

# Marco Mussi | Ph.D. Student

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## Short Bio

Marco Mussi is a PhD candidate in Information Technology at the Department of Electronics, Information and Bioengineering of Politecnico di Milano. He received his Master's degree in Computer Science and Engineering at Politecnico di Milano in 2019. After a period as a research fellow in the AIRLab research team, he started the PhD in collaboration with ML cube. His main research topics revolve around artificial intelligence and machine learning, focusing on reinforcement learning applied to advertising. He contributed to several industrial research projects funded by both private and public Italian companies.

## Education

### Politecnico di Milano

Milano

*Ph.D. in Information Technology*

Nov 2020 – now

Ph.D. in Machine Learning. Focus on Pricing and Advertising Reinforcement Learning solutions

*Supervisor:* Prof. Marcello Restelli

*Relevant coursework:* Reinforcement Learning, Online Learning and Monitoring

### Politecnico di Milano

Milano

*M.Sc. in Computer Science and Engineering*

Sep 2017 – Dec 2019

*Main focus:* Artificial Intelligence and Machine Learning

*Scholarship:* Tuition waiver for high academic performance

*Relevant coursework:* Machine Learning, Artificial Intelligence, Game Theory, Autonomous Agents and Multi-agent Systems, Foundations of Operational Research, Software Engineering, Principles of Programming Languages, Data Bases II

### Politecnico di Milano

Milano

*B.Sc. in Computer Science and Engineering*

Sep 2014 – Jul 2017

*Relevant coursework:* Software Engineering, Theoretical Computer Science, Communication Networks and Internet, Information Systems, Data Bases I, Computer Architecture and Operating Systems, Automatic Control, Calculus I, Calculus II, Linear Algebra and Geometry, Logics and Algebra, Statistics and Probability, Physics, Applied Physics

### IIS Galileo Galilei

Crema

*High School Diploma in Computer Science*

Sep 2008 – Jul 2014

*Main Focus on:* C, Java, HTML, CSS, Javascript.

## Experience

### Professional

#### ML cube

Milano

*AI Researcher*

Nov 2020 – now

*Goal:* develop algorithms for dynamic pricing and advertising optimization

### Academic

#### Politecnico di Milano

Milano

*Research Assistant*

Jan 2020 – Oct 2020

*Supervisor:* Prof. Marcello Restelli

## Languages

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**Italian:** Mother Tongue

**English:** Excellent

## Master thesis

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**Title:** *Improving aerodynamic load estimation algorithms for F1 racing cars*

**Supervisor:** Prof. Marcello Restelli

**Industrial Partner:** Scuderia Ferrari F1

**Short Abstract:** The thesis studies the aerodynamic behavior of Formula One car, aiming to develop effective methodologies for the estimation of aerodynamic forces on the vehicle. Using data-driven techniques coming from the Machine Learning field that exploits the data gathered during the wind tunnel tests, and the measurements from a small set of pressure sensors, this work allows to reconstruct the pressure profile of the entire car. Moreover, this work proposes a methods to aggregate the data coming from a set of wind tunnel test, to better generalize the aerodynamic load estimation over newly seen aerodynamic configurations.

## Talks and Seminars

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- "An introduction to Reinforcement Learning in Real World", DEIB Seminar, Politecnico di Milano (3 September 2021)
- "Un metodo data-driven per la stima dello stato di carica di batterie a ioni di litio", RSE Academy Seminar, Ricerca Sistema Energetico (23 October 2020)

## Industrial Projects

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### Reinforcement Learning in Smart-grids

**Milano**

*Ricerca Sistema Energetico*

*Feb 2020 – Feb 2022*

*Focus:* Exploit Reinforcement Learning solutions to preserve the battery State of Health in smart-grids, optimizing economic variables

### Last-mile delivery optimization

**Milano**

*PaxMile*

*May 2020 – Oct 2020*

*Focus:* Delivery allocation using Reinforcement Learning and bikers load estimation using Supervised Learning techniques

### AD cube product release

**Milano**

*ML cube*

*Nov 2020 – now*

*Focus:* Release of AD cube, a product for advertising optimization in online campaigns

### Dynamic pricing for e-commerce

**Milano**

*Eurooffice*

*Feb 2021 – now*

*Focus:* Implementation of a dynamic pricing model for an e-commerce with over 20000 products

## Master's Students Supervision

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- Gianmarco Genalti, "A Multi-Armed Bandit Approach to Dynamic Pricing". Co-supervision. Supervisor: Prof. Nicola Gatti (M.Sc. in Mathematical Engineering, December 2021)
- Amedeo Cavallo, "A Combinatorial Multi-Armed Bandit Approach to Online Advertising Budget Optimisation". Co-supervision. Supervisor: Prof. Marcello Restelli (M.Sc. in Computer Science and Engineering, December 2021)
- Thomas Petrone. Co-supervision. Supervisor: Prof. Marcello Restelli (M.Sc. in Mathematical Engineering, in progress)
- Oscar Francesco Pindaro. Co-supervision. Supervisor: Prof. Marcello Restelli (M.Sc. in Computer Science and Engineering, in progress)

- Davide Lombarda. Co-supervision with Alberto Maria Metelli. Supervisor: Prof. Marcello Restelli (M.Sc. in Mathematical Engineering, in progress)

## Publications

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- [1] Marco Mussi, Luigi Pellegrino, Marcello Restelli, and Francesco Trovò. A voltage dynamic-based state of charge estimation method for batteries storage systems. *Journal of Energy Storage*, 44, 2021.