Luca **Corbucci**

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About Me

Computer Science PhD candidate focused on **Fairness**, **Privacy**, and **XAI** for **Federated Learning**, with 5+ publications in venues including **FAccT** and **ECAI**. Proven ability to bridge theory and practice via collaborations with **Telefónica Research Lab** and **Johannes Gutenberg-Universität Mainz**. Experienced public speaker, community builder (FOSDEM AI Devroom, Superhero Valley, Pisa.dev), and **podcaster** (250+ episodes).

Education

University of Pisa - KDD Lab
Pisa, Italy

PhD in Computer Science - **Supervisors:** Prof. Anna Monreale and Dr. Nicolas Kourtellis   *Nov. 2021 - Jul. 2025*

- Developed methodologies to ensure privacy and fairness in Federated Learning models, addressing key challenges in **safe and ethical AI**.
- Explored and designed techniques for explainable Federated Learning (**XAI** for FL) to enhance model transparency and trust.
- Started collaboration with **Telefonica Research Lab** (1-year visit) and **Johannes Gutenberg-Universität Mainz**.
- Partially funded and supported by the Horizon Europe project "TANGO".

Technical University of Munich
Munich, Germany

Computer Science - Erasmus+ Study   *Oct. 2019 - Mar. 2020*

- Visited the Technical University of Munich thanks to a 5-month Erasmus+ Study grant.
- **Courses:** Machine Learning, Basic Mathematical Tools for Imaging and Visualization, Practical Course: Cloud Databases.

University of Pisa
Pisa, Italy

M.Sc. in Computer Science - **Final Grade:** 110/110 Cum Laude   *Oct. 2018 - Jun 2021*

- **Thesis:** "Semantic enrichment of XAI explanations for healthcare". [**Paper** | **Code**]
- Supervised by: Prof. Anna Monreale and Dr. Cecilia Panigutti.
- Spent a semester at **Technical University of Munich** thanks to the Erasmus+ study program.

University of Pisa
Pisa, Italy

B.Sc. in Computer Science   *Sep. 2014 - Oct. 2018*

- **Thesis:** "Construction and Analysis of the Ethereum Transaction Graphs". [**Code**]

Work Experience

Telefónica R&D - System AI Lab
Barcelona, Spain

Research Intern - Supported by the SPATIAL H2020 EU project and supervised by Dr. Nicolas Kourtellis   *Mar. 2023 - Mar. 2024*

- Designed PUFFLE, a **Federated Learning** method achieving 75% fairness improvement with minimal (22%) accuracy loss, while preserving privacy and utility. [**Paper** | **Code**]
- Integrated fairness constraints based on practitioner requirements, bridging the gap between theoretical fairness and real-world systems.
- **Paper** accepted at the European Conference on Artificial Intelligence (**ECAI**) 2024; **Patent** application submitted.

University of Pisa - Computer Science Department
Pisa, Italy

Teaching Assistant for the "Programming and Algorithmics" Bachelor Course

- Provided support to students over three semesters, helping them with algorithms, data structures, and programming.
- Organized exercise sessions to enhance students' problem-solving skills and algorithmic thinking.

University of Pisa
Pisa, Italy

Research Assistant   *Jun. 2021 - Oct. 2021*

- Won a research scholarship to work on the semantic enrichment of Explainable AI methods for healthcare.
- The results of this work have been published in the paper "*Semantic enrichment of XAI explanation for healthcare*" presented at Discovery Science Conference 2023.

Tocket
Pisa, Italy

Flutter Developer - Tech Stack: Flutter, Dart, Python, Flask   *Mar. 2020 - Jan. 2021*

- Developed the Tocket mobile app released on the iOS App Store and Google Play Store to buy tickets for online and in-person events.
- More than **20k users** have downloaded and used the app.
- Developed internal APIs and dashboard.

