Georgia Fargetta, Ph.D.

🖂 georgia.fargetta@unict.it

- https://www.dmi.unict.it/fargetta/index.html
- b https://orcid.org/0000-0002-6444-1564

Georgia Fargetta was born in Milan (Italy) on July 9, 1995. She earned her Bachelor's degree in Mathematics in 2017 and her Master's degree in Mathematics in 2019 from the University of Catania. In early 2018, she began collaborating with the Operations Research Group at the Department of Mathematics and Computer Science at the University of Catania, where she developed a keen interest in research topics related to Game Theory, Variational Inequalities, and Nash Equilibria.

From 2019 to 2022, she pursued her Ph.D. at the same department under the supervision of Prof. Mario F. Pavone and co-supervision of Prof. Laura R. M. Scrimali, focusing on optimization techniques with a specific emphasis on metaheuristic algorithms.

From 2019 to 2023, she collaborated with the Complex Intelligence System (CIS) Research Group at the Department of Mathematics and Computer Science at the University of Catania, delving into research areas such as Game Theory, Variational Inequalities, Metaheuristics, flow optimization on networks, integer and continuous optimization, Nash Equilibria, and agent behavior optimization.

From 2022 to 2023, she worked as a Research Fellow (MAT/09) under the supervision of Prof. Patrizia Daniele.

Currently, she has authored 16 scientific publications and has participated in numerous international scientific events. In 2021, she was selected by EURO WISDOM as the winner of the Young Women for Operational Research in Europe award. She currently holds a Research Fellow (INFO-01/A) position at the Department of Mathematics and Computer Science, within the Image Processing Laboratory (IPLab) Research Group, where she focuses on Adversarial Machine Learning and Computer Vision.

Current Position

01/08/2023-31/07/2026	Research Fellow (INFO-01/A) Local project code: PNRR MUR project PE0000013-FAIR Beneficiary/Implementing Body: University of Catania Implementing Body/Contractor: University of Catania University hosting the assignee: Catania, Department of Mathematics and Computer Science, Italy
	Supervisor: Prof. Sebastiano Battiato
As of 17/09/2024	Google Scholar: h-index 6; documents 20; citations 110. Scopus: h-index 4; documents 16; citations 600.

Research Position

31/05/2022-31/07/2023	Post-Doc Research Grant
	Project Giustizia Smart: Strumenti e modelli per ottimizzare il lavoro dei giu-
	dici - JustSmart

Education

2019 – 2022 Ph.D. in Computer Science - 35th Cycle (International Doctorate) University of Catania, Department of Mathematics and Computer Science, Italy
 Supervisors: Prof. Mario F. Pavone & Prof. Laura R.M. Scrimali
 Thesis: Variational Inequality and Metaheuristic approaches to model and investigate agents' strategies

Education (continued)

2017 - 2019	Master's Degree in Mathematics (110 cum Laude) University of Catania, Depart-
	ment of Mathematics and Computer Science, Italy
	Advisor: Prof. Laura R.M. Scrimali
	Thesis: A game theory approach to some models of online content diffusion
2014 – 2017	Bachelor's Degree in Mathematics University of Catania, Department of Mathe-
	matics and Computer Science, Italy
	Advisors: Prof. Laura R.M. Scrimali & Prof. Filippo Stanco
	Thesis: Equilibrium Strategies and Algorithms in the Game of Chess

International Experiences

May-August 2021

University of Guelph, Department of Mathematics and Statistics, Canada Supervisor: Prof. Monica Cojocaru

Member of International Conference Program Committees

- 2024 ICAETA 2024 3rd International Conference On Advanced Engineering, Technology And Applications, May 24-25, 2024, University Of Catania, Italy
- 2022 OLA 2022 The International Conference in Optimization and Learning, Ortigia-Syracuse, Italy, 18-20 July 2022
 - MIC 2022 14th Metaheuristics International Conference, Ortigia-Syracuse, Italy, 11-14 July 2022
- 2021 OLA 2021 The International Conference in Optimization and Learning, University of Catania, Department of Mathematics and Computer Science, Italy, 21-23 June 2021
- 2018 **ODS 2018** International Conference on Optimization and Decision Science, Hotel Diodoro Taormina (ME), Italy, 10-13 September 2018

