Matteo Castiglioni

Curriculum Vitae et Studiorum

Personal Information

Date of Birth	June 21, 1994
Place of Birth	Tradate, Varese
Citinzenship	Italian
Email	matcasti00@gmail.com

Work Information

University	Politecnico di Milano
Department	Dipartimento di Elettronica, Informazione e Bioingegneria (DEIB)
Address	Via Golgi 39, 20133, Milano (MI), Italy
Email	matteo.castiglioni@polimi.it
Webpage	https://castiglionimatteo.github.io

Highlights

Matteo Castiglioni is an assistant professor (RTD-A) at the Department of Electronics, Information, and Bioenginnering of Politecnico di Milano. His research focuses on artificial Intelligent, algorithmic game theory and online learning. In particular, his research aims to combine machine learning techniques with economic paradigms to build strategic agents able to act in complex multi-agent environments. He got his PhD in Information Thecnology with laude from Politecnico di Milano with a thesis on asymmetric-information games and Bayesian persuasion under the supervision of Nicola Gatti. His Phd thesis was awarded the *Premio Cadoli*, awarded by AIxIA to the best Italian PhD thesis on artificial intelligence. He is the author of more than 20 peer reviewed research papers. In particular, he published in the premier AI journals *Artificial Intelligence* (5) and *Journal of Aritificial Intelligence research* (1), and in the premier AI conferences AAAI (6), IJCAI (4), ICML (3), NeurIPS (3), EC (2), and AAMAS (1). He serves as a program committee member in several top-tier conference. He also tough several courses (as teaching assistant) on algorithmic game theory at Politecnico di Milano. He participated in several industrial and research projects as a research scientist.

Experience

2023 **Assistant Professor (RTD-A)**, *Politecnico di Milano*, Milano.

2022–2023 **Postdoctoral Researcher**, *Politecnico di Milano*, Milano.

Education

2018 – 2022 **PhD in Computer Science and Engineering**, *Politecnico di Milano*, Milano, *Advisor*: Prof. Nicola Gatti.

2016 – 2018 **MSc in Computer Science and Engineering**, *Politecnico di Milano*, Milano,
Thesis: Leadership in singleton congestion games : what is hard and what is easy
Advisor: Prof. Nicola Gatti.
Mark *110 cum laude/110*

2013 – 2016 **BSc in Computer Science and Engineering**, *Politecnico di Milano*, Milano.
Mark *110/110*

Research Interests

His research focuses on *Artificial Intelligence*, especially Algorithmic Game Theory, Allocation Problems and Incentives, Social Influence, and Online Learning.

Algorithmic Game Theory He is intrested in the computational complexity of finding equilibria, and the development of efficient algorithm to compute equilibria both in full-information and online problems. In particular, his research focuses on the computation of equilibria in leader-follower games, Bayesian persuasion, and contract theory. Moreover, he is intrested in the design of no-regret online learning algorithms for these problems.

Allocation Problems and Incentives He is intrested in the design of incentive compatible mechanisms for allocation problems, *e.g.,* auctions, and on the design of utility-maximizing algorithms for a single agent that takes part to these mechanisms, *e.g.,* bidders in auctions. His research mainly focuses on the design of efficient bidding strategies in repeated auctions with long-term constraints, *e.g.*, budget and return on investment constraints, using online learning algorithms.

Social Influence He is intrested in the study of the diffusion of information in social networks. He investigated the problem of manipulating elections and voting scenarios by persuasion and social influence. He provided the conditions under which the manipulation is affordable and when it is not, showing that computing the optimal manipulation is a computational intractable problem in basic settings.

Online Learning He is intrested in the design of online learning problems. In particular, his research focuses on the design of no-regret algorithms for game theory problems. Moreover, he his intrested in online problems with uncertain long-term safety constraints.

