Daniel James Mills

About:

I am a 2nd year PhD student researching quantum computation. With extensive experience in mathematics, physics and computer science, I am eager to conduct research leading to the wide spread utilisation of quantum computers and am driven to learn the tools necessary to do so.

Highlights:

- Master of science by research (Distinction)
  - Quantum computing focus
  - Top of class
- Master of mathematics (1st class)
  - Covered mathematics, physics, computing
- Extensive research engagement before PhD
- Practical experience in technology industry
- Skilled programmer and writer
- Well practised radio show host and science communicator

Education:

University of Edinburgh CDT in pervasive parallelism **Doctorate** **2016-present**

- Supervised by Professor Elham Kashefi.
- Research focusing on the verification of early stage quantum computers.
- Other interests include comparing different models of quantum computing, their experimental implementation, foundations of quantum mechanics and simulations of quantum computations.

University of Edinburgh **MSc (by research) : Distinction (top of class)** **2015-2016**

- Received grade of 90% for dissertation titled 'Information Theoretically Secure Hypothesis Test for Temporally Unstructured Quantum Computing' which was supervised by Professor Elham Kashefi.
- Courses on machine learning broadened my background in probability theory.
- Included several courses on conducting effective research which improved my time management and academic writing as well as presentation, planning and reflection skills.

University of Warwick **MMath : 1st (Hons)** **2011-2015**

- Broad studies with a focus on Analysis; particularly information theory and dynamical systems.
- Also included extensive coverage of algebra, number theory, probability theory, geometry, fluid dynamics, computational mathematics, numerical analysis and scientific programming.
- Fourth year project, 'Communication Over Binary Symmetric Channel With Random Failure Rate', supervised by Professor Oleg Zaboronski.
- Studied many modules from physics including those on quantum mechanics and cosmology.

Work Experience:

Title: Makerspace Assistant technician PhD Intern
Employer: The University of Edinburgh **Dates: 05/2018 - present**

- Maintained and developed digitally focused manufacturing technologies, including; 3D printers, CNC milling machines, virtual and augmented reality equipment, raspberry pi and arduino boards, and die cutters.

- Utilised a selection of related software, including; Fusion360, Raspbian and Inkscape.
- Provided assistance, supervision and training for users of the space in how to use these technologies.
- Maintained and improved marketing material, including social media profiles, instructional videos and relations with the main university.

Title: Research and Development Intern
Employer: Atos / Bull SAS **Dates: 09/2017 - 02/2018 (6 months)**

- Implementing a classical simulator of my own developed my understanding of; programming languages C, C++, python and openMP; software development tools Git, Jenkins and Callgrind; and how to integrate my work in a large team project.
- Utilised classical simulation and HPC as a tool to provide new insight into quantum computing and, in particular, the impact of noise.
- Extensively researched methods for classical simulation of quantum computation and communicated these complex ideas to the rest of the team through code annotation and presentations.

Title: Research Engineer Placement Student
Employer: Siglead Europe **Dates: Summer 2014 (2 months)**

- Designed, understood and modelled error correction codes used in solid state memory.
- Tested my model by investigating, numerically (using C and MATLAB) and experimentally, the behaviour of individual cells within memory.
- Successfully conducted research with distant collaborators (Japan).
- Working with a start-up company taught me the tools used in research and running a business.

Title: Undergraduate Research Support Scheme intern
Employer: The University of Warwick **Dates: Summer 2013 (2 months)**

- Project, 'The Evolution of Eigenvalues in Random Matrices', supervised by Dr Roger Tribe.
- Developed a MATLAB program to simulate random matrices.
- Scheme included courses improving research, writing, presentation, quick thinking and teamwork skills.

Title: Mathematics and Physics Mentor
Employer: Saffron Walden County High School **Dates: 2009-2011**

- A voluntary scheme pairing me with year 11 students to whom I would explain topics related to the mathematics and physics GCSEs for which they were studying.
- Improved my ability to explain new ideas and adapt an explanation quickly to fit the audience.

Other Skills:

- Trained to use the programming languages Java, MATLAB, Python, C++ and C.
- Experienced user of Linux and Windows operation systems, Microsoft office and LaTex.
- Skilled writer and speaker due to, among other things, experience as radio presenter.

Other interests and achievements:

Obtaining the gold Duke of Edinburgh award made me accustomed to being relied on and relying on others.

I have been the science correspondent for the news team at the Edinburgh student radio station and also hosted my own science news show. I was also the elected head of the news team, with responsibilities such as organising the script and team for the weekly show and coordinating the student union election debates, and part of the team producing the Edinburgh informatics pod-cast.

For the tenpin bowling club at the University of Warwick, I managed an internal league and I was also treasurer for the postgraduate society at the University of Edinburgh.

Personal Information and Contact Details:

Address: 39/2 Coates Gardens, Edinburgh, EH12 5LF, Email: daniel.mills@ed.ac.uk, Mobile: (+44) 07443497392, DoB: 28/03/1993, LinkedIn: `www.linkedin.com/in/dan-mills/`.