# Andrea Rafanelli

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## EDUCATION

**Ph.D in Artificial Intelligence for Society**                                        Nov. 2021 – Present
*Università degli Studi di Pisa*                                                               Pisa (PI), Italy

- Mitigated deep learning problems like data scarcity and lack of transparency by investigating Neuro-Symbolic AI techniques.
- I am part of **Artificial Agents and Artificial Intelligence Research Group** of the Department of Computer Science, Engineering, and Mathematics (DISIM) at University of l'Aquila, and of **Pervasive Intelligence Knowledge and Autonomy Group** of Department of Computer Science and Engineering (DISI) at University of Bologna.

**M.Sc Data analytics for business and economics**                                      Oct. 2018 – Sep. 2020
*Università Cattolica Del Sacro Cuore*                                                        Milan (MI), Italy

- Applications of statistical, probabilistic, mathematical and computational methodologies that allow the construction of inferential and forecasting models with exploratory, confirmatory or in any case supporting decision-making purposes.
- **relevant coursework:** Neural network, Data mining, Stochastic modelling, Computational statistics, Statistical learning, Business analytics, Dynamic economics, Digital marketing.
- **Thesis:** *Dynamic pricing under competition in an e-commerce scenario: a demand learning and price optimization technique.*
- Grade: 110/110

**B.Sc Economics and Statistics**                                                       Sep. 2015 – Sep. 2018
*Università degli Studi di Torino*                                                             Turin (TO), Italy

- Applications of theoretical tools for understanding economic problems within institutions and enterprises. Development of the ability to collect and analyse data to respond to identified problems and formulate data-based solutions.
- **relevant coursework:** Probability, Statistics, Data mining, Econometrics, Micro and Macro economics, Sampling theory, Financial markets.
- **Thesis:** *Evaluation techniques and their use in Italy to measure the effect of labor policies: a Difference in Difference method.*
- Grade: 105/110

## PROFESSIONAL EXPERIENCE

**Data Scientist**                                                                      Oct. 2020 – Oct. 2021
*Kellify S.p.a*                                                                               Genoa (GE), Italy

- Research and development of a ML tool to classify good **wine investments**
- NLP project for **sentiment** classification and **swear words** identification

## RESEARCH INTERESTS

**Symbolic and Sub-symbolic integration:** combining statistical AI with human-like symbolic knowledge and reasoning.
**Explainable Artificial Intelligence:** build transparent, explainable, and trustworthy systems.

## SCIENTIFIC ACTIVITY

**Program Committee Membership for TransAI 2023**                                              Sept. 2023
*https://www.transai.org/*                                                                 Laguna Hills, CA

**Program Committee Membership for EXTRAAMAS 2023**                                             May 2023
*https://extraamas.ehealth.hevs.ch/index.html*                                               London, UK

**Publication Committee Membership for ISM 2023**                                              Dec. 2022
*https://semanticcomputing.wixsite.com/ism2022*                                              Naples, IT

## EXTRA-CURRICULAR

**Covid CXR hackathon**                                          Feb. – Mar. 2022
*Bracco Imaging, Centro Diagnostico Italiano*

- Design an algorithm to support medical doctor to formulate a Covid-19 prognosis from chest X-ray images and clinical data collected during triage.
  https://ai4covid-hackathon.it/

**Dynamic Pricing competition**                                 Jun. – Aug. 2020
*Haensel AMS*

- Build an RL algorithm that is able to vary prices and compete with other algorithms by incorporating the information received on a simulated market.
  https://dynamic-pricing-competition.com/

**Hackathon Stats Under the Stars 5**                               Jun. 2019
*Università Bocconi*

- Analysis of a real-world analytics problem, provided by Generali Assicurazioni.
  https://www.sus5.unibocconi.eu/

## MOOCS

**Neuro-Symbolic AI Essentials**                                   Feb. 2023
*https://www.credly.com/badges/ab083fa4-fd5c-4576-a03d-81fbf0c2084c/public_url*        IBM

