Alessandro **Petruzzelli**

PhD Student · in Computer Science - Artificial Intelligence

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Research & Professional Experience

University of Bari *Bari, Italy*

PhD Researcher *Oct 2023 - Present*

- Developing frameworks to inject domain-specific knowledge into LLMs, demonstrating significant improvements in recommendation accuracy.
- Designing and building end-to-end conversational AI systems capable of multi-turn, personalized interactions.
- Pioneering research on symbiotic systems, aiming to create more transparent and user-centric AI.

University of Bari *Bari, Italy*

Research Fellow *Feb 2023 - Oct 2023*

- Conducted a formal analysis and validation of recommendation algorithms for retail personalization.
- Authored a comprehensive report on state-of-the-art methods, influencing subsequent project directions.

Education

University of Bari *Bari, Italy*

Ph.D. in Computer Science - Artificial Intelligence *Oct 2023 - Present*

Thesis: Understanding human needs in Symbiotic AI: towards Symbiotic Recommender Systems

University of Bari *Bari, Italy*

M.S. in Data Science *Oct 2021 - Jul 2023*

Thesis: Transformer-Based Conversational Recommendation based on Knowledge Graphs

University of Bari *Bari, Italy*

B.S. in Computer Science and Software Production Technology *Oct 2018 - Jul 2021*

Thesis: Design and Development of a Content-based Recommender System to Support a Conversational Agent

Skills

Programming	Python (Expert), Java (Proficient), R (Familiar)
ML/AI Frameworks	PyTorch, TensorFlow, Hugging Face Transformers, LangChain
Distributed Training	DeepSpeed, PyTorch Fully Sharded Data Parallel
Languages	Italian (Native), English (Professional Working Proficiency)

Selected Publications

DISTILLRECDIAL: A Knowledge-Distilled Dataset Capturing User Diversity in Conversational Recommendation *The 19th ACM Conference on Recommender Systems (RecSys)*

Martina, A. F. M., **Petruzzelli, A.**, Musto, C., de Gemmis, M., et al. *Prague, Czech Republic, 2025*

- Introduces a novel dataset generated via knowledge distillation to simulate diverse user stereotypes, improving dialogue quality and realism for training CRSs.

Empowering Recommender Systems based on Large Language Models through Knowledge Injection Techniques *The 33nd ACM Conference on User Modeling, Adaptation and Personalization (UMAP)*

Petruzzelli, A., Musto, C., de Gemmis, M., Lops, P., & Semeraro, G. *New York City, NY, USA, 2025*

- Proposes a novel framework for injecting domain-specific knowledge into LLMs to enhance recommendation accuracy and relevance.

Instructing and Prompting Large Language Models for Explainable Cross-domain Recommendations *18th ACM Conference on Recommender Systems (RecSys)*

Petruzzelli, A., Musto, C., Laraspata, L., et al. *Bari, Italy, 2024*

- Investigates prompt engineering and fine-tuning strategies that enable LLMs to provide accurate cross-domain recommendations with natural language explanations.

Healthy and Sustainable Meals Recommendation Exploiting Food Retrieval and Large Language Models

PETRUZZELLI, A., DI CARLO, M.C., TEMPESTA, G., ET AL.

- Presents a system that combines food retrieval techniques with LLMs to generate personalized healthy and sustainable meal recommendations.

Improving Transformer-based Sequential Conversational Recommendations through Knowledge Graph Embeddings

PETRUZZELLI, A., MARTINA, A. F. M., SPILLO, G., ET AL.

- Demonstrates that integrating knowledge graph embeddings into Transformer models significantly boosts performance in sequential conversational recommendation scenarios.

Academic Service & Committees

19th ACM Conference on Recommender Systems (RecSys '25)

Prague, Czech Republic

PROGRAM COMMITTEE MEMBER

2025

- Full & Short Papers
- Late Breaking Results
- Reproducibility Track
- Workshop: Recommender Systems for Sustainability and Social Good (RecSoGood)
- Workshop: Interfaces and Human Decision Making for Recommender Systems (IntRS)

33rd ACM Conference on User Modeling, Adaptation and Personalization (UMAP '25)

New York City, NY, USA

PROGRAM COMMITTEE MEMBER

2025

- Full & Short Papers
- Late Breaking Results & Demo Papers
- Workshop: Explainable User Models and Personalised Systems (ExUM)

18th ACM Conference on Recommender Systems (RecSys '24)

Bari, Italy

PROGRAM COMMITTEE MEMBER

2024

- Full & Short Papers
- Workshop: Recommender Systems for Sustainability and Social Good (RecSoGood)

32nd ACM Conference on User Modeling, Adaptation and Personalization (UMAP '24)

Cagliari, Sardinia, Italy

PROGRAM COMMITTEE MEMBER

2024

- Full & Short Papers
- Workshop: Explainable User Models and Personalized Systems (ExUM)

Extracurricular Activity

ADVANCED TRAINING & SCHOOLS

ACM RecSys, SIGCHI, ACM Europe, EURAI, and University of Cagliari

Bari, Italy

ACM EUROPE SCHOOL ON RECOMMENDER SYSTEMS

Oct 2024

Association for Logic, Language and Information

Leuven, Belgium

35TH EUROPEAN SUMMER SCHOOL IN LOGIC, LANGUAGE AND INFORMATION (ESSLI)

Aug 2024

Associazione Italiana di Linguistica Computazionale

Bari, Italy

LECTURES ON COMPUTATIONAL LINGUISTICS

Jul 2024

Various Sponsors

Bari, Italy

9TH INTERNATIONAL SCHOOL ON DEEP LEARNING

Apr 2023

TEACHING

Short Master in Generative AI

Bari, Italy

LECTURER

Gen 2026 - Feb 2026

- Theory and practical lessons about how to improve LLMs performance through RAG

SPEGEA Business School   *Bari, Italy*

Lecturer   *Jul 2024 - Sep 2024*

- Designed and delivered a 6-hour professional course titled "How to Build a Chatbot".

Selected Presentations

Oral Presentation at the 33rd ACM Conference on User Modeling, Adaptation and Personalization (UMAP '25)

New York City, NY, USA

Empowering Recommender Systems based on LLMs through Knowledge Injection Techniques   *Jun 2025*

- Presented a framework for improving LLM-based recommenders by injecting structured domain knowledge, showing significant gains in performance.

Oral Presentation at the 18th ACM Conference on Recommender Systems (RecSys '24)

Bari, Italy

Instructing and Prompting LLMs for Explainable Cross-domain Recommendations   *Oct 2024*

- Detailed our investigation into prompt engineering strategies for generating accurate and explainable cross-domain recommendations from LLMs.

Presentation at the RecSys '24 Doctoral Symposium

Bari, Italy

Towards Symbiotic Recommendations: Leveraging LLMs for Conversational Recommendation Systems   *Oct 2024*

- Presented my doctoral research vision on creating symbiotic conversational systems to an audience of senior researchers and peers.