Adam Callison

South Croydon, Surrey, United Kingdom
+447512 232 066 | callison.adam@gmail.com | adamcallison.com | https://github.com/adamcallison

Employment and Experience

University College London (March 2021 - Present)
Post-doctoral Research Fellow in Quantum Computing

- Build performant numerical simulations of quantum algorithms, using Python libraries such as `numpy` and `scipy`
- Enhance productivity and output by automating the execution of the simulations using Python and `bash` scripts
- Produce publishable results for high-quality research articles by processing and analysing data from simulations using `pandas`, and visualising with `matplotlib`
- Develop quantum algorithms with a focus on near-term applications
- Collaborate with other researchers, including with different expertise
- Create new insights in various quantum algorithms through analytical and numerical study
- Supervise an MSc student for a quantum algorithms project by suggesting ideas, reviewing and helping to debug Python code, and helping manage their time
- Communicate and explain my research in group meetings and give talks at various conferences

Imperial College London/Durham University (October 2017 - March 2021)
PhD in Quantum Computing

- Performed detailed numerical studies of various quantum algorithms in Python using a computing cluster
- Tested these approaches on existing quantum computing hardware
- Developed a new quantum approach to solving optimisation problems
- Explored the feasibility of applying these algorithms on near-term quantum hardware
- Advanced the theory of a particular quantum computing method
- Supervised summer project students

University of Surrey (June 2014 - September 2014)
Summer Placement Student

Used Python to develop an umbrella sampling scheme for a Monte Carlo simulation of crystal formation

Education

Imperial College London (September 2016 - September 2017)
MRes in Controlled Quantum Dynamics, Passed with Distinction

University of Surrey (September 2012 - June 2016)
MPhys Physics, First Class Honours

Modules include: Advanced Quantum Physics (82%) - Modern Computational Techniques (95%) - Scientific Investigation Skills (93%)
Average each year (87.5%, 87.5%, 80.1%)

Final year project: Simulation of Majorana quasi-particles in superconducting qubit arrays

- Designed and implemented efficient computational modelling of relevant physical system using a combination of Python and C++ on a computing cluster
- Guided my research by studying existing scientific literature
- Published a paper and wrote my MPhys dissertation on this topic

The King Edmund School - Rochford, Essex (September 2004 - June 2011)

A-Level Mathematics (A) - Physics (B) - Biology (A)

GCSE Physics (A*) - Chemistry (A*) - Mathematics (A*) - Statistics (A) - Biology (A) - 7 other A-C grades

Relevant Skills

Computing

- Highly capable of programming in Python, having done so extensively throughout my research and having contributed to existing Python-based software via Github, including the `quimb` library for quantum information and many-body calculations
- Highly proficient in using `numpy` and `scipy` for demanding numerical computations, and `pandas` and `jupyter` for manipulating and analysing data produced from simulations and experiments
- Experienced with Linux systems and HPC platforms running various schedulers
- Capable of programming in FORTRAN, C++, MATLAB and LabVIEW after studying them at university
- Demonstrated for undergraduates during FORTRAN and Python classes
- Proficient in Microsoft Office software including Excel
- Completed online course in SQL

Teamwork

- Wrote papers with co-authors, managing different areas of expertise and skill sets
- Collaborated with supervisors and other colleagues both locally and remotely during my PhD and post-doctoral fellowship, producing successful research outcomes

Communication

- Presented conference talks at **CoSec Conference** (2021), **APS March Meeting** (2021), and **AQC** (2021&2022)
- Presented posters at conferences within the UK and internationally, including **QIP** (2018&2022) and **QCTIP** (2019,2020&2022)