Academic Roles

- Reviewer for European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases **ECML PKDD 2024 and 2025**
- Reviewer for European Conference on Artificial Intelligence **ECAI 2023**

Publications

Under Review **L. Corbucci, M. Heikkilä, D. Noguero, A. Monreale, N. Kourtellis**, *"Self-Adaptive Balancing of Fairness, Privacy, and Utility in Federated Learning"*

Under Review **V. Bonsignori, L. Corbucci, F. Naretto, A. Monreale**, *"FLEXAI: Federated Learning EXplainability through Aggregated Interpretations"*

Under Review **X. Heilmann, L. Corbucci, M. Cerrato**, *"A Benchmark for Client-level Fairness in Federated Learning"*

Oct 2025 **L. Corbucci, J. A. B. Legrottaglie, F. Spinnato, A. Monreale and R. Guidotti**, *"An Interpretable Data-Driven Unsupervised Approach for the Prevention of Forgotten Items"* - Accepted at European Conference on Artificial Intelligence (ECAI) 2025 — *Bologna, Italy*

Sep 2025 **L. Corbucci, F. Naretto, A. Monreale**, *"Enhancing Local Explanations with GAN-Based neighborhood generation"* - Accepted at International Conference on Discovery Science 2025 — *Ljubljana, Slovenia*

Jun 2025 **L. Corbucci, X. Heilmann, M. Cerrato**, *"Benefits of the Federation? Analyzing the Impact of Fair Federated Learning at the Client Level"* - Accepted at ACM Conference on Fairness, Accountability, and Transparency (FAccT) 2025 — *Athens, Greece*

Jun 2025 **V. Bonsignori, L. Corbucci, F. Naretto, A. Monreale**, *"Differentially Private FastSHAP for Federated Learning Model Explainability"* - Accepted at International Joint Conference on Neural Networks (IJCNN) 2025 — *Rome, Italy*

Oct 2024 **L. Corbucci, M. Heikkilä, D. Noguero, A. Monreale, N. Kourtellis**, *"PUFFLE: Balancing Privacy, Utility, and Fairness in Federated Learning"* - Accepted at European Conference on Artificial Intelligence (ECAI) 2024 — *Santiago de Compostela, Spain*

July 2024 **L. Corbucci, A. Monreale, R. Pellungrini**, *"Enhancing Privacy and Utility in Federated Learning: A Hybrid P2P and Server-Based Approach with Differential Privacy Protection"* - Accepted at SECRYPT 2024 — *Dijon, France*

Oct 2023 **L. Corbucci, A. Monreale, C. Panigutti, M. Natilli, S. Smiraglio, D. Pedreschi**, *"Semantic enrichment of explanations of AI models for healthcare"* - Accepted at International Conference on Discovery Science 2023 — *Porto, Portugal*

Jul 2023 **L. Corbucci, R. Guidotti, A. Monreale**, *"Explaining Black-Boxes in Federated Learning"* - Accepted at World Conference on Explainable Artificial Intelligence — *Lisbon, Portugal*

Community Involvement

Devroom Manager
Brussels, Belgium
"Low-Level AI Engineering & Hacking" Dev Room @ Fosdem 2025 *Feb 2025*
- Co-organized the "Low-Level AI Engineering & Hacking" Dev Room at Fosdem 2025, a dedicated track for AI practitioners and researchers.
- Curated the schedule, coordinated speaker selection, and managed the call for proposals to ensure a diverse and high-quality lineup of talks.
- Facilitated logistics, promoted the event within the AI and developer communities, and engaged with potential speakers.

Superhero Valley
Pisa, Italy
Co-founder and Community Manager *Oct. 2020 - Ongoing*
- Co-founded a community of **2000+** computer scientists supported by big-tech employees and Italian universities
- Supervised a team of **5** helpers in organising community activities and events.
- **70+** community members got internships or full-time positions in Big Tech companies thanks to our activities.

PointerPodcast
Pisa, Italy
Co-Creator and Podcaster *May. 2019 - Ongoing*
- Co-created a podcast with **250+** episodes, **70+** guests from industry and academia, and **40k+** total listens.

Pisa.dev
Pisa, Italy
Co-founder and core organizer *Jul. 2022 - Ongoing*
- Co-founded Pisa.dev, a community for developers based in Pisa. Organized **20+ meetups and social events**.