Scientific Production and Metrics

Scientific Productivity Author of 7 journal papers: 5 AIJ, 1 JAIR, 1 Algorithmica, all top ranked Q1 journal papers (SCIMAGO).
Author of 23 publications on peer-reviewed international conferences: 19 A++, 3 A+, 1 A according to GGS rating including 6 AAAI, 4 IJCAI, 6 ICML, 3 NeurIPS, 3 EC, 1 AAMAS.

publication impact: Based on Google Scholar: h-index 10 citations 284
Based on Scopus: h-index 6 citations 90

Awards and Recognition

Winner of Premio per NeoDottori di Ricerca Marco Cadoli 2022 (AIxIA)
Award for the best Italian PhD thesis on artificial intelligence.

Member of the ELLIS society
within the Milan ELLIS unit.

National Doctoral Scholarship
Three-years doctoral scholarship sponsored by the Ministry of Education, Universities and Research.

Research and Industrial Projects

2019 – 2022
PRIN 2017 ALGADIMAR, Ministry of Education, Universities and Research, Italy.
Description:Research project.
Role:Research scientist.

2022 – 2022
Digital Advertising in the Metaverse, Locify Inc., USA.
Description:Industrial project.
Role:Research scientist.

2019 – 2020
BidMatic, *AdsHotel*.
Description: Industrial project.
Role:Research scientist.

2019 – 2020
RocketAvoid, *Analisi & Valore and Marina Militare*.
Description:Industrial project.
Role:Research scientist.

Publications

Conference Papers

Castiglioni M., Marchesi A., Gatti N.
Online Multi-Agent Contract Design: How to Commission Multiple Agents with Individual Outcome
The 24th ACM Conference on Economics and Computation, EC 2022, London, UK

Cacciamani F., Castiglioni M., Gatti N.
Online Mechanism Design for Information Acquisition
The 40th International Conference on Machine Learning, ICML 2023, Honolulu, USA

Bernasconi M., Castiglioni M., Marchesi A., Trovò F., Gatti N.
Constrained Phi-Equilibria
The 40th International Conference on Machine Learning, ICML 2023, Honolulu, USA

Bernasconi M, Castiglioni M., Celli A., Marchesi A., Celli A. Gatti N., Trovò F.
Optimal Rates and Efficient Algorithms for Online Bayesian Persuasion
The 40th International Conference on Machine Learning, ICML 2023, Honolulu, USA

Castiglioni M., Celli A., Marchesi A., Romano G., Gatti N.
A Unifying Framework for Online Optimization with Long-Term Constraints
36th Conference on Neural Information Processing Systems, NeurIPS 2022, New Orleans, USA

Bernasconi M., Castiglioni M., Marchesi A., Gatti N., Trovò F.
Sequential Information Design: Learning to Persuade in the Dark
36th Conference on Neural Information Processing Systems, NeurIPS 2022, New Orleans, USA

Castiglioni M., Marchesi A., Gatti N.
Designing Menus of Contracts Efficiently: the Power of Randomization
The 23rd ACM Conference on Economics and Computation, EC 2022, Boulder, USA

Castiglioni M., Celli A., Kroer C.
Online Learning with Knapsacks: the Best of Both Worlds
The 39th International Conference on Machine Learning, ICML 2022, Baltimora, USA

Bernasconi M., Cacciamani F., Castiglioni M., Marchesi A., Gatti N., Trovò F.
Safe Learning in Tree-Form Sequential Decision Making: Handling Hard and Soft Constraints
The 39th International Conference on Machine Learning, ICML 2022, Baltimora, USA

Bacchiocchi F., Castiglioni M., Marchesi A., Romano G., Gatti N.
Public Signaling in Bayesian Ad Auctions
The 31st International Joint Conference on Artificial Intelligence, IJCAI 2022, Vienna, Austria

Romano G., Castiglioni M., Marchesi A., Gatti N.
The Power of Media Agencies in Ad Auctions: Improving Utility through Coordinated Bidding
The 31st International Joint Conference on Artificial Intelligence, IJCAI 2022, Vienna, Austria