Organization of International Schools

- 2024 📕 IFOSS2024 International Forensics Summer School 3rd Edition July 2024
- 2021 MESS 2020+1 Metaheuristic Summer School, University of Catania, Department of Economics, Italy, 15-18 June 2021

Reviewer for Journals and International Conferences

2024

2023

- ACM MULTIMEDIA 2024 28 October 1 November 2024, Melbourne, Australia
- The 3rd Workshop on MultiMedia FORensics in the WILD, May 24-25, 2024 (MMFOR-WILD24) Organized in conjunction with ICPR2024 The 27th International Conference on Pattern Recognition, Kolkata, India,1-5 December 2024.
- **IEEE International Conference on Metrology for eXtended Reality, Artificial Intelligence and Neural Engineering, October 21-23, 2024**(MetroXRAINE24) - St Albans, Great Britain
- **3rd International Conference On Advanced Engineering, Technology And Applications, May 24-25, 2024** (ICAETA24) - University of Catania, Italy
- Mathematics, MDPI (Computer Science: Q2)
- International Journal of Systems Science, Taylor and Francis Ltd. (Computer Science: Q1)
 - International Journal of Systems Science, Taylor and Francis Ltd. (Computer Science: Q1)

Reviewer for Journals and International Conferences (continued)

2022 Metaheuristic International Conference (MIC2022) - 14th Metaheuristics International Conference, Ortigia-Syracuse, Italy, 11-14 July 2022

Invited International Seminars as Speaker

2024	Neural Optimization Machine Applied on Medical Supply Chain Network
	Invited Speaker at 8th International Conference on Mathematical Models & Computational Tech-
	niques in Science & Engineering, invited by Prof. Nikos E. Mastorakis
	Athens, Greece.
2022	A sustainable dynamic closed-loop supply chain network equilibrium for collectibles markets
	YW4OR Seminars organized by Prof. F. Sibel Salman and EURO WISDOM
	University of Istanbul, Turkey, College of Engineering Koc
	Two-Stage Stochastic Variational Inequality problems
	Invited Speaker at 32nd European Conference on Operational Research
	(EURO2022) - Aalto University, Espoo, Finland
2021	Stochastic equilibrium problems
	BTU Stochastics Seminars organized by Prof. Carsten Hartmann, Prof. Ralf Wunderlich, Dr.
	Omar Kebiri, Brandenburgische Technische Universität Cottbus-Senftenberg, Institute of

Participation and Oral Presentations at International Conferences

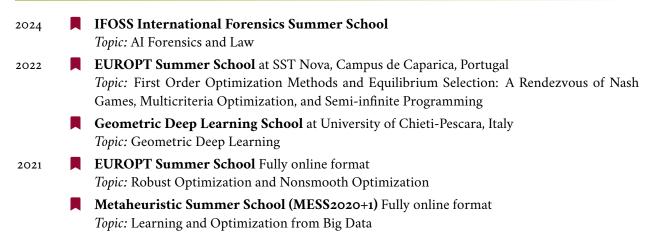
Mathematics, Chair of Stochastics and their Applications

2024	IEEE International Conference on Metrology for eXtended Reality, Artificial Intelli- gence and Neural Engineering, October 21-23, 2024 (MetroXRAINE24) - St Albans, Great Britain
	Neural Optimization Machine Applied on Medical Supply Chain Network 8th International Conference on Mathematical Models & Computational Techniques in Science & Engineering, June 1-3, 2024, (MMCTSE2024) Athens, Greece.
	3rd International Conference On Advanced Engineering, Technology And Applications, May 24-25, 2024 (ICAETA24) - University of Catania, Italy
2023	International Conference on Optimization and Decision Science (ODS2023) – Ischia (NA), Italy
2022	International Conference on Optimization and Decision Science (ODS2022) – Florence, Italy
	18th International Workshop on Continuous Optimization (EUROPT2022) – Almada, Portugal
	The International Conference in Optimization and Learning (OLA2022) – Syracuse, Italy
	14th Metaheuristics International Conference (MIC2022) – Syracuse, Italy
	32nd European Conference on Operational Research (EURO2022) – Espoo, Finland
	6th AIROYoungWorkshop on Operation Research and Data Science in Public Services (AIROYW22) – Rome, Italy

