Daniel Scalena

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Education

University of Milano - Bicocca | University of Groningen, CLCG *Milan, Italy | Groningen, Netherlands*
Joint Doctorate (Ph.D) in Computer Science - NLP *Nov 2023 – exp. 2026*

Research focuses on the use of interpretability as a tool to make generative models safer, more reliable and less toxic in order to extend and improve their real-world applications

University of Milano - Bicocca *Milan, Italy*
Master of Science (M.Sc) in Computer Science, (track: AI & ML) *Oct 2021 – Oct 2023*

Thesis: On the explainability of Large Language Models detoxification
Final Grade: 110/110, with honors

University of Milano - Bicocca *Milan, Italy*
Bachelor of Science (B.Sc) in Computer Science *Oct 2018 – Jul 2021*

Thesis: Hate speech detection on social networks using state-of-the-art NLP techniques
Final grade: 110/110, with honors

Work Experience

Research Intern *Groningen, Netherlands*
University of Groningen, Computational Linguistic Group *Apr 2023 – Jul 2023*

- Aligned LMs to *counter* hate speech narratives using RL*AI*F, reaching up to 50% in safety improvements;
- Analyzed and interpreted model behavior shifts after applying post-training algorithms.

Assistant Researcher *Milan, Italy*
C.I.N.I. & University of Milano - Bicocca *Jun 2022 – Apr 2023*

- Devised Open Relation Extraction for Italian legal texts, improving previous accuracy by 30%;
- Reduced manual legal document review using ad hoc models;
- Project funded by the Italian *Ministry of Justice* and *Interuniversity Consortium for Computer Science*.

ML Engineer (contractor) *Milan, Italy*
TESTUDO *Jun 2022 – Aug 2022*

- Designed and trained deep learning models to predict working hours timestamps.
- Fully automated the company's recognition system.

Scholarships and Awards

2023	Google and Apple - BlackBoxNLP (EMNLP 2023) travel award
2021-2023	Full-Fee M.Sc. Scholarship due to merit and financial scores
2018-2021	Full-Fee B.Sc. Scholarship due to merit and financial scores

Publications

🔗 **Multi-property Steering of Large Language Models with Dynamic Activation Composition**
Daniel Scalena, Gabriele Sarti, Malvina Nissim
Arxiv Preprint

🔗 **A gentle push *funziona benissimo*: making instructed models in Italian via contrastive activation steering**
Daniel Scalena, Elisabetta Fersini, Malvina Nissim
CLIC-it 2024: Tenth Italian Conference on Computational Linguistics

🔗 **Let the Models Respond: Interpreting Language Model Detoxification Through the Lens of Prompt Dependence**
Daniel Scalena, Gabriele Sarti, Malvina Nissim, Elisabetta Fersini
Extended abstract at the Sixth BlackboxNLP Workshop (EMNLP 2023)

🔗 **MIND at SemEval-2023 Task 11: From Uncertain Predictions to Subjective Disagreement**
Giulia Rizzi, Alessandro Astorino, **Daniel Scalena**, Paolo Rosso, Elisabetta Fersini
Proceedings of the 17th International Workshop on Semantic Evaluation (SemEval-2023)

Personal projects

Reward LM *Spring 2023*
Open source Python library *GitHub*

- Python toolkit library enabling Fine-Tuning and Reinforcement Learning from *AI* Feedback (RLAIF) of Generative Large Language Models;
- Tools to interpret and explain the differences in toxicity between the original models and those trained with different training techniques.

-> Other projects and Open Source contributions *are available on my personal GitHub profile*

Activities

2024 MSc degree in Data Science at UniMiB	Teaching NLP course labs
2024 LREC conference, Turin	Reviewer
2023 EMNLP conference, Singapore	Student Volunteer
2023 European Researchers Night	GroNLP collaborator, building demo tools on LMs Interpretability

Language Skills

Italian	Native Language
English	Badge Bbetween Foreign Languages – English C1 🔗
French	B1