Castiglioni M., Marchesi A., Gatti N.
Bayesian Persuasion Meets Mechanism Design: Going Beyond Intractability with Type Reporting
The 21st International Conference on Autonomous Agents and Multiagent Systems, AAMAS 2022, Virtual conference

Castiglioni M., Romano G., Marchesi A., Gatti N.
Signaling in Posted Price Auctions
The 36th AAAI Conference on Artificial Intelligence, AAAI 2022, Virtual conference

Castiglioni M., Ferraioli D., Gatti N., Marchesi A., Romano G.
Efficiency of Ad Auctions with Price Displaying
The 36th AAAI Conference on Artificial Intelligence, AAAI 2022, Virtual conference

Castiglioni M., Marchesi A., Celli A. Gatti N.
Multi-Receiver Online Bayesian Persuasion
The 38th International Conference on Machine Learning, ICML 2021, Virtual conference

Castiglioni M., Marchesi A., Gatti N.
Bayesian Agency: Linear Versus Tractable Contracts
The 22nd ACM Conference on Economics and Computation, EC 2021, Virtual conference

Castiglioni M., Celli A., Marchesi A., Gatti N.
Signaling in Bayesian Network Congestion Games: the Subtle Power of Symmetry
The 35th AAAI Conference on Artificial Intelligence, AAAI 2021, Virtual conference

Castiglioni M., Gatti N.
Persuading Voters in District-based Elections
The 35th AAAI Conference on Artificial Intelligence, AAAI 2021, Virtual conference

Castiglioni M., Celli A., Marchesi A., Gatti N.
Online Bayesian Persuasion
34th Conference on Neural Information Processing Systems, NeurIPS 2020, Virtual conference

Castiglioni M., Ferraioli D., Gatti N.
Election Control in Social Networks via Edge Addition or Removal
34th AAAI Conference on Artificial Intelligence, AAAI 2020, New York, USA

Castiglioni M., Celli A., Gatti N.
Persuading Voters: It's Easy to Whisper, It's Hard to Speak Loud
34th AAAI Conference on Artificial Intelligence, AAAI 2020, New York, USA

Castiglioni M., Marchesi A., Gatti N.
Be a Leader or Become a Follower:The Strategy to Commit to with Multiple Leaders
28th International Joint Conference on Artificial Intelligence, IJCAI 2019, Macao, China

Marchesi A., Castiglioni M., Gatti N.
Leadership in Congestion Games: Multiple User Classes and Non-Singleton Actions
28th International Joint Conference on Artificial Intelligence, IJCAI 2019, Macao, China

Journal Papers

Castiglioni M., Celli A., Gatti N.
Public bayesian persuasion: being almost optimal and almost persuasive
Algorithmica, 2023

Castiglioni M., Marchesi A., Gatti N.
Designing Menus of Contracts Efficiently: the Power of Randomization
Artificial Intelligence Journal, 2023

Castiglioni M., Celli A., Marchesi A., Gatti N.
Regret minimization in online Bayesian persuasion: Handling adversarial receiver's types under full and partial feedback models
Artificial Intelligence Journal, 2023

Castiglioni M., Marchesi A., Gatti N.
Bayesian Agency: Linear Versus Tractable Contracts
Artificial Intelligence Journal, 2022

Castiglioni M., Ferraioli D., Gatti N., Landriani G.
Election Manipulation on Social Networks: Seeding, Edge Removal, Edge Addition
Journal of Artificial Intelligence Research, 2021

Castiglioni M., Marchesi A., Gatti N.
Committing to Correlated Strategies with Multiple Leaders
Artificial Intelligence Journal, 2021

Castiglioni M., Marchesi A., Gatti N., Coniglio S.
Leadership in singleton congestion games: What is hard and what is easy
Artificial Intelligence Journal, 2019

Talks

Invited Talks

December. 2022 **Reducing the Gap between Theory and Applications in Algorithmic Bayesian Persuasion**
The 21st International Conference of the Italian Association for Artificial Intelligence, AIxIA 2202, Udine, Italy

