Pietro **Bernardelle**

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Educational qualifications and academic awards

The University of Queensland
Brisbane, AU

DOCTORATE OF PHILOSOPHY — *Jul. 2024 - Current*

- My research focuses on the intersection of large language models (LLMs) and social science. I am particularly interested in studying the various types of biases present in current LLMs, developing methods to mitigate these biases, and analyzing their impact on end users

The University of Queensland
Brisbane, AU

MASTER OF ENGINEERING SCIENCE (MANAGEMENT) - SOFTWARE ENGINEERING MAJOR — *Feb. 2023 - Jul. 2024*

- I was **awarded a scholarship** that enabled me to participate in a **double degree program** between UQ and PoliMi
- Awarded **Dean's Commendation for Academic Excellence** in Semester 1, 2024
- GPA: 6.66/7

Polytechnic University of Milan - **ranked 123 in QS World University Rankings 2024**
Milan, IT

M.SC. IN COMPUTER SCIENCE & ENGINEERING - AI SPECIALIZATION — *Sep. 2021 - Dec. 2024*

- GPA: 28.05/30
- Grade: 110/110

Polytechnic University of Milan
Milan, IT

B.SC. IN ENGINEERING OF COMPUTING SYSTEMS — *Sep. 2018 - Jul. 2021*

- GPA: 26.31/30
- Grade: 102/110

Employment history

UQ - School of Electrical Engineering and Computer Science
Brisbane, AU

CASUAL RESEARCH ASSISTANT — *Nov. 2023 - Gen. 2024*

- **Project:** Graph-Based Reinforcement Learning for Pair Selection
- **Supervisor:** Professor Gianluca Demartini
- The project's objective is to optimize the evaluation of preference judgments in information retrieval systems.
- My focus was toward **intensive experimental work**, particularly in training the model. The knowledge and skills honed from my Machine Learning and Information Retrieval courses proved to be indispensable during this phase. I explored a variety of training approaches and experimented with multiple models, delving into the nuances of each to optimise our outcomes.

Other research experience

UQ - School of Electrical Engineering and Computer Science
Brisbane, AU

SUMMER RESEARCH STUDENT — *Gen. 2024 - Feb. 2024*

- **Project:** Graph-Based Reinforcement Learning for Pair Selection
- **Supervisor:** Professor Gianluca Demartini
- The project's objective is to optimize the evaluation of preference judgments in information retrieval systems.
- During this period my efforts were concentrated on the **evaluation phase** of the project, meticulously assessing the model's performance

CIRES - The Australian Research Council Centre for Information Resilience

Brisbane, AU

RESEARCH INTERN

Aug. 2023 - Nov. 2023

- **Project:** Graph-Based Reinforcement Learning for Pair Selection
- **Supervisor:** Professor Gianluca Demartini
- The project aimed to streamline preference judgment evaluation in information retrieval systems. It focused on efficiently selecting informative document pairs for assessment, reducing the need for extensive pairwise comparisons and **optimizing human judgment resources**
- My primary contribution significantly enhanced data generation efficiency, achieving a remarkable **400% improvement in time**. The process of streamlining these preliminary stages was greatly facilitated by the skills I acquired in the Data Mining course, proving essential for realizing this improvement. This advancement was a pivotal moment, laying the foundational groundwork for subsequent phases of the project.

Research outputs

- Pietro Bernardelle, Leon Fröhling, Stefano Civelli, Riccardo Lunardi, Kevin Roitero and Gianluca Demartini. **Mapping and Influencing the Political Ideology of Large Language Models using Synthetic Personas**. In: Companion Proceedings of the ACM Web Conference 2025 (WWW 2025). Sydney, Australia, 28 April 2025 - 2 May 2025. [arXiv]
- Stefano Civelli, Pietro Bernardelle, Gianluca Demartini. **The Impact of Persona-based Political Perspectives on Hateful Content Detection.** In: Companion Proceedings of the ACM Web Conference 2025 (WWW 2025). Sydney, Australia, 28 April 2025 - 2 May 2025. [arXiv]
- Leon Fröhling, Pietro Bernardelle and Gianluca Demartini. **SubData: A Python Library to Collect and Combine Datasets for Evaluating LLM Alignment on Downstream Tasks**. arXiv preprint arXiv:2412.16783 (2024). [arXiv]
- Pietro Bernardelle and Gianluca Demartini. **Optimizing LLMs with Direct Preferences: A Data Efficiency Perspective.** In: The 2nd International ACM SIGIR Conference on Information Retrieval in the Asia Pacific (SIGIR-AP 2024). Tokyo, Japan, December 2024. [ACM Digital Library]

Academic referees

Professor Gianluca Demartini

Brisbane, AU

PROFESSOR - THE UNIVERSITY OF QUEENSLAND

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- g.demartini@uq.edu.au
- Throughout my academic journey, Professor Gianluca Demartini has been a pivotal figure, introducing me to the realm of research and igniting my passion for it. His mentorship has been the guiding light in my exploration of this field, making him a central influence in my academic pursuits. Professor Demartini is now my PhD supervisor.

Assistant Professor Kevin Roitero

Udine, IT

TENURE TRACK ASSISTANT PROFESSOR - UNIVERSITY OF UDINE

- kevin.roitero@uniud.it
- Assistant Professor Kevin Roitero is my PhD co-supervisor.