Lorenzo Corti

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Summary — I am a PhD Candidate in the Web Information Systems group at TU Delft. I am supervised by Jie Yang and Geert-Jan Houben. I am also part of the TU Delft AI Lab Design@Scale. In my work, I adopt a human-centred approach to studying and building tools that support practitioners in diagnosing the behaviours of large multi-modal and language models. Before starting my PhD, I worked as a Research Assistant at Politecnico di Milano, where I contributed to two EU H2020 projects, TRIGGER and PERISCOPE. I received my MSc (supervised by Prof. Marco Brambilla) and BSc in Computer Science and Engineering from Politecnico di Milano in 2019 and 2017, respectively.

Skills

Languages Python, Java, C, Javascript
Data Management Relational DBs and NoSQL
Web Development Spring, FastAPI
DevOps Docker, VPS, Git

Machine Learning NumPy, Pandas, scikit-learn, spaCy
Deep Learning Pytorch, Captum, Huggingface Transformers, Datasets, and Evaluate
Project Management Research design and planning

Education

Delft University of Technology, Delft, Netherlands **Feb 2022 – 2027 (expected)**
PhD in Computer Science

- *Promotor*: Prof.Dr.Ir. Geert-Jan Houben
- *Co-promotor*: Dr. Jie Yang
- Note: My contract includes additional mentoring and teaching duties. Hence, the expected duration is 5 years against the usual 4 years given in the Netherlands.

Politecnico di Milano, Milan, Italy
Master of Science in Computer Science and Engineering *Sept 2017 – Dec 2019*

- *Final grade*: 110/110
- *Thesis*: Time Conditional Generative Adversarial Networks for Augmentation of Irregularly Sampled Time Series
- *Supervisor*: Marco Brambilla (Politecnico di Milano, DEIB)
- *Co-advisor*: Pavlos Protopapas (Harvard University, SEAS)

Bachelor of Science in Computer Science and Engineering *Sept 2014 – July 2017*

- *Final grade*: 98/110
- *Thesis Project*: Development of a customer relationship management system for an advertising company.
- *Deliverables*: requirement analysis with `i*` framework, UML design, and documented codebase.

Professional Experience

Doctoral Researcher **Feb 2022 – 2027 (expected)**
Delft University of Technology, Delft, Netherlands

- My research focuses on developing methods and tools that enable practitioners to diagnose the behaviour of large, multi-modal, and language models.
- I primarily work in Python with libraries like PyTorch and Hugging Face's frameworks to test and interpret large language models.
- I adopt human-centred approaches (e.g., Research through Design) to study how diagnostic tools are used in practice, informing their design and implementation.
- My PhD is funded by the TU Delft AI Lab Design@Scale. As a result, I spend additional time on educational activities like mentoring students.

Research Assistant **Feb 2020 – Jan 2022**
Politecnico di Milano, Milan, Italy

- I was part of two EU H2020 projects TRIGGER and PERISCOPE.
- In TRIGGER (TRends In Global Governance and Europe's Role), we designed and developed a citizen engagement platform, COCTEAU (Co-Creating the European Union), and the public engagement toolkit PERSEUS (Public Engagement for Responsive and Shared EU Strategies).
- In PERISCOPE (Pan-European Response to the ImpactS of COVID-19 and future Pandemics and Epidemics), we extended and contextualization of COCTEAU and PERSEUS (outcomes of the TRIGGER project) for the analysis of the COVID-19 global pandemic.
- In addition to these, I contributed to the VaccinItaly project and other educational activities.

Current Research Projects

Method to Diagnose the Behaviours of Multi-model LLMs
Targeting ACL 2026

Multi-modal Large Language Models (MLLMs) require storing and transferring information across their sub-components. As these models are increasingly being used, little is known about the soundness of MLLM behaviours in response to specific prompts. In this work, we introduce a diagnostic framework to construct specifications for desired model behaviours and to identify and verify both benign and faulty observed ones.

