

Alessandro Petruzzelli

PHD STUDENT · IN COMPUTER SCIENCE - ARTIFICIAL INTELLIGENCE

Department of Computer Science - University of Bari Aldo Moro

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Research & Professional Experience

University of Bari

PHD RESEARCHER

Bari, Italy

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

RESEARCH FELLOW

Bari, Italy

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

PH.D. IN COMPUTER SCIENCE - ARTIFICIAL INTELLIGENCE

Bari, Italy

Oct 2023 - Present

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

University of Bari

M.S. IN DATA SCIENCE

Bari, Italy

Oct 2021 - Jul 2023

Thesis: Transformer-Based Conversational Recommendation based on Knowledge Graphs

University of Bari

B.S. IN COMPUTER SCIENCE AND SOFTWARE PRODUCTION TECHNOLOGY

Bari, Italy

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 33rd 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.

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

Bari, Italy, 2024

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.

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

Cagliari, Sardinia, Italy, 2024

Academic Service & Committees

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

PROGRAM COMMITTEE MEMBER

- 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)

Prague, Czech Republic

2025

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

PROGRAM COMMITTEE MEMBER

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

New York City, NY, USA

2025

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

PROGRAM COMMITTEE MEMBER

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

Bari, Italy

2024

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

PROGRAM COMMITTEE MEMBER

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

Cagliari, Sardinia, Italy

2024

Extracurricular Activity

ADVANCED TRAINING & SCHOOLS

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

ACM EUROPE SCHOOL ON RECOMMENDER SYSTEMS

Bari, Italy

Oct 2024

Association for Logic, Language and Information

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

Leuven, Belgium

Aug 2024

Associazione Italiana di Linguistica Computazionale

LECTURES ON COMPUTATIONAL LINGUISTICS

Bari, Italy

Jul 2024

Various Sponsors

9TH INTERNATIONAL SCHOOL ON DEEP LEARNING

Bari, Italy

Apr 2023

TEACHING

Short Master in Generative AI

LECTURER

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

Bari, Italy

Gen 2026 - Feb 2026

- 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.