# Davide Baldelli

PhD in Computer Engineering at Polytechnique Montreal and Mila

davide.baldelli@mila.quebec | dundalia.github.io | github | linkedin | scholar

## Education

**MILA and Polytechnique Montréal** *Montréal, Canada*
PhD in Computer Engineering (GPA: 4.0) *Jan 2025 - Current*
- Supervisors: Sarath Chandar, Amal Zouaq.
- Courses: Representation Learning, Reinforcement Learning.

**University of Bologna** *Bologna, Italy*
MSc in Artificial Intelligence (Grade: 110/110 cum laude.) *Sept 2021 - Oct 2023*
- Courses: Programming for Data Science, Knowledge Representation and Reasoning, Statistical Theory and Methods, Machine Learning, Deep Learning, Computer Vision, Natural Language Processing.

**University of Florence** *Florence, Italy*
BSc in Mathematics (Grade: 110/110) *Sept 2017 - Mar 2021*
- Courses: Analysis, Linear Algebra, Geometry, Probability and Statistics, Logic and Computability.

## Publications

**Davide Baldelli**, Ali Parviz, Amal Zouaq, and Sarath Chandar (2026). LLMs Can't Play Hangman: On the Necessity of a Private Working Memory for Language Agents. arXiv: 2601.06973 [cs.CL]. URL: https://arxiv.org/abs/2601.06973.

Govindarajan, Prashant, **Baldelli, Davide**, Jay Pathak, Quentin Fournier, and Sarath Chandar (2025). "CADmium: Fine-Tuning Code Language Models for Text-Driven Sequential CAD Design". Transactions on Machine Learning Research. arXiv:2507.09792. URL: https://openreview.net/forum?id=lExqWvQht8.

**Baldelli, Davide**, Junfeng Jiang, Akiko Aizawa, and Paolo Torroni (2024). "TWOLAR: A TWO-Step LLM-Augmented Distillation Method for Passage Reranking". Advances in Information Retrieval. Vol. 14608. Lecture Notes in Computer Science. Springer, pp. 465–481. DOI: 10.1007/978-3-031-56027-9_29. URL: https://doi.org/10.1007/978-3-031-56027-9_29.

## Research Experience

**National Institute of Informatics** *Tokyo, Japan*
MSc Thesis - International Internship Program *Mar 2023 - Aug 2023*
- Supervisors: Akiko Aizawa (National Institute of Informatics), Paolo Torroni (University of Bologna)
- Title: A TWO-step LLM Augmented distillation method for passage Reranking

**University of Florence** *Florence, Italy*
BSc Thesis *Sept 2020 - Mar 2021*
- Supervisor: Francesca Romana Nardi (University of Florence)
- Title (translated): Big Deviations for Markov Chains

## Professional Experience

**MILA** *Montréal, Canada*
Teaching Assistant - Summer High School Internships *Summer 2025*
- Designed and delivered educational workshops on Machine Learning and Probability for high school students.

**Independent Consultant (Upwork Platform)** *Remote*
Freelance Machine Learning Engineer *June 2024 - Jan 2025*
- Delivered a variety of machine learning projects for international clients, consistently earning 5-star ratings for quality and speed.

**Loop AI Labs Inc.** *Remote*
Machine Learning Engineer *Sept 2022 - Dec 2024*
- Co-supervised a master's thesis titled "Self Assessment Tool for Medical Exam Candidates" in collaboration with the University of Padova.
- Conducted project on Musical Deepfake Detection achieving 94% of F1 score on a proprietary dataset.

- Implemented BERT-based email classifier for an italian University's administration, achieving 98% accuracy.

## Service and Leadership

**CoLLAs 2026 (Conference on Lifelong Learning Agents)** *Montréal, Canada*
Web Communication Chair *Nov 2025 - Current*
- Managing the official conference website and digital presence for the 2026 edition.
- Coordinating external communications and information dissemination to the research community.

**Belle Parole Arci APS** *Florence, Italy*
Leadership in Non-Profit Organization *Nov 2023 - Current*
- Involved in founding and leading Belle Parole Arci APS, a non-profit organization.
- Responsible for organizing community events and handling communications, including building the organization's website: **belleparoleaps.it**
- Secured a €20,000 grant from Cassa di Risparmio di Firenze to fund organizational activities.

## Other Achievements

### Awards and Recognitions

| | | |
|---|---|---|
| *Jan 2026* | **Selected Participant**, ARENA 7.0 (Alignment Research Engineer Accelerator) | *London, UK* |
| *Jun 2025* | **Selected Participant**, Y Combinator AI Startup School | *San Francisco, CA* |
| *Jun 2022* | **4th place**, Loop Q Prize Competition | *Italy* |

### Certifications

| | | |
|---|---|---|
| *Apr 2025* | **Agents Course**, Hugging Face | *Remote* |

## Projects

**Full-Stack AI Agent Platform with LangGraph Integration** *Montreal, Canada*
Personal Open-Source Project *Jul 2025*
- Built a comprehensive full-stack platform for creating and deploying custom AI agents (like DeepResearch) using modern web technologies. Frontend developed with Next.js, React, and TypeScript. Backend implemented with FastAPI and LangGraph framework, supporting multiple AI models.

**Choosr – Career Orientation Platform** *Remote*
Creator and Lead Developer *Sept 2024 – Present*
- Designed and implemented the entire technical stack for a career guidance platform helping Italian high school students navigate university choices.
- Built and integrated comprehensive databases of career paths and Italian university programs.
- Implemented the RIASEC psychometric test to provide personalized career recommendations.

**Deepdreaming with newest vision architectures** *Tokyo, Japan*
Personal Open-Source Project *Aug 2023*
- Extended and modernized one of the most comprehensive open-source repositories for DeepDream-style visualizations, adding support for the latest vision models (CLIP, ConvNeXt, and more).

## Skills

| | |
|---|---|
| **ML & LLM Tooling** | PyTorch, Hugging Face (Transformers, TRL), Hydra, vLLM, LangChain/LangGraph |
| **Programming** | Python (fluent), TypeScript, Bash, HTML, CSS |
| **Tools & Frameworks** | Docker, Linux, LaTeX, Weights & Biases, Blender, Figma |

## Languages

| | |
|---|---|
| **English** | Professional proficiency |
| **Italian** | Native proficiency |