Toolkit to Diagnose the Behaviours of LLMs
Targeting UIST 2026

Despite the rapid technical advances of large language models (LLMs) and related benchmarks, diagnostic efforts are lagging in terms of availability and applicability. To help Natural Language Processing (NLP) practitioners diagnose their models, we develop a diagnostic toolkit to analyse the behaviours of LLMs supporting both discriminative and generative model variants and related diagnostic techniques. Our toolkit is designed, implemented, and evaluated based on insights from ML debugging and diagnosing literature and think-aloud sessions with NLP industry practitioners.

Past Projects

VaccinItaly **2021 – 2022**
During Research Assistant position at Politecnico di Milano

Monitoring and analysis of Italian discourse on vaccines on social media (Twitter and Facebook) to understand the interplay between online public perceptions, vaccine hesitancy, and intake rates.

IDiOM - Information and Disinformation in Online Media **2021**
During Research Assistant position at Politecnico di Milano

IDiOM is a NLP data analysis pipeline that collects data from social and news media sources and runs natural language processing and machine learning analyses. The final purpose is to create a publicly available dashboard raising citizen awareness about misinformation.

PERSEUS - Public Engagement for Responsive and Shared EU Strategies **2021**
Part of EU H2020 projects PERISCOPE (101016233) and TRIGGER (822735)

PERSEUS is an integrated toolkit within the TRIGGER project linked to the concept of actorness and supported by data science techniques like named entity recognition, topic extraction, sentiment analysis and language models. PERSEUS also includes a resource search functionality powered by the Elastic stack.

COCTEAU - Co-Creating The EuropeAn Union **2020 – 2021**
Part of EU H2020 project TRIGGER (822735)

COCTEAU is a gamified, crowdsourcing tool that has the goal of enabling large-scale citizen engagement and co-creation in support of policymakers when approaching complex governance solutions.

Mentoring & Teaching Experience

Mentoring Experience
Master Theses, TU Delft

- Sebastiaan Beekman, *On Developing a Diagnostic Toolkit for Large Language Models*, *Ongoing*.
- Jeroen Nelen, *Developing a user-centered explainability tool to support the NLP Data Scientist in creating LLM-based solutions*, 2024.
- Alice Brugnoli, *Exploring the capabilities of generative image captioning models for producing structured output*, 2024.
- Rembrandt Oltmans, *Clearing the Air: An Exploration of Pulmonologists' Needs and Intents in XAI Solutions for Respiratory Medicine*, 2023.
- Simran Karnani, *Data Model for Computer Vision Explainability, Fairness, and Robustness*, 2023.
- Ziad Ziad Ahmad Saad Soliman Nawar, *A System for Model Diagnosis centered around Human Computation*, 2023.
- Shreyan Biswas, *CHIME: Causal Human-In-the-Loop Model Explanations*, 2022.
- Siwei Wang, *Characterizing the knowns and unknowns of text simplification models*, 2022.

Bachelor Theses, TU Delft

- Elliot Afrait, Shivani Singh, Jean-Paul Smit, Annabel Simons, Evan de Kruif, *Explaining Deep Learning Models for Fact-Checking*, 2023.

Seminar on Web Information Systems, TU Delft *2022 – Present*

– Mentoring students in writing a short literature review on topics surrounding web information systems.

Capstone Applied AI Project *2025*

– Mentoring group project "*Characterising Toxicity in Language Models*".

Natural Language Processing, TU Delft *2023*

– Mentoring group project.

Teaching Assistant Experience

Fundamentals of Artificial Intelligence Programme, TU Delft *2022 – Present*

– Creation of teaching materials, support on-campus sessions, and grading assignments for the following topics: data management systems, data work, interpretable & explainable AI, and natural language processing.

Crowd Computing, TU Delft *2022 – 2024*

– Grading students' reviews of influential works in human computation and mentoring group projects.

Post-graduate Master Courses, Quantia Consulting and Cefriel *2021 – 2022*

– Cloud Data Engineering: basics of Information Retrieval and practical sessions with NoSQL technologies (MongoDB, Neo4j, Cassandra, and the Elastic Stack). Offered to BIP Consulting.
– Advanced Data Science: theory and practice on Generative Adversarial Networks. Offered to Allianz and Nestlè.