Participation and Oral Presentations at International Conferences (continued)

	International Conference on Operation Research and Enterprise Systems (ICORES2022) – Online
2021	International Conference on Optimization and Decision Science (ODS2021) – Online
	The 22nd Conference of the International Federation of Operational Research Societies (IFORS2021) – Online
	31st European Conference on Operational Research (EURO2021) – Athens, Greece
	18th International Workshop on Continuous Optimization (EUROPT2021) – Online
	The International Conference in Optimization and Learning (OLA2021) – Online
2020	International Conference on Optimization and Decision Science (ODS2020) – Online
	International Conference on Bioinspired Methods and Their Applications (BIOMA2020) – Online
2019	Workshop: Machine Learning Day University of Catania, Italy (no talk)
	Workshop on Security Framework University of Catania, Italy (no talk)
2018	International Conference on Optimization and Decision Science (ODS2018) – Taormina (ME), Italy (no talk)

Participation in International Schools for Researchers



Participation in Doctoral Courses

2020–2021 📕 Analysis of Social Media Contents (PhD Course) - Prof. Alessandro Ortis - 18 hours

Research Projects

2023–2026	FAIR - PNRRPNRR MUR project PE0000013-FAIRProject Coordinator: Prof. Concetto SpampinatoInstitution: University of CataniaResearch Unit Leader: Prof. Sebastiano BattiatoRole: Participant (Research Fellow)
2022–2024	ACHILLES - ecosustAinable effiCient tecH-drIven Last miLE logiStics PRIN 2022 - Programs of Scientific Research of National Relevance Project Coordinator: Prof. Claudio Sterle Institution: University of Catania Research Unit Leader: Prof. Patrizia Daniele Role: Participant
2022-2023	Giustizia Smart: Strumenti e modelli per ottimizzare il lavoro dei giudici - <i>JustS-</i> <i>mart,</i> PON <i>Governance e Capacità Istituzionale 2014-2020.</i> CUP B25F2200000001. <i>PON GOV Just Smart Project Contact:</i> Prof. Enrico Camilleri, University of Palermo. <i>Role:</i> Research Fellow
2020–2022	MAMI-MED – Mamma & Bambino cohort: a Multisectoral Approach to Maternal and Child Health through the evaluation of Exposome in Women University Incentive Plan for Research 2020/2022 (Pia.ce.ri.). Granted by: University of Catania Leader: Prof. Sebastiano Battiato, University of Catania Role: Participant
2020-2021	Equilibrium Problems: Variational Methods and Game Theory <i>Granted by:</i> GNAMPA-INdAM <i>Leader:</i> Prof. Sofia Giuffrè, Mediterranean University of Reggio Calabria <i>Role:</i> Participant

Research Groups

2023–2024	Member of the IPLab (Image Processing Laboratory) Research Group
	University of Catania, Department of Mathematics and Computer Science, Italy
2018–2023	Member of the Operational Research Research Group University of Catania, Department of Mathematics and Computer Science, Italy
2019–2023	Member of the "Complex Intelligent System Research Group" https://www.dmi.unict.it/mpavone/cis-research-group/index.html University of Catania, Department of Mathematics and Computer Science, Italy

Membership in National Research Groups

2019–2023	Member of National Research Groups of the National Institute of Advanced Math-
	ematics
	GNAMPA – National Group for Mathematical Analysis, Probability, and their Applications,
	P.le Aldo Moro, 5 00185 Rome
2019–2024	Member Italian Association of Operational Research (AIRO) https://www.airo.org

Awards and Recognitions

2023 Rest International Doctoral Thesis Award in Operational Research Awarded among the 4 winning finalists at the "AIRO Young Dissertation Award" 2023.

