3-030-03098-8_6>.

DOI: 10.1007/978-3-030-03098-8_6

- 2** **Title of the work:** A Simulation Tool for Large-Scale Online Ridesharing

Name of the conference: International Conference on Autonomous Agents and Multiagent Systems (Rank A*)

Type of event: Conference

Corresponding author: Yes

City of event: Stockholm, Stockholm, Sweden

Date of event: 10/07/2018

Organising entity: IFAAMAS

Type of contribution: Scientific book or monograph

Filippo Bistaffa; Juan Rodríguez-Aguilar; Jesús Cerquides; Christian Blum. pp. 1797 - 1799. 2018. Available on-line at: <<https://dl.acm.org/citation.cfm?id=3237981>>.



- 3** **Title of the work:** Solving the Synergistic Team Composition Problem
Name of the conference: International Conference on Autonomous Agents and Multiagent Systems (Rank A*)
Type of event: Conference
Corresponding author: No
City of event: Stockholm, Stockholm, Sweden
Date of event: 10/07/2018
Organising entity: IFAAMAS
Type of contribution: Scientific book or monograph
Ewa Andrejczuk; Filippo Bistaffa; Christian Blum; Juan Rodríguez-Aguilar; Carles Sierra. pp. 1853 - 1855. 2018. Available on-line at: <<https://dl.acm.org/citation.cfm?id=3238001>>.
- 4** **Title of the work:** CUBE: A CUDA Approach for Bucket Elimination on GPUs
Name of the conference: European Conference on Artificial Intelligence (Rank A)
Type of event: Conference
Corresponding author: Yes
City of event: The Hague, Zuid-Holland, Holland
Date of event: 29/08/2016
Organising entity: EurAI
Type of contribution: Scientific book or monograph
Filippo Bistaffa; Nicola Bombieri; Alessandro Farinelli. pp. 125 - 132. 2016. Available on-line at: <<http://ebooks.iospress.nl/publication/44750>>.
DOI: 10.3233/978-1-61499-672-9-125
- 5** **Title of the work:** Recommending Fair Payments for Large-Scale Social Ridesharing
Name of the conference: ACM Conference on Recommender Systems (Rank B)
Type of event: Conference
Corresponding author: Yes
City of event: Vienna, Austria
Date of event: 16/09/2015
Organising entity: ACM
Type of contribution: Scientific book or monograph
Filippo Bistaffa; Alessandro Farinelli; Georgios Chalkiadakis; Sarvapali D. Ramchurn. pp. 139 - 146. Available on-line at: <<http://dl.acm.org/citation.cfm?doid=2792838.2800177>>.
DOI: 10.1145/2792838.2800177
- 6** **Title of the work:** Sharing Rides with Friends: a Coalition Formation Algorithm for Ridesharing
Name of the conference: AAI Conference on Artificial Intelligence (Rank A*)
Type of event: Conference
Corresponding author: Yes
City of event: Austin, United States of America
Date of event: 25/01/2015
Organising entity: AAI
Type of contribution: Scientific book or monograph
Filippo Bistaffa; Alessandro Farinelli; Sarvapali D. Ramchurn. pp. 608 - 614. 2015. Available on-line at: <<http://www.aaai.org/ocs/index.php/AAAI/AAAI15/paper/view/9622>>.
- 7** **Title of the work:** Optimising Memory Management for Belief Propagation in Junction Trees using GPGPUs
Name of the conference: IEEE International Conference on Parallel and Distributed Systems (Rank B)
Type of event: Conference



Corresponding author: Yes

City of event: Hsinchu, Taiwan

Date of event: 16/12/2014

Organising entity: IEEE

Type of contribution: Scientific book or monograph

Filippo Bistaffa; Alessandro Farinelli; Nicola Bombieri. pp. 526 - 533. 2014. Available on-line at: <<http://ieeexplore.ieee.org/document/7097850>>.

DOI: 10.1109/padsw.2014.7097850

- 8** **Title of the work:** Anytime Coalition Structure Generation on Synergy Graphs
Name of the conference: International Conference on Autonomous Agents and Multiagent Systems (Rank A*)
Type of event: Conference
Corresponding author: Yes
City of event: Paris, Île de France, France
Date of event: 05/05/2014
Organising entity: IFAAMAS
Type of contribution: Scientific book or monograph
Filippo Bistaffa; Alessandro Farinelli; Jesús Cerquides; Juan Rodríguez-Aguilar; Sarvapali D. Ramchurn. pp. 13 - 20. 2014. Available on-line at: <<http://dl.acm.org/citation.cfm?id=2615737>>.
- 9** **Title of the work:** Anytime Coalition Structure Generation on Scale-Free and Community Networks
Name of the conference: International Joint Workshop on Optimisation in Multiagent Systems and Distributed Constraint Reasoning (Rank W)
Type of event: Workshop
Corresponding author: Yes
City of event: Paris, Île de France, France
Date of event: 05/05/2014
Organising entity: IFAAMAS
Type of contribution: Scientific book or monograph
Filippo Bistaffa; Alessandro Farinelli; Jesús Cerquides; Juan Rodríguez-Aguilar; Sarvapali D. Ramchurn. 2014.
- 10** **Title of the work:** Parallel Algorithms for Hard Combinatorial Optimisation Problems in Multi-Agent Systems (Doctoral Consortium)
Name of the conference: International Conference on Autonomous Agents and Multiagent Systems (Rank A*)
Corresponding author: Yes
City of event: Paris, Île de France, France
Date of event: 05/05/2014
Organising entity: IFAAMAS
Type of contribution: Scientific book or monograph
Filippo Bistaffa. pp. 1717 - 1718. Available on-line at: <<http://dl.acm.org/citation.cfm?id=2616142>>.
- 11** **Title of the work:** A Fast Approach to Form Core-Stable Coalitions Based on a Dynamic Model
Name of the conference: IEEE International Joint Conferences on Web Intelligence and Intelligent Agent Technologies (Rank B)
Type of event: Conference
Corresponding author: Yes
City of event: Atlanta, United States of America
Date of event: 17/11/2013
Organising entity: IEEE