Sep. 2022 **Bayesian Persuasion Meets Mechanism Design: Going Beyond Intractability with Type Reporting**
Ellis Workshop, Milan

Dec. 2020 **Online Bayesian Persuasion**
ALGADIMAR annual Meeting 2020, Virtual

Presentations at International Conferences

July. 2022 **Designing Menus of Contracts Efficiently: the Power of Randomization**
The 23rd ACM Conference on Economics and Computation, EC 2022, Boulder, USA

May. 2022 **Bayesian Persuasion Meets Mechanism Design: Going Beyond Intractability with Type Reporting**
The 21st International Conference on Autonomous Agents and Multiagent Systems, AAMAS 2022, Virtual conference

Jul. 2021 **Bayesian Agency: Linear Versus Tractable Contracts**
The 22nd ACM Conference on Economics and Computation, EC 2021, Virtual conference

Feb. 2021 **Signaling in Bayesian Network Congestion Games: the Subtle Power of Symmetry**
The 35th AAAI Conference on Artificial Intelligence, AAAI 2021, Virtual conference

Feb. 2021 **Persuading Voters in District-based Elections**
The 35th AAAI Conference on Artificial Intelligence, AAAI 2021, Virtual conference

Dec. 2020 **Online Bayesian Persuasion**
The 34th Conference on Neural Information Processing Systems, NeurIPS 2020, Virtual conference

Feb. 2020 **Election Control in Social Networks via Edge Addition or Removal**
The 34th AAAI Conference on Artificial Intelligence, AAAI 2020, New York, USA

Aug. 2019 **Leadership in Congestion Games: Multiple User Classes and Non-Singleton Actions**
The 28th International Joint Conference on Artificial Intelligence, IJCAI 2019, Macao, China

Editorial Activities

International Conferences

2020 **Program Committee Member**, *AAAI conference on Artificial Intelligence, AAAI*.

2022 **Program Committee Member**, *International Conference on Machine Learning, ICML*.

2022 **Program Committee Member**, *International Joint Conference on Artificial Intelligence, IJCAI*.

2022 **Program Committee Member**, *Conference on Neural Information Processing Systems, NeurIPS*.

2023 **Reviewer**, *ACM-SIAM Symposium on Discrete Algorithms, SODA*.

2023 **Reviewer**, *ACM Symposium on Theory of Computing, STOC*.

Students Supervision

MSc Students
- Giulia Landriani
- Giovanni Vignocchi
- Kevin Mussi
- Samuele Milanesi
- Edoardo Disarò
- Gabriele Aquaro
- Carlo Vitellio
- Francesco Bacchiocchi
- Federico Innocente
- Alberto Latino

Teaching Activities

Online Learning Applications, Politecnico di Milano, Milan.
M.Sc. in Computer Science and Engineering.
Professor during the accademic year 2022-2023.

Game Theory, Politecnico di Milano, Milan.
M.Sc. in Mathematical Engineering.
Teaching assistant during the accademic years 2021-2022, 2020-2021.

Game Theory, Politecnico di Milano, Milan.
M.Sc. in Computer Science and Engineering.
Teaching assistant during the accademic years 2019-2020.

Qualifications

TOEIC, Mark 940/990, Milan
Certificate of English language

Languages

Italian	Native	*Mother Tongue*
English	Fluent	*Daily practice, all work performed in English*

Skills

Programming Languages	Python, Java, C, Matlab, Ampl

Autorizzo al trattamento dati ai sensi del GDPR 2016/679 del 27 aprile 2016 (Regolamento Europeo relativo alla protezione delle persone fisiche per quanto riguarda il trattamento dei dati personali). Autorizzo la pubblicazione del Curriculum Vitae sul sito istituzionale del Politecnico di Milano (sez. Amministrazione Trasparente) in ottemperanza al D. Lgs n. 33 del 14 marzo 2013 (e s.m.i.).