Roberto Gheda

Ph.D. in Machine Learning and Network Science

+39 349 651 2656 - robertogheda.rg@gmail.com - r-gheda.github.io - Google Scholar

EXPERIENCE

TU Delft — PhD Researcher

Mar 2025 – Present

Delft, The Netherlands — *Advisors: Lydia Y. Chen, Maksim Kitsak*

- Conducting research on graph diffusion models.
- Published **two papers in A* conferences** (highest ranking in Computer Science).
- Project in collaboration with Dutch national telecommunication company KPN.

Extra activities: Supervised two MSc students, website manager, peer-reviewer.

ASML — Machine Learning Research Intern

Feb 2024 – Jan 2025

Veldhoven, The Netherlands — *Advisors: Thiago Guzella, Carlo Lancia*

- Federated inference for root-cause analysis of lithography machines via Bayesian Networks.
- Improved accuracy (32%) and reduced communication costs (10.4×) with respect to the previous patent.
- Published a paper at **NeurIPS 2025**.

PUBLICATIONS

First author

CheckMate! Watermarking Graph Diffusion Models in Polynomial Time

ICLR 2026

Roberto Gheda, Abele Mălan, Robert Birke, Maksim Kitsak, Lydia Y. Chen

TL;DR First to apply watermark on graph data in polynomial time by using graph diffusion models and spectra of random matrices.

Collaborative and Confidential Junction Trees for Hybrid Bayesian Networks

NeurIPS 2025

Roberto Gheda, Abele Mălan, Thiago Guzella, Carlo Lancia, Robert Birke, Lydia Y. Chen

TL;DR Multi-party inference framework for Bayesian Networks, with improved scalability and precision.

Other

Test-time Graph Extrapolation via Progressive Anchor-Guided Expansion

ICLR Workshop 2026

Abele Mălan, Roberto Gheda, Robert Birke, Lydia Y. Chen

TL;DR Sampling conditioning to preserve validity of graphs generated by diffusion models at scale.

SuperHype: Hypergraph Generation via Graph-Superposition Decomposition

Under review

Lucas Gantes, Abele Mălan, Roberto Gheda, Robert Birke, Lydia Y. Chen

TL;DR A diffusion model for hypergraphs, with a scalable latent representation.

MAGiC: Attributed Graph Generation via Mixed-type Diffusion and Coarsening

Under review

Abele Mălan, Roberto Gheda, Robert Birke, Lydia Y. Chen

TL;DR A diffusion model for generating graphs with rich node features.

EDUCATION

MSc Machine Learning

Delft, The Netherlands

TU Delft – Final Grade: 8.2 out of 10 — *Sep 2022 – Jan 2025*

Thesis: ”Collaborative and Confidential Junction Trees for Hybrid Bayesian Networks”.
Extra activities: Navigation Software Engineer at Lunar Zebro.

BSc Computer Science

Trento, Italy

University of Trento — Final Grade: 102 out of 110 — *Sep 2019 – Jul 2022*

Thesis: ”Integration of PlanSys2 for a fleet automated guided vehicles”.

Projects developed during my studies (mostly in C++ and Python) are available on my GitHub: github.com/r-gheda.