Alessandro Soccol

MSc Student in Artificial Intelligence

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Bio

I am a second-year Master's student in Applied Artificial Intelligence at the University of Cagliari, where I have also served as a Research Fellow under Prof. Ludovico Boratto, and Dr. Mirko Marras. My research focuses on Information Retrieval, Recommender Systems, Explainability, and Natural Language Processing.

I have **authored four research papers**, including two published in **top-tier international conferences (ACM CIKM '25, ACM RecSys '24)** and a conference tutorial **ACM UMAP '26**. I am also **part of the Excellence Program**, an honors track reserved for only two top-performing students, and an **Lead the Future (LTF) Mentee**, a selective mentorship program for outstanding students with an acceptance rate of around 10%. I've also been recognized by **Forbes** as one of the top 100 graduate students in Italy.

Work Experience

Research Assistant @ University of Cagliari (TAIL Lab) 08/2024 - 12/2025

Presented two research papers at the 18th ACM RecSys (1,100+ attendees, Bari, Italy), and the 34th ACM CIKM (1,470+ attendees, Seoul, South Korea).
Mentored one BSc student through completion of Bachelor's thesis

Research Intern @ University of Cagliari (TAIL Lab) 09/2023 – 07/2024

Transformer-based recommendation models leveraging knowledge graphs.

Intern @ University of Cagliari (Agile Lab) 07/2023 – 09/2024

Fundamentals of Quantum Computation, Quantum Algorithms, and Quantum Machine Learning. Implemented Shor's Algorithm for semiprime factorization and explored basic Quantum Algorithms using Qiskit to reinforce theoretical understanding through practical simulation.

Education

2024 - present MSc Artificial Intelligence at **University of Cagliari**
2024 - 2024 BSc Computer Engineering at **University of Oviedo (Erasmus+ Program)** (GPA: 4.0/4.0)
2021 - 2024 BSc Computer Science and Data Analytics at **University of Cagliari** (GPA: 4.0/4.0, laude)

Publications

Authors are listed in alphabetical order by surname.

[1] Giacomo Balloccu, Ludovico Boratto Gianni Fenu, Mirko Marras, and **Alessandro Soccol**. "KGGLM: A Generative Language Model for Generalizable Knowledge Graph Representation Learning in Recommendation". In: *Proceedings of the **18th ACM Conference on Recommender Systems, RecSys 2024**, Bari, Italy, October 14-18, 2024. Late breaking result Paper*, 2024.

[2] Ludovico Boratto, Gianni Fenu, Mirko Marras Giacomo Medda, and **Alessandro Soccol**. "hopwise: A Python Library for Explainable Recommendation based on Path Reasoning over Knowledge Graphs". In: *Proceedings of the **34th ACM Conference on Information and Knowledge Management, CIKM 2025**, Seoul, South Korea, November 10-14, 2025. Resource Paper*, 2025.

[3] Neda Afreen, Ludovico Boratto, Gianni Fenu, Mirko Marras, and **Alessandro Soccol**. "Effective and Transparent Course Recommendation through Causal Reasoning with Language Models". In: *Proceedings of the **15th Italian Information Retrieval Workshop, IIR 2025**, Cagliari, Italy, September 3-5, 2025. Discussion Paper*, 2025.

[4] Ludovico Boratto, Gianni Fenu, Giacomo Medda, and **Alessandro Soccol**. "Low-Resource Course Recommendation for Professional Training Associations". In: *Proceedings of the **2nd Workshop on Artificial***

Intelligence with and for Learning Sciences, WAILS 2025 *Cagliari, Italy, December 10-12, 2025. Short Paper*, 2025.

[5] Neda Afreen, Ludovico Boratto, Francesca M. Mallocci, Mirko Marras, and **Alessandro Soccol**. "Explainable Course Recommendation with Knowledge Graphs: A Comparative Audit of Diverse Modeling Paradigms". In: *Under Review, Journal Paper. Full Paper*, 2025.

[6] Ludovico Boratto, Gianni Fenu, Francesca M. Mallocci, Mirko Marras, Giacomo Medda, and **Alessandro Soccol**. "How to Build Explainable Recommender Systems using Path Reasoning on Knowledge Graphs: A Tutorial with hopwise". In: ***34th ACM International Conference on User Modeling, Adaptation and Personalization, UMAP 2026****, Gothenburg, Sweden, June 8-11, 2026. Conference Tutorial*, 2026.

Projects

Frogger game in C with Process and Thread Parallelization GitHub

Built a game that implements the frogger game using processes, threads and network sockets.

Recommender System for a Local Organization GitHub

Built a recommender system that generated personalized course suggestions.

Maintainer of hopwise: A Python Library for State-of-the-art Recommender Systems GitHub

The most advanced open-source Python library providing cutting-edge implementations of state-of-the-art recommender system algorithms to support research and development in personalized recommendations.

A comparison of oversampling techniques using GAN and CycleGAN GitHub

Conducted a comparative study of GAN and CycleGAN, generating 1,500+ synthetic samples with Keras and TensorFlow to improve binary classifier accuracy.

Spam email machine learning binary classifier GitHub

Developed and evaluated multiple machine learning models for predictive tasks, including regression and classification, using Python and scikit-learn. Implemented feature selection, hyperparameter tuning, and performance comparison across algorithms to identify optimal model configurations.

Italian COVID '19 Tracker Dashboard GitHub

Developed a dashboard showing daily and monthly data on COVID19 in Italy, with login and logging features that use a MySQL database to record data. Hosted locally using XAMPP and presented in real time using ngrok.

Certifications

University of Cagliari, English B2 2023

University of Cagliari, Spanish A2 2023

CISCO, CCNAv7 Bridging 2021

CISCO, Cybersecurity Essentials 2020

CISCO, Introduction to Cybersecurity 2019

CISCO, CCNA1 v7 2019

Skills

Languages Python, C, R, SQL, LaTex
Technical Skills Data Structures and Algorithms, Machine Learning, Deep Learning, Natural Language Processing, Information Retrieval, Graph Neural Networks, Data Mining, Statistics, Recommender Systems, Reinforcement Learning, Knowledge Graphs
Tools PyTorch, Tensorflow, Keras, Huggingface Transformers, Pandas, Polars, Git, PostgreSQL, Docker, AWS
Volunteer LeadTheFuture Mentee, ACM Student Member (ACM), Forbes Top Graduate 2025