ADITHYA SIREESH (ADI)

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EDUCATION

University of Edinburgh Sep 2024 – Feb 2028 (expected)
PhD in Quantum Error Correction and Fault tolerant Resource Estimation
Supervised by Dr. Joschka Roffe & Dr. Alexandru Cojocaru.

Imperial College London Oct 2021 – Oct 2022
MSc in Advanced Computing — Distinction
Worked with Dr. Tobias Haug on quantum algorithms for disentangling quantum states.

University of Edinburgh Sep 2016 – May 2020
BSc (Hons) in Computer Science and Mathematics — First Class

EXPERIENCE

Quantum Software Lab, University of Edinburgh Nov 2024 – Present
Research Assistant (Part-time) *Edinburgh, UK*

- Exploring hardware acclerated quantum error correction decoding protocols.
- Developed a resource-estimation package for automated resource estimation of cryptographic attacks on RSA and ECC (see QuantumThreatTracker).

Research Assistant (Full time) Sep 2023 – Oct 2024

- Worked on projects related to verification of BQP computations as a part of the Autonomous Quantum Technologies grant (AutoQT).
- Setup Quantum Error Correction reading group in the lab.

Inveriant Inc. Oct 2022 – Sep 2023
Quantum Computing Researcher (Python) *Remote (Singapore/London)*

- Worked at a spin-off from Center for Quantum Technologies (CQT), on resource estimation and optimization of fault-tolerant quantum algorithms for cryptographic attacks, with a focus on developing cheaper quantum arithmetic subroutines.

Amazon Prime Video Sep 2020 – Sep 2021
Software Development Engineer (AWS, React, Kotlin, Python) *London, UK*

- Built internal testing and automation tools.
- Improved developer pipelines and partner device integration workflows.

Software Development Intern Jul 2019 – Sep 2019

- Designed and deployed a serverless data lake for Prime Video analytics.
- Automated dashboards to visualize customer engagement metrics.

AlgoSurg Inc. Jun 2018 – Sep 2018
Machine Learning Intern (Python) *Mumbai, India*

- Developed statistical shape models (SSMs) for CT knee segmentation, reducing manual annotation effort in clinical workflows.

HypEd — University of Edinburgh Hyperloop Team Oct 2017 – Jun 2018
Software Developer (C++) *Edinburgh, UK*

- Devised an orientation-detection algorithm using proximity-sensor data.
- Contributed to simulation and math libraries in C++.

PUBLICATIONS

Logical accreditation: a framework for efficient certification of fault-tolerant computations
J. Mills, **A. Sireesh**, D. Leichtle, J. Roffe, E. Kashefi — *7th Int. Conf. on Quantum Error Correction (QEC 2025)* — Contributed Talk

Disentangling quantum autoencoder
A. Sireesh, A. Alhajri, M. S. Kim, T. Haug — *Quantum Science and Technology (IOP), 2025*

Measurement-based uncomputation of quantum circuits for modular arithmetic
A. Luongo, A. M. Miti, V. Narasimhachar, **A. Sireesh** — *ACM/IEEE Design Automation Conf. (DAC 2025)* — Contributed Talk

Optimized circuits for windowed modular arithmetic with applications to quantum attacks against RSA
A. Luongo, V. Narasimhachar, **A. Sireesh** — *ACM/IEEE Design Automation Conf. (DAC 2025)* — Contributed Talk

OPEN SOURCE PROJECTS

Quantum Threat Tracker (QTT)
Open-source tool for estimating when quantum computers will break RSA/DH/ECC protocols. Developed with support from Ofgem, Cambridge Consultants, and the University of Edinburgh.

COMPETITIONS

Semifinalist — Google Quantum XPRIZE 2025
Developed a *Quantum Elastic Network Model (qENM)* framework for simulating large-scale molecular dynamics (with applications to graphene), inspired by Babbush *et al.*, PRX 2023.

3rd Place — NQCC Quantum Hackathon 2022
Optimized 5G beam steering for British Telecom using hybrid quantum–classical solvers (annealing, QAOA, and classical baselines).

1st Place — Ericsson Challenge, Hack Junction 2019
Built reinforcement-learning agents for transport network optimization at Europe's largest hackathon.