SALVATORE GRECO

Curriculum Vitae

Department of Control and Computer Engineering
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Bio

I am currently a Research Associate at Politecnico di Torino. I earned my Ph.D. in October 2024 from the Department of Control and Computer Engineering at Politecnico di Torino. My primary research interests include Natural Language Processing, Fairness, and Explainable Artificial Intelligence.

Education

2024–Present	**Research Associate**, *Polytechnic University of Turin*, Turin, Italy. Natural Language Processing for Inclusive Language
2020–2024	**PhD, Computer Science & Engineering**, *Polytechnic University of Turin*, Turin, Italy. Explainable Artificial Intelligence and Fairness in Natural Language Processing
2016–2019	**Master of Engineering, Computer Engineering**, *Polytechnic University of Turin*, Turin, Italy.
2013–2016	**Bachelor of Engineering, Computer Engineering**, *University of Modena and Reggio Emilia*, Modena, Italy.

Research Experience

King's College London, London, UK

Sept,2024 – Dec, 2024	***Group Fairness in NLP classifiers***. Visiting Researcher in the Department of Informatics, working on group fairness in NLP.
Supervisor :	**Oana Cocarascu**, *Senior Lecturer*, King's College London (*Personal Webpage*)

Nokia Bell Labs, Cambridge, UK

Summer 2023 Summer 2022	***Fairness through Unawareness in NLP classifiers***. I completed two Summer Research Internships in the Responsible AI group at Nokia Bell Labs, where I proposed and developed a framework to ensure fairness through unawareness in NLP classifiers by mitigating the use of protected attributes in predictions without compromising performance.
Supervisor :	**Daniele Quercia**, *Director of Responsible AI*, Bell Labs Cambridge (*Personal Webpage*)

Polytechnic University of Turin, Turin, Italy

May,2019 – 2023	***Explainability techniques for Text and Image Classifiers***. Designing explainable AI techniques to interpret the predictions of text and image classifiers by extracting meaningful features from the embedding representations of word groups or image pixels, and assessing their importance through a perturbation process.
Dec,2020 – Present	***Empowering Multi-lingual Inclusive Communication***. Developing and training NLP solutions to promote inclusive language in formal communications. This multidisciplinary project aims to create a multilingual tool that identifies non-inclusive sections of text and suggests inclusive reformulations.
Nov,2020 – Present	***Concept Drift Detection in Deep learning Classifiers***. Designing and developing a framework for detecting concept and data drift in text, image, and speech classifiers to identify performance degradation and ensure robustness over time.
Supervisor :	**Tania Cerquitelli**, *Full Professor, Department of Control and Computer Engineering*, Polytechnic University of Turin (*Personal Webpage*)

Teaching Experience

2024	**Explainable and Trustworthy AI**, *MD*, Polytechnic University of Turin.
2024, 2023	**Data Science & Machine Learning for Engineering Applications**, *MD*, Polytechnic University of Turin.
2022	**Applied Data Science Project**, *MD*, Polytechnic University of Turin.
2023, 2022	**Databases**, *BD*, Polytechnic University of Turin.

Personal Development

Summer School

August, 2024 **Oxford Machine Learning Summer School**, *(Certificate)*, Online.
MLx Generative AI: Theory, Agents, Products tack of the OxML Summer School.

July, 2024 **Oxford Machine Learning Summer School**, *(Certificate)*, Oxford.
MLx Representation Learning & Generative AI and Health & Bio tracks of the OxML Summer School.

March, 2024 **ELLIS Winter School on Foundation Models**, *(Certificate)*, Amsterdam.
ELLIS Winter School on Foundation Models organized by the University of Amsterdam.

July, 2023 **Oxford Machine Learning Summer School**, *(Certificate)*, Oxford.
NLP & Finance track of the OxML Summer School.

Online Courses

2023 **Generative AI with Large Language Models**, *(Certificate)*, Coursera.
2023 **Mathematics for Machine Learning and Data Science Specialization**, *(Certificate)*, Coursera.
2023 **Machine Learning Engineering for Production (MLOps) Specialization**, *(Certificate)*, Coursera.
2021 **AI for Medicine Specialization**, *(Certificate)*, Coursera.
2021 **Natural Language Processing Specialization**, *(Certificate)*, Coursera.
2021 **TensorFlow: Advanced Techniques Specialization**, *(Certificate)*, Coursera.
2021 **Generative Adversarial Networks (GANs) Specialization**, *(Certificate)*, Coursera.
2020 **Python 3 Programming**, *(Certificate)*, Coursera.
2020 **TensorFlow: Data and Deployment Specialization**, *(Certificate)*, Coursera.
2020 **DeepLearning.AI TensorFlow Developer Specialization**, *(Certificate)*, Coursera.
2019 **Deep Learning Specialization**, *(Certificate)*, Coursera.

Other Working Experience

Feb,2019 – **IT Junior Analyst**, *Intesa SanPaolo*, Turin, Italy.
Oct,2020 Before completing my master's degree, I transitioned into a full-time role with project management responsibilities in the IT department of a well-established Italian bank. This experience honed my skills in project and time management and strengthened my ability to maintain effective client relationships.

Key Skills

Coding Python, Java, C, C++
Frameworks PyTorch, Keras, TensorFlow, Hadoop, Spark, Flask
Libraries HuggingFace, Pandas, Numpy, NLTK, SpaCy, Scikit-Learn, Gensim
Web Dev. SQL, Javascript, HTML, CSS

Volunteer Activities

2023 **ECML PKDD Conference 2023**, Turin.
I was involved as a volunteer in the organization of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, held in Turin in September 2023. This experience enhanced my skills in organizing research-related activities, such as conferences.

