Alberto Marchesi

Curriculum Vitae et Studiorum

Personal Information

Date of Birth	September 22, 1992
Place of Birth	Piacenza, Italy
Citinzenship	Italian

Work Information

University	Politecnico di Milano
Department	Dipartimento di Elettronica, Informazione e Bioingegneria (DEIB)
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Highlights

Alberto Marchesi is a postdoctoral reserach assistant at the Department of Electronics, Information, and Bioenginnering of Politecnico di Milano. He works in the Artificial Intelligence and Robotics Lab (AIRLAB), within the research group lead by Prof. Nicola Gatti. His reasearch focuses on *algorithmic game theory* and *machine learning*, with the aim of bridging the two fields to build artificial agents that are able to effectively take autonomus decisions in complex multi-agent scenarios. He got his PhD in Information Technology with laude from Politecnico di Milano, with a thesis on algorithmic game theory. His work as PhD student was awarded the *2020 Chorafas Award* by the Dimitris N. Chorafas Foundation, while his PhD thesis received an honorable mention for the *2020 EurAI Dissertation Award*. He is the author of more than 25 peer-reviewed research papers, including papers published in premier journals, such as *Artificial Intelligence Journal* (2), *Algorithmica*, and *Games and Economic Behavior*, and in top-tier international conferences, such as *AAAI* (7), *IJCAI* (5), *NeurIPS* (4), *ICML*, *ACM EC*, and *AAMAS* (2). One of his papers was awarded an *"Outstanding Paper Award"* at NeurIPS 2020, which is the most important annual gathering in the field of AI and machine learning (only 3 papers have been selected out of 9467 submissions). He serves as a program committee member for several top-tier confereces in AI and machine learning, and he is also guest associate editor for the *Frontiers in Artificial Intelligence* journal. He partecipated in several research and industrial projects as a research scientist, and, in 2020, he co-founded *ML cube s.r.l.*, which is part of the *spin-off* program of Politecncio di Milano. He also taught several courses on computer science and AI, including BSc and MSc courses at Politecnico di Milano (as teaching assistant) and a PhD course on algorithmic game theory at Università di Bergamo (as lecturer).

Experience

2020 **Postdoc Research Assistant**, *Politecnico di Milano, Dipartimento di Elettronica Informazione e Bioingegneria (DEIB)*, Milano.
Working in the Artificial Intelligence and Robotics Lab (AIRLAB), within the research group lead by Prof. Nicola Gatti.

2020 **Co-founder & AI Specialist**, *ML cube s.r.l. – Polimi Spin-Off*, Milano.
Involved in some projects at ML cube s.r.l., whose goal is providing cutting-edge solutions for machine learning systems and their life-cycle-management optimization.

Education

2016
2020 **PhD in Computer Science and Engineering**, *Politecnico di Milano*, Milano.
Thesis: Leadership Games: Multiple Followers, Multiple Leaders, and Perfection.
Advisor: Prof. Nicola Gatti.
Mark: *with laude*.

2014
2016 **MSc in Computer Science and Engineering**, *Politecnico di Milano*, Milano.
Thesis: Methods for finding Leader-Follower equilibria with multiple followers.
Advisor: Prof. Nicola Gatti.
Mark: *110 cum laude/110*.

2011
2014 **BSc in Computer Science and Engineering**, *Politecnico di Milano*, Milano.
Mark: *110 cum laude/110*.

2011 **Diploma di Perito Industriale in Informatica**, *Istituto Tecnico Indistriale Statale G. Marconi*, Piacenza.
Mark: *100 cum laude/100*.

Research Interests

His research focuses on *Artificial Intelligence*, especially on *Algorithmic Game Theory*, *Multi-agent Learning*, and *Online Learning*.

Algorithmic Game Theory
- Analysis of the computational complexity of equilibrum finding problems.
- Computing equilbiria in large imperfect-information sequential games.
- Information structure design problems (a.k.a. algorithmic Bayesian persuasion).
- Auctions, pricing, and mechanism design under the compuatational lense.
- Computational analaysis of principal-agent problems in contract theory.
- Simulation-based games and their applications to complex real-world problems.

