

Tommaso Carraro, Ph.D.

✉ tcarraro96@gmail.com

📞 (+39) 3473884061

🌐 <https://github.com/tommasocarraro>

📄 <https://scholar.google.com/citations?user=hy1cRN8AAAAJ>

📍 Location Padova, Italy



Profile

Applied AI Scientist with expertise in LLMs and recommender systems. Built end-to-end agentic solutions that progressed from research prototypes to business-facing proof-of-concepts, with a focus on reliability, evaluation frameworks, and LLM-based personalization. Published at NeurIPS, ECIR, and ACM RecSys.

Work experience

- Mar 2026 – May 2026 📌 **Internship.** Disney Research, Zurich, CH.
Researched LLM-based reranking techniques to improve recommendation quality of existing models deployed on Disney Plus.
- Feb 2025 – Jan 2026 📌 **Internship.** SonyAI, Zurich, CH, and Sony Research India, Bangalore, India.
Designed and developed an end-to-end LLM-based recommendation agent (RAG, tool calling) for Sony LIV. The system reached Proof-of-Concept stage and was presented to business stakeholders, who subsequently invested in continuing the project. The work was also published at ACM RecSys 2025.
GitHub project: <https://github.com/tommasocarraro-sony/recsys-agent>
- Jan 2021 – Sep 2021 📌 **Research assistant.** DKM unit, Fondazione Bruno Kessler, Trento, IT.
Research about Neuro-Symbolic approaches to recommender systems.
- Oct 2020 – Jan 2021 📌 **Teaching assistant.** Department of Mathematics, University of Padova, IT.

Projects

- 2026 📌 **Zurich Guide Agent — Personal Project.** LangGraph-based conversational travel assistant integrating Google Places, Tavily, and OpenWeather APIs to suggest activities in Zurich based on real-time context (user location and time). Built classifier-based guardrails to prevent scope drift under long conversation histories, and a context caching mechanism to eliminate redundant API calls on follow-up questions.
GitHub project: <https://github.com/tommasocarraro/zurich-guide-agent>

Education

- Oct 2021 – Mar 2025 📌 **Ph.D. Brain, Mind, and Computer Science**
Department of Mathematics, University of Padova, IT.
Thesis: *Neuro-Symbolic Recommender Systems*. **Supervisors:** Luciano Serafini and Fabio Aiolli.
Developed LTNTorch, an open-source PyTorch implementation of Logic Tensor Networks, which has been adopted by researchers in the neuro-symbolic AI community.
GitHub project: <https://github.com/tommasocarraro/ltntorch>
Visiting research period: *The WISE Lab, Rutgers University, The State University of New Jersey, New Jersey, USA*. **Supervisor:** Yongfeng Zhang.

Education (continued)

- Dec 2018 – Sept 2020  **Master's degree in Computer Science (110/110 with honors)**
Department of Mathematics, University of Padova, IT.
Thesis: *Variational Autoencoders for top-N item recommendation.*
Erasmus exchange: *Department of Computer Science, University of Helsinki, FI.*
- Oct 2015 – Dec 2018  **Bachelor's degree in Computer Science (110/110 with honors)**
Department of Mathematics, University of Padova, IT.
Thesis: *MOVlorder, a cross-platform mobile application.*

Selected publications

- 1 T. Carraro, B. Singh, and N. Pedanekar, "Large language model-based recommendation system agents," in *Proceedings of the 19th ACM Conference on Recommender Systems*, ser. RecSys '25, Prague, Czech Republic: Association for Computing Machinery, 2025, ISBN: 979-8-4007-1364-4.  DOI: 10.1145/3705328.3759334.
- 2 S. Bortolotti et al., "A benchmark suite for systematically evaluating reasoning shortcuts," in *38th Annual Conference on Neural Information Processing Systems (NeurIPS)*, 2024.  URL: <https://arxiv.org/abs/2406.10368>.
- 3 T. Carraro, A. Daniele, F. Aioli, and L. Serafini, "Mitigating data sparsity via neuro-symbolic knowledge transfer," in *Advances in Information Retrieval*, N. Goharian et al., Eds., Cham: Springer Nature Switzerland, 2024, pp. 226–242, ISBN: 978-3-031-56063-7.  DOI: 10.1007/978-3-031-56063-7_15.
- 4 T. Carraro, "Overcoming recommendation limitations with neuro-symbolic integration," in *Proceedings of the 17th ACM Conference on Recommender Systems*, ser. RecSys '23, Singapore, Singapore: Association for Computing Machinery, 2023, pp. 1325–1331, ISBN: 9798400702419.  DOI: 10.1145/3604915.3608876.

Awards and scholarships

- 2024  **NGI Enrichers fellowship - 2nd cohort.** The Next Generation Internet European project proposed fellowships for European researchers who wanted to spend 3 to 6 months in the USA or Canada to create collaborations with international organizations. This fellowship fully sponsored my research expedition at Rutgers University, New Jersey, USA.
- 2023  **Best Doctoral Consortium Paper Award (AIxIA'23).** The award has been given to the best two doctoral consortium papers presented at the 22nd International Conference of the Italian Association for Artificial Intelligence.
- 2016  **"Mille e una lode" scholarship.** The scholarship has been given to the best thousands of students at the University of Padova.

Skills

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| AI / ML |  | Recommender Systems, LLMs, RAG, Agentic AI, Neuro-Symbolic AI. |
| Coding |  | Python (advanced), PyTorch framework (advanced), Java, C, SQL. |
| Frameworks/tools |  | LangChain, LangGraph, Ollama, vLLM, Docker, Qdrant, Pydantic. |
| Languages |  | C1 level in English reading, writing, and listening, and B2 level in English speaking. |