Awards and Recognitions (continued)

2021 YoungWomen4OR2021 Award,

Selected as the winner of the award for young women in operational research in Europe. *YoungWomen4OR Award* established by EURO-WISDOM (The Association of European Operational Research Societies - Women in Society Doing Operational Research and Management Science). Young Women for Operational Research 2021 - https://www.euro-online.org/web/ pages/1654/wisdom

Participation in Competitive Grant Calls



GNAMPA-INdAM Call

Grant recipient – GNAMPA-INdAM Call of 02/09/2022: grant for participation in the *International Conference on Optimization and Decision Science*, Ischia, Italy (4-7 September 2023).

Accommodation Grant for the 6th AIROYoung Workshop

Grant for participation, by invitation from the Italian Association of Operational Research (AIRO), at the *6th AIROYoung Workshop*, *23-25 February 2022*, *Rome*, *Italy*

2019-2022 Winner **Computer Science PhD Call XXXV Cycle** with research fellowship funded by the University of Catania, Department of Mathematics and Computer Science.

Scientific Publications

Journal Articles

C. Crespi, R. A. Scollo, G. Fargetta, and M. Pavone, "A sensitivity analysis of parameters in an agent-based model for crowd simulations," *Applied Soft Computing, (Computer Science: Q1*), vol. 146, p. 110 684, 2023.

G. Fargetta and L. R. Scrimali, "A sustainable dynamic closed-loop supply chain network equilibrium for collectibles markets," *Computational Management Science, Springer, (Computer Science:* **Q3**), vol. 20, no. 1, p. 19, 2023.

R. A. Scollo, A. G. Spampinato, G. Fargetta, V. Cutello, and M. Pavone, "Discovering entities similarities in biological networks using a hybrid immune algorithm," *Informatics, MDPI, (Computer Science:* **Q2**), vol. 10, no. 1, p. 18, 2023.

G. Fargetta, A. Maugeri, and L. Scrimali, "A stochastic nash equilibrium problem for medical supply competition," *Journal of Optimization Theory and Applications, Springer, (Applied Mathematics/Control and Optimization:* **Q1**), vol. 193, no. 1-3, pp. 354–380, 2022.

G. Fargetta and L. Scrimali, "Optimal emergency evacuation with uncertainty," *Springer Optimization and Its Applications, (Control and Optimization:* **Q3**), pp. 261–279, 2022.

G. Fargetta and L. R. Scrimali, "Generalized nash equilibrium and dynamics of popularity of online contents," *Optimization Letters, Springer, (Control and Optimization:* **Q1**), vol. 15, no. 5, pp. 1691–1709, 2021.

V. Cutello, G. Fargetta, M. Pavone, and R. A. Scollo, "Optimization algorithms for detection of social interactions," *Algorithms, MDPI, (Computer Science:* **Q3**), vol. 13, no. 6, p. 139, 2020.

Conference Proceedings

C. Crespi, G. Fargetta, M. Pavone, and R. A. Scollo, "An agent-based model for crowd simulation," in *Artificial Life and Evolutionary Computation: 16th Italian Workshop, WIVACE 2022, Gaeta, Italy, September 14–16, 2022, Revised Selected Papers*, Springer, 2023, pp. 15–26.

C. Crespi, R. A. Scollo, G. Fargetta, and M. Pavone, "How a different ant behavior affects on the performance of the whole colony," in *Metaheuristics: 14th International Conference, MIC 2022, Syracuse, Italy, July 11–14, 2022, Proceedings*, Springer, 2023, pp. 187–199.



G. Fargetta and L. Scrimali, "Time-dependent generalized nash equilibria in social media platforms," in *Optimization and Decision Science: Operations Research, Inclusion and Equity*, Springer Nature Switzerland, 2023, pp. 3–13.