Multi-agent Learning
- Design of effcient no-regret learning dynamcis converging to equilibria in games.
- Multi-agent reinforcement learning.

Online Learning
- Online learning techniques applied to classical algorithmic game theory problems.
- Online convex optimization and its releation to learning dynamics in games.
- Prediction with expert advice.
- Best-arm identification problems.

Summary

Research
- Author of 5 journal papers, including 4 top-ranked Q1 journal papers (SCIMAGO).
- Author of 19 papers on peer-reviewed international conferences, including 17 top-tier A++ conferences (CORE).
- h-index 11 and 248 citations (Google Scholar, accessed: 09-23-2021).
- Outstanding Paper Award at NeurIPS 2020.
- Recipient of the 2020 Chorafas Award.
- Honorable mention for the 2020 EurAI Dissertation Award.
- PC member of three top-tier international conferences (*NeurIPS, ICML, AAAI*).
- Senior PC memenber of a top-tier international conference (*IJCAI*).
- Guest associate editor for the *Frontiers in Artificial Intelligence* journal.
- Internation collaborations with CMU, Columbia University, and University of Southampton.

Teching
- Lecturer of a PhD-level course at *Università degli studi di Bergamo*.
- Lecturer of an advanced course held for *Ferrari s.p.a.*
- Teaching assistant of BSc and MSc courses at *Politecnico di Milano* for 4 years.

Projects
- Reserach scientist for the *PRIN 2017 ALGADIMAR* reserach project.
- Reserach scientist for three indutrial projects (*DoveVivo s.p.a.*, *Marina Militare*, and *Leonardo s.p.a.*).

Technology Transfer
- Co-founder of *Mlcube s.r.l.*, a spin-off of *Politecnico di Milano*.

Publications

Working Papers

Bacchiocchi F., Castiglioni M., Marchesi A., Romano G., Gatti N.
Public Signaling in Bayesian Ad Auctions
ArXiv preprint, 2022, CoRR abs/2201.09728

Farina G., Celli A., Marchesi A., Gatti N.
Simple Uncoupled No-Regret Learning Dynamics for Extensive-Form Correlated Equilibrium
ArXiv preprint, 2021, CoRR abs/2104.01520

Castiglioni M., Marchesi A., Gatti N.
Bayesian Agency: Linear versus Tractable Contracts
ArXiv preprint, 2021, CoRR abs/2106.00319

Papers on Proceedings of International Conferences

[C23] 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 Multi-Agent Systems, AAMAS 2022, Virtual conference

[C22]   Castiglioni M., Romano G., Marchesi A., Gatti N.
Signaling in Posted Price Auctions
The 36th AAAI Conference on Artificial Intelligence, AAAI 2022, Virtual conference

[C21]   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

[C20]   Bernasconi M., Cacciamani F., Fioravanti S., Gatti N., Marchesi A., Trovò F.
Exploiting Opponents Under Utility Constraints in Sequential Games
The 35th Conference on Neural Information Processing Systems, NeurIPS 2021, Virtual conference

[C19]   Castiglioni M., Marchesi A., Gatti N.
Bayesian Agency: Linear versus Tractable Contracts
The 22nd ACM Conference on Economics and Computation, EC 2021, Virtual conference

[C18]   Castiglioni M., Marchesi A., Celli A., Gatti N.
Multi-Receiver Online Bayesian Persuasion
The 38th International Conference on Machine Learning, ICML 2021, Virtual conference

[C17]   Celli A., Marchesi A., Farina G., Gatti N.
Decentralized No-regret Learning Algorithms for Extensive-form Correlated Equilibria (Extended Abstract)
The 30th International Joint Conference on Artificial Intelligence, IJCAI 2021, Virtual conference