**Advanced SQL for Query Tuning and Performance Optimization**       Sept. 2020
                                                                   LInkedin

**Reinforcement Learning in Python**                               Apr. 2020
*https://www.udemy.com/certificate/UC-44e972b7-b2c5-4954-9e66-d1345e94c106/*        Udemy

**Tableau certification**                                          Dec. 2019
*https://www.udemy.com/certificate/UC-NM8WUGUT/*                   Udemy

**Deep Learning A-Z: Hands-on Artificial Neural Network**          Nov. 2019
*https://www.udemy.com/certificate/UC-QN4LRUTN/*                   Udemy

## TECHNICAL SKILLS

**Languages** : Python, Prolog
**Data Analysis Tools** : R, Python, Pandas, NumPy, Scikit-learn, Keras, Pytorch
**Databases** : SQL, MySQL
**IDEs** : PyCharm, RStudio
**Markup languages** : Markdown, LATEX

## LANGUAGES

|         | Listening | Reading | Interaction | Speaking | Writing |
|---------|-----------|---------|-------------|----------|---------|
| **Italian** | Native language | | | | |
| **English** | C1 | C1 | B2 | B2 | B2 |
| **French** | B2 | B2 | B1 | B1 | B1 |

# LIST OF PUBLICATIONS

[ARM⁺23]   Andrea Agiollo, Andrea Rafanelli, Matteo Magnini, Giovanni Ciatto, and Andrea Omicini. Symbolic knowledge injection meets intelligent agents: Qos metrics and experiments. *Autonomous Agents and Multi-Agent Systems*, 37(2):27, Jun 2023.

[ARO22]   Andrea Agiollo, Andrea Rafanelli, and Andrea Omicini. Towards quality-of-service metrics for symbolic knowledge injection. In Angelo Ferrando and Viviana Mascardi, editors, *Proceedings of the 23rd Workshop "From Objects to Agents", Genova, Italy, September 1-3, 2022*, volume 3261 of *CEUR Workshop Proceedings*, pages 30–47. CEUR-WS.org, 2022.

[DGCR⁺23]   Giovanni De Gasperis, Stefania Costantini, Andrea Rafanelli, Patrizio Migliarini, Ivan Letteri, and Abeer Dyoub. Extension of constraint-procedural logic-generated environments for deep Q-learning agent training and benchmarking. *Journal of Logic and Computation*, 06 2023. exad032.

[DGCR⁺on]   Giovanni De Gasperis, Stefania Costantini, Andrea Rafanelli, Patrizio Migliarini, Ivan Letteri, and Abeer Dyoub. Constraint-procedural logic-generated environments for deep q-learning agent training and benchmarking. In *Journal of Logic and Computation*. under publication.

[RCDG23]   Andrea Rafanelli, Stefania Costantini, and Giovanni De Gasperis. Neural-logic multi-agent system for flood event detection. *Intelligenza Artificiale*, 17:19–35, 2023. 1.

[RCG22]   Andrea Rafanelli, Stefania Costantini, and Giovanni De Gasperis. A multi-agent-system framework for flooding events. In Angelo Ferrando and Viviana Mascardi, editors, *Proceedings of the 23rd Workshop "From Objects to Agents", Genova, Italy, September 1-3, 2022*, volume 3261 of *CEUR Workshop Proceedings*, pages 142–151. CEUR-WS.org, 2022.

[RCO22]   Andrea Rafanelli, Stefania Costantini, and Andrea Omicini. Position paper: On the role of abductive reasoning in semantic image segmentation. In Agostino Dovier, Angelo Montanari, and Andrea Orlandini, editors, *22nd International Conference of the Italian Association for Artificial Intelligence (AIxIA 2022), Udine, Italy, November 28-December 2, 2022*, volume 3419 of *CEUR Workshop Proceedings*. CEUR-WS.org, 2022.

# DECLARATION

I hereby declare that all the details furnished above are true to the best of my knowledge and belief.

June 26, 2023                                                                        *Andrea Rafanelli*