

Amir Sasanfar

MSc Candidate in Quantum Engineering | BSc in Computer Engineering

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Research Profile

Quantum Engineering MSc candidate at Politecnico di Torino, expected to graduate in October 2026, with a background in computer engineering. My research interests lie in theoretically grounded problems in quantum computing, particularly quantum algorithms and quantum information. My current master's thesis research at TU Hamburg investigates Decoded Quantum Interferometry for weighted Max-LINSAT problems through mathematical analysis, proof development, algorithm design, and complexity analysis. I am seeking PhD opportunities where I can continue working at the intersection of quantum computing, algorithms, and mathematical modelling.

Education

Master of Science in Quantum Engineering

Oct 2023 – Oct 2026

Politecnico di Torino

Current weighted average: 26.3 / 30 (coursework only; thesis grade pending) – Expected Graduation: Oct 2026

- **Thesis Subject:** *Decoded Quantum Interferometry for Solving Weighted Max-LINSAT Problems*
- **Relevant Coursework:** Quantum Computing, High Performance Computing, Quantum Hardware Design & Optimization, Quantum Information, Quantum Cryptography, Quantum Communications & Networks, Quantum Photonics

Bachelor of Science in Computer Engineering

Oct 2019 – Jul 2023

Politecnico di Torino

- **Relevant Coursework:** Algorithms & Data Structures, Object-Oriented Programming, C Programming, Database Design, Signal Analysis, Automatic Control, Computer Networks

Research Experience

Research Assistant · Institute for Quantum Inspired & Quantum Optimization – TUHH
Hamburg, Germany

Oct 2025 – Present

Supervisors: Martin Kliesch, Daniel Heineken

- Conducted my master's thesis research and internship at the Institute for Quantum Inspired and Quantum Optimization, focusing on extending the Decoded Quantum Interferometry (DQI) algorithm to weighted linear satisfiability problems.
- Developed the initial research direction independently and in parallel with work that was subsequently published by another group using a closely related approach; after assessing the overlap, redirected the project with my supervisor toward another aspect of the algorithm, which we are currently investigating.
- Conducted theoretical analysis and developed mathematical proofs; designed algorithms and analyzed their computational complexity; formulated research questions through an extensive literature review.

Selected Academic Project

Permutation Synchronization via QAOA · *Quantum Computing Course Final Project*

GitHub Repository

- Completed as the final project for the MSc Quantum Computing course.
- Applied the Quantum Approximate Optimization Algorithm (QAOA) to the permutation synchronization problem; full report and code available in the repository.

Industry Experience

- Developed and optimized ETL pipelines while using a suite of AWS services, including S3, Lambda, QuickSight, and Amazon Forecast.

Academic Activities & Outreach

Team Member – QubiTO · *Politecnico di Torino*

Nov 2024 – May 2025

- Contributed to a student organization focused on quantum technologies, supporting educational workshops and outreach activities.

Team Member – BitPolito · *Politecnico di Torino*

Dec 2022 – Aug 2023

- Participated in a student team focused on blockchain technology, contributing to educational activities related to blockchain systems and applied cryptography.

Technical Skills & Certifications

Programming Languages: Python | C | Go | SQL

Quantum Computing: Qiskit | PennyLane | NetSquid

High-Performance Computing: OpenMP | MPI | CUDA

Other Tools: AWS Cloud Services | Linux | Bash | Git | MATLAB

Certification: IBM AI Engineering Professional Certificate, Coursera – Oct 2023

Languages

English: IELTS Academic 8.0 · **Italian:** Full Proficiency