[C16]   Romano G., Tartaglia G., Marchesi A., Gatti N.
Online Posted Pricing with Unknown Time-Discounted Valuations
The 35th AAAI Conference on Artificial Intelligence, AAAI 2021, Virtual conference

[C15]   Marchesi A., Gatti N.
Trembling-Hand Perfection and Correlation in Sequential Games
The 35th AAAI Conference on Artificial Intelligence, AAAI 2021, Virtual conference

[C14]   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

[C13]   Celli A., Marchesi A., Farina G., Gatti N.
No-Regret Learning Dynamics for Extensive-Form Correlated Equilibrium
The 34th Conference on Neural Information Processing Systems, NeurIPS 2020, Virtual conference [**Best Paper Award**, only **3** out of **9467** submissions; Invited at the Sister Conference Best Paper Track session at the 30th International Joint Conference on Artificial Intelligence, IJCAI 2021; Invited at the Highlights Beyond EC plenary session at the 22nd ACM Conference on Economics and Computation, EC 2021]

[C12]   Castiglioni M., Celli A., Marchesi A., Gatti N.
Online Bayesian Persuasion
The 34th Conference on Neural Information Processing Systems, NeurIPS 2020, Virtual conference [**Spotlight** presentation, top **2.96%** of submissions]

[C11] Marchesi A., Trovò F., Gatti N.
Learning Probably Approximately Correct Maximin Strategies in Simulation-Based Games with Infinite Strategy Spaces
The 19th International Conference on Autonomous Agents and Multi-Agent Systems, AAMAS 2020, Virtual conference

[C10] Celli A., Marchesi A., Bianchi T., Gatti N.
Learning to Correlate in Multi-Player General-Sum Sequential Games
The 33rd Conference on Neural Information Processing Systems, NeurIPS 2019, Vancouver, Canada

[C9] Castiglioni M., Marchesi A., Gatti N.
Be a Leader or Become a Follower:The Strategy to Commit to with Multiple Leaders
The 28th International Joint Conference on Artificial Intelligence, IJCAI 2019, Macao, China

[C8] Marchesi A., Castiglioni M., Gatti N.
Leadership in Congestion Games: Multiple User Classes and Non-Singleton Actions
The 28th International Joint Conference on Artificial Intelligence, IJCAI 2019, Macao, China

[C7] Marchesi A., Farina G., Kroer C., Gatti N., Sandholm T.
Quasi-Perfect Stackelberg Equilibrium
The 33rd AAAI Conference on Artificial Intelligence, AAAI 2019, Honolulu, USA

[C6] Marchesi A., Coniglio S., Gatti N.
Leadership in Singleton Congestion Games
The 27th International Joint Conference on Artificial Intelligence, IJCAI 2018: 447-453, Stockholm, Sweden

[C5] Farina G., Marchesi A., Kroer C., Gatti N., Sandholm T.
Trembling-Hand Perfection in Extensive-Form Games with Commitment
The 27th International Joint Conference on Artificial Intelligence, IJCAI 2018: 233-239, Stockholm, Sweden

[C4] De Nittis G., Marchesi A., Gatti N.
Computing the Strategy to Commit to in Polymatrix Games
The 32nd AAAI Conference on Artificial Intelligence, AAAI 2018: 989-996, New Orleans, USA

[C3] Coniglio S., Gatti N., Marchesi A.
Pessimistic Leader-Follower Equilibria with Multiple Followers
The 26th International Joint Conference on Artificial Intelligence, IJCAI 2017: 171-177, Melbourne, Australia

[C2] Celli A., Marchesi A., Gatti N.
On the Complexity of Nash Equilibrium Reoptimization
The 33rd Conference on Uncertainty in Artificial Intelligence, UAI 2017: 292-301, Sydney, Australia

[C1]   Basilico N., Coniglio S., Gatti N., Marchesi A.
Bilevel programming approaches to the computation of optimistic and pessimistic single-leader-multi-follower equilibria
The 16th International Symposium on Experimental Algorithms, SEA 2017: 31:1-31:14 London, UK, June 21-23, 2017