Computer Science Fundamentals, Politecnico di Milano *2021*

– Supporting exercise and practical sessions, mentoring group projects, and grading assignments.

Software Methodologies and Architectures for Security - Enterprise ICT Architectures, Politecnico di Milano *2020 – 2021*

– Supporting exercise and practical sessions, mentoring group projects, and grading assignments.

Event Organisation

1. The 25th International Conference on Web Engineering (ICWE 2025): Proceedings Co-chair.
2. The 12th AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2024): Web Co-chair.

Languages

– **Italian**, Native.
– **English**, Full Professional Proficiency (B2 FCE, Cambridge).
– **Spanish**, Elementary (A2).

Publications

1. Andrea Tocchetti*, **Lorenzo Corti***, Agathe Balayn*, Mireia Yurrita, Philip Lippmann, Marco Brambilla, Jie Yang "*A.I. Robustness: a Human-Centered Perspective on Technological Challenges and Opportunities*". In: ACM Computing Surveys. 2025. *: *equal contribution*.
2. **Lorenzo Corti**, Rembrandt Oltmans, Jiwon Jung, Agathe Balayn, Marlies Wijsenbeek, Jie Yang. "*It Is a Moving Process: Understanding the Evolution of Explainability Needs of Clinicians in Pulmonary Medicine*". In: Proceedings of the CHI Conference on Human Factors in Computing Systems. 2024.
3. Shreyan Biswas, **Lorenzo Corti**, Stefan Buijsman, Jie Yang. "*CHIME: Causal Human-in-the-Loop Model Explanations*". In: Proceedings of the AAAI Conference on Human Computation and Crowdsourcing. 2022.
4. Andrea Tocchetti, **Lorenzo Corti**, Marco Brambilla, Irene Celino. "*EXP-Crowd: A Gamified Crowdsourcing Framework for Explainability*". In: Frontiers in Artificial Intelligence. 2022.
5. Andrea Tocchetti, Diletta Di Marco, **Lorenzo Corti**, Marco Brambilla. "*Scaling collaborative policymaking: how to leverage on digital co-creation to engage citizens*". In: Data for Policy. 2021.
6. Andrea Tocchetti, **Lorenzo Corti**, Marco Brambilla, and Diletta Di Marco. "*A Web-Based Co-Creation and User Engagement Method and Platform*". In: Proceedings of International Conference on Web Engineering (ICWE). 2021.

Workshop and Demo Papers

1. Agathe Balayn and **Lorenzo Corti** and Fanny Rancourt and Fabio Casati and Ujwal Gadiraju. "*Understanding Stakeholders' Perceptions and Needs Across the LLM Supply Chain*". In: ACM CHI Workshop on Human-Centered Explainable AI. 2024.

2. **Lorenzo Corti**, Jie Yang. "*ARTIST: ARTificial Intelligence for Simplified Text*" In: Generative AI and HCI workshop at CHI. 2023.

3. Andrea Mauri, Andrea Tocchetti, **Lorenzo Corti**, Yen-Chia Hsu, Himanshu Verma, Marco Brambilla. "*COCTEAU: an Empathy-Based Tool for Decision-Making*" In: Companion Proceedings of the Web Conference. 2022.

4. Francesco Pierri, Andrea Tocchetti, **Lorenzo Corti**, Marco Di Giovanni, Silvio Pavanetto, Marco Brambilla, and Stefano Ceri. "*VaccinItaly: monitoring Italian conversations around vaccines on Twitter and Facebook*". In: Workshop Proceedings of the 15th International AAAI Conference on Web and Social Media. 2021.

5. Marco Di Giovanni, **Lorenzo Corti**, Silvio Pavanetto, Francesco Pierri, Andrea Tocchetti, and Marco Brambilla. "*A content-based approach for the analysis and classification of vaccine-related stances on Twitter: the Italian scenario*". In: Workshop Proceedings of the 15th International AAAI Conference on Web and Social Media. 2021.