C. Crespi, G. Fargetta, M. Pavone, and R. A. Scollo, "An agent-based model to investigate different behaviours in a crowd simulation," in *Bioinspired Optimization Methods and Their Applications: 10th International Conference, BIOMA 2022, Maribor, Slovenia, November 17–18, 2022, Proceedings, Springer, 2022, pp. 1–14.*

G. Fargetta and L. Scrimali, "A multi-stage integer linear programming problem for personnel and patient scheduling for a therapy centre.," in *The 11th International Conference on Operations Research and Enterprise Systems (ICORES 2022)*, 2022, pp. 354–361.

G. Fargetta and L. Scrimali, "Closed-loop supply chain network equilibrium with online second-hand trading," in *Optimization in Artificial Intelligence and Data Sciences: ODS, First Hybrid Conference, Rome, Italy, September 14-17, 2021*, Springer, 2022, pp. 117–127.

7 G. Fargetta and L. Scrimali, "A two-stage variational inequality for medical supply in emergency management," in *Optimization and Decision Science: ODS, Virtual Conference, November 19, 2020,* Springer, 2021, pp. 91–102.

C. Crespi, G. Fargetta, M. Pavone, R. A. Scollo, and L. Scrimali, "A game theory approach for crowd evacuation modelling," in *Bioinspired Optimization Methods and Their Applications: 9th International Conference, BIOMA 2020, Brussels, Belgium, November 19–20, 2020, Proceedings 9*, Springer, 2020, pp. 228–239.

G. Fargetta and L. Scrimali, "A game theory model of online content competition," in *Advances in Optimization and Decision Science for Society, Services and Enterprises: ODS, Genoa, Italy, September 4-7, 2019,* Springer, 2019, pp. 173–184.

Other Publications

Tesi di Dottorato di Ricerca:

Variational Inequality and Metaheuristic approaches to model and investigate agents' strategies. Tesi di Dottorato in Informatica (International Doctor) (XXXV Ciclo). Supervisor: Prof. Mario F. Pavone, Co-Supervisor: Prof.ssa Laura R.M. Scrimali, Università degli Studi di Catania, 13/03/2023.

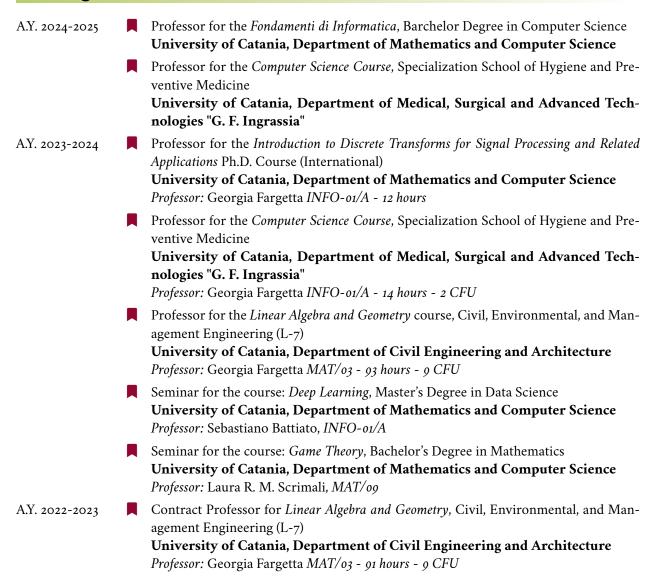
Abstract

Fargetta, G., Scrimali, L. Evolutionary Generalized Nash equilibrium for the competition for the diffusion of online contents, abstract on "6th AIROYoungWorkshop on Operation Research and Data Science in Public Services (2022)".

In fase di revisione o pubblicazione

- Fargetta, G., Ortis, A., Battiato, S. Neural Optimization for Pharmaceutical Transportation Under Stressful Conditions accepted for the IEEE International Conference on Metrology for eXtended Reality, Artificial Intelligence and Neural Engineering
- Fargetta, G., Ortis, A., Battiato, S., Scrimali, L. Analyzing Interactions in Donation-Based Live Streaming Platforms: A Multi-Leader-Follower Game Approach submitted to Social Media Analysis and Mining (SMAM) (*Computer Science* Q2) (2024).
- Fargetta, G., Ortis, A., Anile, S., Battiato, S. Evaluation of CNNs for Wildcats Classification in Real World Scenario accepted for the **3rd International Conference On Advanced Engineering, Technology And Applications** (ICAETA24)
- Fargetta, G., Scrimali, L.R.M. A tripartite evolutionary game for strategic decision-making in live-streaming e-commerce submitted to Journal of Computational Science (JCS) (*Computer Science Q2*) (2024).