International Journals

[J5]   Castiglioni M., Marchesi A., Gatti N.
Committing to correlated strategies with multiple leaders
Artificial Intelligence Journal (AIJ), 2021

[J4]   Gatti N., Gilli M., Marchesi A.
A Characterization of Quasi-Perfect Equilibria
Games and Economic Behavior, 2020

[J3]   Coniglio S., Gatti N., Marchesi A.
Computing a Pessimistic Stackelberg Equilibrium with Multiple Followers: the Mixed-Pure Case
Algorithmica, 2020

[J2]   Castiglioni M., Marchesi A., Gatti N., Coniglio S.
Leadership in Singleton Congestion Games: What is Hard and What is Easy
Artificial Intelligence Journal (AIJ), 2019

[J1]   Basilico N., Coniglio S., Gatti N., Marchesi A.
Bilevel programming methods for computing single-leader-multi-follower equilibria in normal-form and polymatrix games
EURO Journal on Computational Optimization, 2019

Papers in International Workshops

Bernasconi M., Cacciamani F., Fioravanti S., Gatti N., Marchesi A., Trovò F.
Exploiting Opponents under Utility Constraints in Extensive-Form Games
AAAI-22 Workshop on Reinforcement Learning in Games, Virtual workshop

Castiglioni M., Celli A., Marchesi A., Gatti N.
Bayesian Persuasion in Online Setting
AAAI-21 Workshop on Reinforcement Learning in Games, Virtual workshop

Marchesi A., Trovò F., Gatti N.
Learning Probably Approximately Correct Maximin Strategies in Games with Infinite Strategy Spaces
AAAI-21 Workshop on Reinforcement Learning in Games, Virtual workshop

Celli A., Marchesi A., Farina G., Gatti N.
No-Regret Learning Dynamics for Extensive-Form Correlated Equilibrium
Cooperative AI Workshop (NeurIPS 2020), Virtual workshop

Castiglioni M., Marchesi A., Gatti N.
Computing Correlated Strategies to Commit to with Multiple Leaders
Games, Agents and Incentives Workshops at AAMAS 2020, Virtual workshop

Marchesi A., Trovò F., Gatti N.
Learning Maximin Strategies with Best Arm Identification Techniques
Games, Agents and Incentives Workshops at AAMAS 2020, Virtual workshop

Celli A., Marchesi A., Bianchi T., Gatti N.
Learning to Correlate in Multi-Player General-Sum Sequential Games
Smooth Games Optimization and Machine Learning Workshop (NeurIPS 2019), Vancouver, Canada.

Marchesi A., Trovò F., Gatti N.
Learning Maximin Strategies in Simulation-Based Games with Infinite Strategy Spaces
Smooth Games Optimization and Machine Learning Workshop (NeurIPS 2019), Vancouver, Canada.

Farina G., Marchesi A., Kroer C., Gatti N., Sandholm T.
Trembling-Hand Perfection in Stackelberg Sequential Games
Games, Agents and Incentives Workshops at AAMAS 2019, Montreal, Canada

Marchesi A., Farina G., Kroer C., Gatti N., Sandholm T.
Computing a Quasi-Perfect Stackelberg Equilibrium
Games, Agents and Incentives Workshops at AAMAS 2019, Montreal, Canada

Marchesi A., Coniglio S., Gatti N.
Singleton Congestion Games with Leadership
Games, Agents and Incentives Workshops at AAMAS 2019, Montreal, Canada

Marchesi A., Farina G., Kroer C., Gatti N., Sandholm T.
Quasi-Perfect Stackelberg Equilibrium
AAAI-19 Workshop on Reinforcement Learning in Games, Honolulu, USA

Celli A., Marchesi A.
Nash Equilibrium Reoptimization is Hard
The 3rd IJCAI Algorithmic Game Theory Workshop, Melbourne, Australia

National Journals

Celli A., Marchesi A.
Learning Dynamics in Limited-Control Repeated Games
Intelligenza Artificiale, 2018

Awards

Paper Awards

NeurIPS 2020 Outstanding Paper Award
The paper "No-Regret Learning Dynamics for Extensive-Form Correlated Equilibrium" [C13] has been selected as one of the best **3** papers out of **9467** submissions.