2017 - 2019 **ESN Torino** - **Erasmus Student Network**, Turin.
I actively volunteered with the Erasmus Student Network, facilitating the integration of international students and organizing cultural and social events. This experience enhanced my teamwork, interpersonal, communication, and adaptability skills in a multicultural environment.

Language Skills

Italian, First Language.
English, Expert User.

Publications

In Conference Proceedings

2024 **Salvatore Greco**, Ke Zhou, Licia Capra, Tania Cerquitelli, and Daniele Quercia. NLPGuard: A framework for mitigating the use of protected attributes by nlp classifiers. *Proc. ACM Hum.-Comput. Interact.*, volume 8, pages 1–25, nov 2024.

2024 **Salvatore Greco**, Bartolomeo Vacchetti, Daniele Apiletti, and Tania Cerquitelli. Driftlens: A concept drift detection tool. In *Proceedings 27th International Conference on Extending Database Technology, EDBT, DemoTrack, Paestum, Italy, March 25 - March 28*, pages 806–809, 2024.

2024 Moreno La Quatra*, **Salvatore Greco***, et al. Building foundations for inclusiveness through expert-annotated data. In *EDBT/ICDT Workshops*, 2024.

2024 Matteo Berta, **Salvatore Greco**, Giuseppe Tipaldo, and Tania Cerquitelli. Decoding narratives: Towards a classification analysis for stereotypical patterns in italian news headlines. In *2024 IEEE International Conference on Big Data (BigData)*, pages 5253–5262. IEEE, 2024.

2023 Moreno La Quatra, **Salvatore Greco**, Luca Cagliero, and Tania Cerquitelli. Inclusively: an ai-based assistant for inclusive writing. In *ECML-PKDD, DemoTrack*, pages 1–5. Springer, 2023.

2023 Giuseppe Gallipoli*, Moreno La Quatra*, Daniele Rege Cambrin*, **Salvatore Greco***, and Luca Cagliero. DANTE at geolingit: Dialect-aware multi-granularity pre-training for locating tweets within italy. In *Proceedings of the Eighth Evaluation Campaign of Natural Language Processing and Speech Tools for Italian (EVALITA 2023), Parma, Italy, September 7th-8th*, 2023.

2022 Raus, Rachele, Tonti, Michela, Cerquitelli, Tania, Cagliero, Luca, Attanasio, Giuseppe, La Quatra, Moreno, and **Salvatore Greco**. L´analyse du discours et l´intelligence artificielle pour réaliser une écriture inclusive: le projet emimic. *SHS Web Conf.*, volume 138, page 01007, 2022.

2022 Luca Colomba, Alessandro Farasin, Simone Monaco, **Salvatore Greco**, Paolo Garza, Daniele Apiletti, Elena Baralis, and Tania Cerquitelli. A dataset for burned area delineation and severity estimation from satellite imagery. In *Proceedings of the 31st ACM International Conference on Information; Knowledge Management*, New York, NY, USA, 2022.

2021 **Salvatore Greco** and Tania Cerquitelli. Drift lens: Real-time unsupervised concept drift detection by evaluating per-label embedding distributions. In *2021 International Conference on Data Mining Workshops (ICDMW)*, pages 341–349, 2021.

2021 Giuseppe Attanasio, **Salvatore Greco**, Moreno La Quatra, Luca Cagliero, Michela Tonti, Tania Cerquitelli, and Rachele Raus. E-mimic: Empowering multilingual inclusive communication. In *2021 IEEE International Conference on Big Data (Big Data)*, pages 4227–4234, 2021.

Journal Articles

2023 Francesco Ventura*, **Salvatore Greco***, Daniele Apiletti, and Tania Cerquitelli. Explaining deep convolutional models by measuring the influence of interpretable features in image classification. *Data Mining and Knowledge Discovery*, pages 1–58. Springer, 2023.

2022 Francesco Ventura*, **Salvatore Greco***, Daniele Apiletti, and Tania Cerquitelli. Trusting deep learning natural-language models via local and global explanations. *Knowledge and Information Systems*. Springer, June 2022.

2021 Simone Monaco, **Salvatore Greco**, Alessandro Farasin, Luca Colomba, Daniele Apiletti, Paolo Garza, Tania Cerquitelli, and Elena Baralis. Attention to fires: Multi-channel deep learning models for wildfire severity prediction. *Applied Sciences*, volume 11, 2021.

2021 Paolo Bethaz, Sara Cavaglion, Sofia Cricelli, Elena Liore, Emanuele Manfredi, Stefano Salio, Andrea Regalia, Fabrizio Conicella, **Salvatore Greco**, and Tania Cerquitelli. Empowering commercial vehicles through data-driven methodologies. *Electronics*, volume 10, 2021.

Under review papers

2024 **Salvatore Greco***, Moreno La Quatra*, and et al. Towards ai-assisted inclusive language writing in italian formal communications. *Under review on Transactions on Intelligent Systems and Technology (TIST)*. ACM, 2024.

2024 **Salvatore Greco** and et al. Unsupervised concept drift detection from deep learning representations in real-time. *Under review on Transactions on Knowledge and Data Engineering (TKDE)*. IEEE, 2024.

* Equal Contribution