Teaching Activities



Teaching Activities (continued)

	 Seminar for the course: Mathematical Methods for Optimization, Master's Degree in Mathematics University of Catania, Department of Mathematics and Computer Science Professor: Laura R. M. Scrimali, MAT/09
A.Y. 2021-2022	 Seminars and exercises for the course: Mathematical Methods for Optimization, Master's Degree in Mathematics University of Catania, Department of Mathematics and Computer Science Professor: Laura R. M. Scrimali, MAT/09
A.Y. 2020-2021	 Seminars and exercises for the course: Principles of Computer Science and Mathematics applied to Biotechnology, Bachelor's Degree in Biotechnology University of Catania, Department of Biotechnology Professor: Mario F. Pavone, INFO-01/A
	Seminars and exercises for the course: <i>Mathematical Methods for Optimization</i> , Master's Degree in Mathematics

University of Catania, Department of Mathematics and Computer Science *Professor:* Laura R. M. Scrimali *MAT/09*

Co-Supervision of Thesis

AY. 2023–2024	Thesis Title: Deep Learning Strategies for WildCats Image Classification in Real World Scenario Thesis Candidate: Melika Kalbasi, Master's Degree in Data Science Supervisor: Prof. Sebastiano Battiato Co-Supervisor: Dr. Georgia Fargetta
	Thesis Title: Analisi e implementazione di algoritmi per il gioco degli scacchi Thesis Candidate: Gianluca Caruso, Master's Degree in Mathematics Supervisor: Prof. Laura R.M. Scrimali Co-Supervisor: Dr. Georgia Fargetta
A.Y. 2020–2021	 Thesis Title: Un modello di ottimizzazione per la schedulazione dei turni, nell'ambito di un progetto integrato nel contesto di un centro di riabilitazione ex art.26 Thesis Candidate: Giovanni Russo, Master's Degree in Rehabilitation Sciences of Health Professions, Department of Medical, Surgical and Advanced Technologies Sciences. Supervisor: Prof. Laura R.M. Scrimali Co-Supervisor: Dr. Georgia Fargetta

Tutoring Activities

A.Y. 2022–2023	Qualified Tutor for the Linear Algebra and Geometry Course, Bachelor's Degree in Computer Science (A-Z), University of Catania, 60 hours
A.Y. 2021–2022	Tutor for the Linear Algebra and Geometry Course, Bachelor's Degree in Civil, Environmental, and Management Engineering, University of Catania, 90 hours
A.Y. 2020–2021	Tutor for the Algebra and Geometry Course, Bachelor's Degree in Civil, Environmen- tal, and Management Engineering, University of Catania, 55 hours
	Tutor for the Signals and Probability Theory Course, Department of Electrical, Elec- tronic, and Computer Engineering, University of Catania, 100 hours

Tutoring Activities (continued)

	Mathematics Olympiads Tutor, Department of Mathematics and Computer Science, University of Catania, 40 hours
A.Y. 2019–2020	Mathematics Olympiads Tutor, Department of Mathematics and Computer Science, University of Catania, 20 hours
	Basic Mathematics Tutor for Remedial Courses, Bachelor's Degree in Computer Sci- ence, Department of Mathematics and Computer Science, University of Catania, 50 hours
A.Y. 2018–2019	Basic Mathematics Tutor for Remedial Courses, Bachelor's Degree in Computer Science, Department of Mathematics and Computer Science, University of Catania, 40 hours
A.Y. 2017–2018	Tutor for the Mathematical Analysis I Course, Bachelor's Degree in Mathematics, Department of Mathematics and Computer Science, University of Catania, 20 hours