Personal Awards

Honorable mention for the 2020 EurAI Dissertation Award
Prize awarded by the European Association for Artificial Intelligence to the best PhD thesis on aritificial intellignce among those of students in european institutions.

2020 Chorafas Award
Prize awarded by the Dimitris N. Chorafas Foundation to the best doctoral student(s) in the Hard Sciences in each partner university.

National Doctoral Scholarship
Doctoral scholarship for three years, sponsored by the italian Ministry of Education,
Universities and Research.

Borsa di Studio FCA e CNH Industrial 2017
Scolarships for the best graduated students (Laurea Magistrale) who are
sons/daughters of emplyees of FCA and CNH Industrial.

Borsa di Studio FCA e CNH Industrial 2015
Scolarships for the best graduated students (Laurea Triennale) who are
sons/daughters of emplyees of FCA and CNH Industrial.

Teaching

Courses with a Primary Responsibility

2020

Algorithmic Game Theory, *Università degli studi di Bergamo*, Bergamo.
— **Role:** Lecturer (with Prof. Nicola Gatti).
— **Academic Year:** 2020-2021 (10 hours).
— **Description:** Lectures for the the students of the PhD program in Computer Science.

2019

Algorithmic Game Theory, *Ferrari s.p.a.*, Maranello.
— **Role:** Lecturer (with Prof. Nicola Gatti and Dr. Andrea Celli; 25 hours in total).
— **Description:** Course on algorithmic game theory for the employees of Scuderia Ferrari.

Teaching Assistant Activities

2018

Economics and Computation, *Politecnico di Milano*, Milano.
— **Role:** Teaching assistant.
— **Academic Years:** 2017-2018 (14 hours); 2018-2019 (14 hours); 2019-2020 (24 hours);
2020-2021 (24 hours).
— **Description:** Exercise sessions using innovative teaching methodologies for students of
the MSc in Computer Science Engineering and the MSc in Mathematical Engineering.

2018

Informatica A, *Politecnico di Milano*, Milano.
— **Role:** Teaching assistant.
— **Academic Years:** 2018-2019 (20 hours); 2019-2020 (20 hours); 2020-2021 (51 hours);
2021-2022 (51 hours).
— **Description:** Exercise sessions for students of the BSc in Mathematical Engineering.

2019
2020

Game Theory, *Politecnico di Milano*, Milano.
— **Role:** Teaching assistant.
— **Academic Year:** 2019-2020 (15 hours).
— **Description:** Exercise sessions for students of the MSc in Mathematical Engineering.

Industrial and Research Projects

2021 **Machine Learning per l'Autonomia dei Velivoli**, *Leonardo s.p.a.*, Italy.
— **Role:** Research Scientist.
— **Description:** Industrial project with the aim of developing ML-based systems for au-
tonomous mission and fleet management.

PRIN 2017 ALGADIMAR, *Ministry of Education, Universities and Research*, Italy.
— **Role:** Research Scientist.
— **Description:** Research project focused on the development of new methods and tools in areas that are critical to the understanding of digital markets: algorithmic game theory, market/mechanism design, machine learning, algorithmic data analysis, and optimization in strategic settings.
— **Reference publications:** [C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19].

RentMatic, *DoveVivo s.p.a.*, Italy.
— **Role:** Research Scientist.
— **Description:** Industrial project with the aim of developing AI-based pricing algorithms for a room rental website.
— **Reference publication:** [C16].

RocketAvoid, *Analisi&Valore s.r.l. and Marina Militare*, Italy.
— **Role:** Research Scientist.
— **Description:** Industrial project with the aim of developing AI algorithms managing counter-missile defensive strategies for military ships.
— **Reference publication:** [C11].