Type of contribution: Scientific book or monograph

Filippo Bistaffa; Alessandro Farinelli. pp. 122 - 129. 2013. Available on-line at: <http://ieeexplore.ieee.org/document/6690780>.

DOI: 10.1109/WI-IAT.2013.100

- 12** **Title of the work:** Coalitional Energy Purchasing in the Smart Grid
Name of the conference: IEEE International Energy Conference & Exhibition
Type of event: Conference
Corresponding author: No
City of event: Firenze, Toscana, Italy
Date of event: 09/09/2012
Organising entity: IEEE
Type of contribution: Scientific book or monograph
Meritxell Vinyals; Filippo Bistaffa; Alessandro Farinelli; Alex Rogers. pp. 848 - 853. 2012. Available on-line at: <http://ieeexplore.ieee.org/document/6348270>.
DOI: 10.1109/energycon.2012.6348270
- 13** **Title of the work:** Decentralised Stable Coalition Formation Among Energy Consumers in the Smart Grid (demonstration)
Name of the conference: International Conference on Autonomous Agents and Multiagent Systems (Rank A*)
Type of event: Conference
Corresponding author: Yes
City of event: Valencia, Valencian Community, Spain
Date of event: 04/06/2012
Organising entity: IFAAMAS
Type of contribution: Scientific book or monograph
Filippo Bistaffa; Alessandro Farinelli; Meritxell Vinyals; Alex Rogers. pp. 1461 - 1462. 2012. Available on-line at: <http://dl.acm.org/citation.cfm?id=2344061>.
- 14** **Title of the work:** Stable Coalition Formation Among Energy Consumers in the Smart Grid
Name of the conference: International Workshop on Agent Technologies for Energy Systems (Rank W)
Corresponding author: No
City of event: Valencia, Valencian Community, Spain
Date of event: 04/06/2012
Organising entity: IFAAMAS
Type of contribution: Scientific book or monograph
Meritxell Vinyals; Filippo Bistaffa; Alessandro Farinelli; Alex Rogers. 2012.



R&D management and participation in scientific committees

Organization of R&D activities

- 1 Title of the activity:** Program chair for AAAI Conference on Artificial Intelligence, AAAI (A*)
- 2 Title of the activity:** Program chair for European Conference on Artificial Intelligence, ECAI (A)
- 3 Title of the activity:** Program chair for International Joint Conference Conference on Artificial Intelligence, IJCAI (A*)
- 4 Title of the activity:** Program chair for International Workshop on Optimisation in Multiagent Systems, OptMAS
- 5 Title of the activity:** Program chair for International Workshop on Teams in Multiagent Systems, TEAMAS
- 6 Title of the activity:** Reviewer for Artificial Intelligence, AIJ (Q1)
- 7 Title of the activity:** Reviewer for IEEE Transactions on Cybernetics, IEEE CYB (Q1)
- 8 Title of the activity:** Reviewer for RoboCup International Symposium

Other achievements

Stays in public or private R&D centres

- 1 Entity:** University of Southampton **Type of entity:** University
Faculty, institute or centre: ECS Department
City of entity: Southampton, Hampshire and Isle of Wight, United Kingdom
Start-End date: 01/06/2014 - 31/03/2015
Goals of the stay: Guest
Provable tasks: Research of AI methods for sustainable urban commuting
- 2 Entity:** IIIA-CSIC **Type of entity:** University Research Institute
City of entity: Barcelona, Catalonia, Spain
Start-End date: 01/06/2013 - 30/06/2013



Goals of the stay: Guest

Provable tasks: Research of AI methods for collective formation

Obtained grants and scholarships

- 1** **Name of the grant:** H2020-MSCA-IF-2016
City awarding entity:
Aims: Post-doctoral
Awarding entity: Comisión Europea **Type of entity:** EU
Amount of the grant: 158.121 €
Conferral date: 16/06/2017 **Duration:** 2 years
End date: 15/06/2019
Entity where activity was carried out: Instituto de Investigación en Inteligencia Artificial
- 2** **Name of the grant:** Doctoral grant
City awarding entity:
Awarding entity: Cariverona Foundation
Amount of the grant: 41.000 €
Conferral date: 01/01/2013 **Duration:** 3 years
End date: 31/12/2015
Entity where activity was carried out: University of Verona
Faculty, institute or centre: Department of Computer Science
- 3** **Name of the grant:** Juan de la Cierva (1º en "Ciencias de la Computación y Tecnología Informática", renunciado)
City awarding entity:
Aims: Post-doctoral
Awarding entity: Ministerio de Ciencia e Innovación **Type of entity:** State agency
Amount of the grant: 50.000 €
Conferral date: 07/11/2017 **Duration:** 2 years