Alessandro **Petruzzelli**

PHD STUDENT · IN COMPUTER SCIENCE - ARTIFICIAL INTELLIGENCE

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Alessandro Petruzzelli

Summary

PhD student on a mission to make AI recommendations less frustrating. My research, published at venues like RecSys, involves 'upgrading' Large Language Models with the crucial knowledge they lack. The result is more accurate, explainable, and useful conversational AI that respects the user's time and preferences.

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.

Honors & Awards

INTERNATIONAL

2024 **Doctoral Symposium Participant**, 18th ACM Conference on Recommender Systems (RecSys) *Bari, Italy*

DOMESTIC

2023 **Research Fellowship Grant**, University of Bari *Bari, Italy*

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.

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

18th ACM Conference on Recommender Systems (RecSys) - Short Paper

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

Bari, Italy, 2024

- 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

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

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

Cagliari, Sardinia, Italy, 2024

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

Academic Service & Committees

The ACM Web Conference 2026 (WebConf '26)

Prague, Czech Republic

PROGRAM COMMITTEE MEMBER

2025

- Full & Short Papers

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

Prague, Czech Republic

PROGRAM COMMITTEE MEMBER

2025

- Full & Short Papers
- Late Breaking Results
- Reproducibility Track
- Outstanding Reviewer Winner

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

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

Bari, Italy

PROGRAM COMMITTEE MEMBER

2024

- Full & Short Papers

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

Cagliari, Sardinia, Italy

PROGRAM COMMITTEE MEMBER

2024

- Full & Short Papers

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*

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

SPEGEA Business School
Bari, Italy

Lecturer
Jul 2024 - Sep 2024

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