JOSEPH D. HICKIE

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EDUCATION

University of Oxford **2019 - 2023**

Materials, DPhil. Thesis: *Efficient quantum device duning using machine learning.*

Lancaster University **2015 - 2019**

Natural Sciences, MSci. Graduated with **1st**. Major focus on Physics.

NOTABLE MODULES: Maths II (Fourier techniques; 80.4%); Scientific Programming and Modelling (Java; 79.6%); Physics of Fluids (79.2%); Atomic Physics (78.5%); Quantum Mechanics (75.5%).

4TH-YEAR MODULES: MPhys Project, Quantum Information Processing, Quantum Transport in Low-Dimensional Nanostructures, Matter at Low Temperature, Semiconductor Device Physics (audit), Intelligent System Control (including MATLAB course), Solid State Physics, MPhys Literature Review (**1st**)

Robert Smyth Academy **2011 - 2015**

A2: Mathematics, Chemistry, Physics. AS: Further Mathematics

GCSEs: 10 A*-B including English (A*) and Mathematics (A*) (within top 10 performers in academic year)

ACADEMIC EXPERIENCE

MPhys Project *Lancaster University Quantum Technology Centre* **2018/19 academic year**

Supervisors: Dr Jonathan Prance, Prof. Richard Haley

Conducted a literature review into modern electromagnetic shielding technology (graded 1st class), with the aim of characterising and improving the shielding performance of Lancaster's IsoLab, an ultra-isolated quantum research laboratory. Designed and engineered solutions to finalise the current EM shield; will carry out analysis of laboratory's performance in line with IEEE standards and simulate theoretical performance using EM simulation software with Python scripting. Project ends with Lancaster Physics' annual conference, including an individual presentation to hundreds of students and academics.

Research Intern *Lancaster University Quantum Nanotechnology Group* **July - August 2018**

Supervisor: Prof. Manus Hayne

Characterised the behaviour of a novel III-V semiconductor universal computer memory, including its response to endurance and reliability testing. Formulated a testing procedure for all future iterations of the device after analysis of the results of weeks of preliminary tests. Contributed advice on PhD candidates' conference talks and advised the lead professor and other group members on my project's progress over its course. Authored a 6,000-word report on the findings of the internship and proposed adaptations to the physical testing apparatus. Also co-authored a comprehensive, 30-page user manual detailing the construction and operation of the testing apparatus. Communicated our results to the Quantum Nanotechnology Group via a 30-minute presentation.

Dissertation with work placement *Freshwater Biological Association* **June 2017 - January 2018**

One of 30 students from 250 applicants successfully accepted on to the "Dissertation with External Placement" scheme. Working with the Freshwater Biological Association, developed a research proposal based on an existing river restoration project to determine how successful it had been in the medium to long term. Collected and analysed river samples, the latter improving my concentration skills enormously as many samples contained over 1000 individual specimens in the range of 0.5 mm to 20 mm. Researched and implemented novel analysis methods after FBA supervisor was made redundant leading to loss of communication with the company. Recommended methods for the improvement of future restoration projects. Achieved a 1st class in both the dissertation and learning journal aspects of the module.

WORK EXPERIENCE

Technology and Strategy Consultant *Netdocs Ltd* **July 2016 - present**

Secured a position as technology and strategy consultant for a multi-million pound document management company, reporting directly to the managing director. Identified opportunities to improve the company's flagship products and enhance web sales presence. Collaborated with the IT department to redesign the user interface of a key software package and update user manuals. Personally designed and created new company website leading to an increase in converted sales calls. Developed marketing ideas and promotional material. My latest project is to

write a program to classify documents using machine learning. Currently retained to carry out consultancy support remotely whilst studying for my degree.

VOLUNTARY WORK

First Aider *St John Ambulance* **January 2017 - October 2018**

Delivered first aid to the public during large events such as football matches as part of a small unit. Regularly refreshed knowledge and skills during weekly training sessions. Developed my ability to work under intense pressure within a small team.

Expeditionist *World Challenge Expeditions* **August 2014**

Fundraised £4000 over one year to travel across Peru with 15 individuals. Managed the group's funds as acting treasurer. Coordinated our activites and travel across the country for several days whilst leading the group. Communicated with business owners, farmers and locals as one of only two members of the team with Spanish language skills. Participated in conservation and crop management work in the Amazon rainforest.

POSITIONS OF RESPONSIBILITY

President *Lancaster University Wine Society* **January 2017 - September 2018**

Founded and developed the first wine society at Lancaster University. Organised regular well-attended events involving wine tastings and socialisation, with wine sourced from local sellers, as well as in collaboration with other university societies. Oversaw the management of the society and delegated responsibilites to other members of the society executive. Developed management and leadership skills. Continue to advise current executive team.

Natural Sciences Student Ambassador *Lancaster University* **October 2016 - present**

Represent Natural Sciences at Lancaster University during open days. Responsibilities include answering questions from prospective students and their parents at open days and applicant days, and guiding large tours of the University's grounds and facilities.

Freshers' Representative *Lancaster University* **September 2016 - October 2016**

Liaised between JCR and freshers during welcome week. Ensured new students settled in comfortably by offering guidance and help across their first year at university.

Maths Mentor *Robert Smyth Academy* **October 2013 - June 2015**

Tutored GCSE students via weekly meetings to better their preparations for exams. Helped two students pass GCSE Mathematics by setting weekly structured goals and providing coaching during the sessions.

AWARDS

Lancaster Award (Gold) *Lancaster University*: Highest level in Lancaster's assessed employability award that recognises individual achievements and endorses the development of key employability skills through extra-curricula activities. Evidence of motivation and commitment to personal development.
STEM Award *National Space Academy*: For showing particular commitment and ability in STEM subjects.
Excellence Award *Robert Smyth Academy*: For results ranking in the top 10 students in the academic year.

SKILLS AND INTERESTS

Technical	LaTeX, R, Java, Python, CSS and HTML competency
Societies	Natural Sciences, Wine Society, Lancaster University Cycling Club
Qualifications	ABRSM Classical Piano Grade 5, ABRSM Grade 5 Music Theory, PADI Advanced Scuba Diver, PADI Night Diver, PADI Nitrox Diver, University of Leeds Good Fieldwork Practice
Online courses	Google Certificate of Digital Marketing, IBM Python for Data Science (edX; audit)
Academic	Attend weekly condensed matter seminars given by guest lecturers at Lancaster University.

Interest	Activities
Piano	Achieved grades up to Grade 5 in two years whilst studying for A levels.
Tennis	Represented local team at under-18 level. Currently play at village club.
Astrophotography	Imaged various planets/deep space objects. Equipment requires regular maintenance.
Cycling	Regularly cycle long distances for health and endurance development.
Technology	Stay up-to-date with the latest advancements in technology, specifically computing.