Talks and Seminars

Talks given at International Conferences

Jul. 2021 **Multi-Receiver Online Bayesian Persuasion**
The 38th International Conference on Machine Learning, ICML 2021, Virtual

Feb. 2021 **Trembling-Hand Perfection and Correlation in Sequential Games**
The 35th AAAI Conference on Artificial Intelligence, AAAI 2021, Virtual

Dec. 2020 **No-Regret Learning Dynamics for Extensive-Form Correlated Equilibrium**
The 34th Conference on Neural Information Processing Systems, NeurIPS 2020, Virtual

Aug. 2019 **Be a Leader or Become a Follower: The Strategy to Commit to with Multiple Leaders**
The 28th International Joint Conference on Artificial Intelligence, IJCAI 2019, Macao, China

Feb. 2018 **Computing the Strategy to Commit to in Polymatrix Games**
The 32nd AAAI Conference on Artificial Intelligence, AAAI 2018, New Orleans, USA

Aug. 2017 **Pessimistic Leader-Follower Equilibria with Multiple Followers**
The 26th International Joint Conference on Artificial Intelligence, IJCAI 2017, Melbourne, Australia

Talks given at International Workshops

Dec. 2020 **No-Regret Learning Dynamics for Extensive-Form Correlated Equilibrium**
Algadimar Annual Meeting 2020, Virtual

Aug. 2019 **Be a Leader or Become a Follower:The Strategy to Commit to with Multiple Leaders**
Markets, Algorithms, Prediction, and LEarning 2019, MAPLE 2019, Milan, Italy

| Aug. 2017 | **Nash Equilibrium Reoptimization is Hard** |
| | The 3rd IJCAI Algorithmic Game Theory Workshop, Melbourne, Australia |

Seminars

Jan. 2018	**When Are Equilibria of Simple Auctions Near-Optimal?**
	Permanent Itinerant Game Theory Seminars (P.I.G.S.), Politecnico di Milano, Italy
Mar. 2017	**Leadership Games**
	Permanent Itinerant Game Theory Seminars (P.I.G.S.), Politecnico di Milano, Italy

Editorial Activities

International Journals

2020 **Guest Associate Editor**, *Frontiers in Artificial Intelligence*.

International Conferences

2021 **Senior Program Committee Member**, *International Joint Conference on Artificial Intelligence*.

2021 **Program Committee Member**, *International Conference on Machine Learning*.

2020 **Program Committee Member**, *Conference on Neural Information Processing Systems*.

2020 **Program Committee Member**, *International Joint Conference on Artificial Intelligence*.
2021

2018 **Program Committee Member**, *AAAI Conference on Artificial Intelligence*.

Students Supervision

MSc Sudents
- Matteo Castiglioni (now a PhD student at Politecnico di Milano)
- Tommaso Bianchi (Honours Programme Scientific Research in IT)
- Jacopo Pio Gargano (Honours Programme Scientific Research in IT)
- Federica Gianotti
- Giordano Colombi
- Gianluca Tartaglia
- Federico Cini
- Niccolo Raspa
- Federico Maggi
- Edoardo Disarò
- Lorenzo Casalini
- Emanuele Ricciardelli

Qualifications

Sep 2013 **TOEIC**, *Mark 980/990*, Milano.
Certificate of English language

Languages

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

Internships

2011

Web Application Programmer, *H&S - Qualità nel software*, Piacenza (PC), Italy. Development of a web application in ASP.NET and C#, management of databases in SQL Server 2008 Professional.

Skills

General

Social	Good ability to adapt to multicultural environments, good communication skills.
Organisational	Team spirit, team coordination.
Technical	MS Office tools.

Programming

Languages	C, Java, Python (numpy, scipy), R, MATLAB, AMPL, SQL, HTML, C#, Scheme, Haskell, Prolog
IDEs	Pycharm, Eclipse, NetBeans, MATLAB, R
Typesetting	Microsoft Office, Apple iWork, LaTeX
Operating Systems	Microsoft Windows, Apple MacOS, GNU/Linux

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.).