

# ADITHYA SIREESH (ADI)

Email: [adithya.sireesh@gmail.com](mailto:adithya.sireesh@gmail.com) | LinkedIn: [linkedin.com/in/s1616497](https://www.linkedin.com/in/s1616497)

GitHub: [github.com/AdithyaSireesh](https://github.com/AdithyaSireesh) | Website: [sireesh.io](https://sireesh.io)

## EDUCATION

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### University of Edinburgh

Sep 2024 – Feb 2028 (expected)

*PhD in Quantum Error Correction*

Supervised by Dr. Joschka Roffe & Dr. Alexandru Cojocaru. See

### Imperial College London

Oct 2021 – Oct 2022

*MSc in Advanced Computing — Distinction*

### University of Edinburgh

Sep 2016 – May 2020

*BSc (Hons) in Computer Science and Mathematics — First Class*

## EXPERIENCE

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### Quantum Software Lab, University of Edinburgh

Nov 2024 – Present

*Research Assistant (Part-time)*

*Edinburgh, UK*

- Exploring hardware accelerated 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.
- Created 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

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### 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

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### 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

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### 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.