Cillian Smith

Software & Quantum Engineer

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SUMMARY

Software and quantum engineer at Citi Dublin with two years of experience across Java microservices engineering and quantum optimisation research. Currently leading a distributed quantum portfolio optimisation project, working with external quantum hardware vendors, and representing Citi at industry events and with senior leadership.

EXPERIENCE

Quantum Researcher Sep 2025 – Present
Citi, Dublin

- Lead research on portfolio optimisation using distributed QAOA (DQAOA) in a hybrid quantum-classical system.
- Collaborated with Oxford Quantum Circuits and the UK's National Quantum Computing Centre (SparQ programme) on quantum-compressed physics-informed neural networks (QPINNs) for derivative pricing; built the Black-Scholes validation model.
- Founded and grew Citi's internal Quantum Community of Practice to 300+ members.
- Opened Citi Quantum Week (approx. 300 attendees), ran a workshop on quantum simulation techniques (statevector vs. MPS), and presented to Citi senior leadership during an executive visit to Ireland.
- Spoke at World Quantum Day (Quantum Ireland / IDA) and Quantum Ireland industry events.

Software Engineer, Inventory Orchestration Sep 2024 – Sep 2025
Citi, Dublin

- Built an integration and end-to-end test suite for a Java microservices platform automating VM and hardware provisioning.
- Rebuilt a neglected CLI tool to feature parity with the platform UI, improving scriptability for other engineers.
- Owned macOS software certification for platform deployment.
- Began quantum optimisation research part-time alongside this role from Jan 2025.

Quantum Computing Researcher May 2024 – Aug 2024
Trinity College Dublin

- Developed mathematical encodings to map optimisation problems onto D-Wave's quantum annealing architecture.
- Implemented and evaluated quantum solutions against classical computing benchmarks.
- Authored technical documentation on methodologies and implementation results.

TECHNICAL SKILLS

- **Languages:** Python, Java, Rust, C/C++, SQL, Bash, VHDL
- **Quantum:** Qiskit, PennyLane, D-Wave Ocean SDK, QAOA, quantum annealing, circuit simulation
- **Frameworks and tools:** Spring Boot, TensorFlow, Pandas, OpenCV, OpenMP, OpenGL, AWS, Git, Linux

PROJECTS

- **qsim-rs:** Quantum circuit simulator written in Rust.
- **qasm3c:** QASM3-to-QIR compiler in Rust with a full lexer, parser, semantic analysis and codegen pipeline.

EDUCATION

M.A.I. Computer and Electronic Engineering 2019 – 2024
Trinity College Dublin

- First Class Honours; Coleen Award for Best Thesis; Stream Prize for Best Overall Result.
- Thesis: "Quantum Optimization for Energy Efficient Railway Trajectory Design".
- Key modules: Computer Vision, Deep Learning, Digital System Design, Algorithms for Quantum Computing.

Erasmus+ Exchange (Grade I) 2023
KTH Royal Institute of Technology, Stockholm

- Modules: Computer Graphics, Machine Learning, High Performance Computing, Cryptography.