

Lorenzo Bisi

Ph.D. Student at Politecnico di Milano

Education

- 2018–Present **Ph.D. Student - Information Technology**, *Politecnico di Milano, Milano(IT)*.
Advisor: Marcello Restelli
- 2014–2017 **MS - Computer Science and Engineering**, *Politecnico di Milano, Milano(IT)*,
Master Degree, 110/110 e lode.
- 2011–2014 **BS - Computer Engineering**, *Università degli Studi di Parma, Parma(IT)*, *Bachelor Degree, 110/110 e lode.*

Research Interests

My main research interest is the development of Reinforcement Learning (RL) techniques in **Risk-Averse** contexts. I am also interested in RL applications to **financial trading**. Our recent work focused on extending trust-region approach to Risk-Averse RL (<https://www.ijcai.org/Proceedings/2020/632>).

Master thesis

- Title *Regret Minimization Algorithms for the Follower's Behavior Identification in Leadership Games*
- Advisors Prof. Marcello Restelli, Ing. Francesco Trovò, Ing. Giuseppe De Nittis
- Description We studied for the first time a leadership game in which one agent, acting as *leader*, faces another agent, acting as *follower*, whose behaviour is not known a priori by the leader, being one among a set of possible behavioural profiles. This is the case for **Security Games**, when we do not know the *rationality level* of our adversary. We propose two novel algorithms which employ **Online Learning** techniques to solve the problem and we also prove a theoretical bound which guarantees a constant regret for one of them. Our work have been described in an article which have been accepted at the UAI 2017 conference (<http://auai.org/uai2017/proceedings/papers/100.pdf>).

Bachelor thesis

- Title *Design and implementation of a smart camera based on IoT technologies for efficient surveillance systems*
- Advisors Prof. Simone Cirani, Prof. Marco Picone

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Publications

- IJCAI 2020 **Risk-Averse Trust Region Optimization for Reward-Volatility Reduction**, Lorenzo Bisi, Luca Sabbioni, Edoardo Vittori, Matteo Papini, Marcello Restelli, IJCAI 2020, <https://www.ijcai.org/Proceedings/2020/632>.
- ICML 2020 **Control Frequency Adaptation via Action Persistence in Batch Reinforcement Learning**, Alberto Maria Metelli, Flavio Mazzolini, Lorenzo Bisi, Luca Sabbioni, Marcello Restelli, ICML 2020, <https://proceedings.icml.cc/paper/2020/hash/b53477c2821c1bf0da5d40e57b870d35>.
- ICAIF 2020 **Foreign Exchange Trading: A Risk-Averse Batch Reinforcement Learning Approach**, - Lorenzo Bisi, Pierre Liotet, Luca Sabbioni, Gianmarco Reho, Nico Montali, Cristiana Corno, Marcello Restelli, ICAIF 2020.
- UAI 2017 **Regret Minimization Algorithms for the Follower's Behaviour Identification in Leadership Games**, Lorenzo Bisi, Giuseppe De Nittis, Francesco Trovo, Marcello Restelli, and Nicola Gatti, UAI 2017, <http://auai.org/uai2017/proceedings/papers/100.pdf>.

Editorial Activities

- Reviewer**, *NeurIPS 2020*, Santiago de Compostela, Spain.
- Reviewer**, *IJCAI 2020*, Santiago de Compostela, Spain.
- PC member**, *ECAI 2020*, Santiago de Compostela, Spain.

Attended Summer Schools

- July 24th – August 2nd 2019 **Deep Learning and Reinforcement Learning Summer School**, *Alberta Machine Intelligence Institute*, Edmonton, Alberta (CA).

Student Co-supervisions

- 2020-Present Risk-averse Rewards, Charlie Saini
- 2019-2020 Risk-averse inverse reinforcement learning, Federico Sandrelli
- 2019-2020 Risk-averse MDP Transformations, Davide Santambrogio
- 2019-2020 RL with sentiment data for SP500 trading, Paolo Bonetti
- 2019-2020 FQI for Forex trading, Gianmarco Reho
- 2019-2020 Persistent actions in batch reinforcement learning, Flavio Mazzolini
- 2018-2019 Risk-sensitive reinforcement learning for the DVA hedging, Alessandro Parmisano

Work Experience

- Jun 2020 **Teaching Assistant - Informatica B course - Tutoring Sessions**, *Politecnico di Milano*, Milan (IT).
- Feb 2020 – Jun 2020 **Teaching Assistant - Machine Learning**, *Politecnico di Milano*, Milan (IT).

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- Nov 2019 – **Teaching Assistant - Informatica B course - Tutoring Sessions**, *Politecnico di Milano*, Milan (IT).
 Feb 2020
- October **Researcher**, *ISI Foundation*, Turin (IT).
- 2018–Present Research on Machine Learning in Finance. Supervised Learning for Parameters Calibration in pricing models and Reinforcement Learning for optimizing Hedging Strategies.
- 2017–2018 **AI Engineer**, *Argotec*, Turin (IT).
 Research and Development of AI applications for small satellites. These kind of spacecrafts are rapidly spreading because they are easier to be launched, have a lower cost and can be reconfigured. However they still lack autonomy and strongly depend on Ground for many of their activities. AI could enable a greater autonomy in small satellites, but constraints on computational power, memory, energy and safety have to be respected.
- 2014–2015 **Developer**, *Kode*, Lodi(IT).

— Languages

Italian Mother Language
 English B2, TOEFL Score: 100/120

— Programming languages

Python, Java, C, C++, Matlab

- 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.).

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