Nicholas Lambourne

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Commonwealth Scientific and Industrial Research Organisation
Clunies Ross Street
Black Mountain ACT 2601
Australia

Dear Hiring Manager,

My name is Nicholas Lambourne and I am a third year undergraduate student at the University of Queensland, enrolled in a Bachelor of Engineering (Hons), majoring in software engineering. This letter accompanies my application for a summer vacation scholarship at the CSIRO Clayton office under the direction of Dr Fanel Donea, whose projects focus on quantum technologies.

I have been enamoured with quantum computing since reading Swiss professor Nicolas Gisin's book *Quantum Chance* in 2016 and have closely followed the rapid development of the QIP industry in Europe and North America, including the development of quantum emulation software by private corporations like Rigetti Computing.

I believe that my educational and professional background has provided me with a skillset uniquely appropriate for this opportunity. My studies at the University of Queensland (UQ) have provided me with solid software engineering skills, including the ability to contribute to and maintain large, active codebases as well as construct efficient algorithms. These studies have also instilled in me a healthy respect for comprehensive testing and thoughtful software design. As part of UQ?s engineering cohort, I have also been exposed to courses in linear algebra and discrete mathematics, both of which are crucial to producing performant software. During the first semester of 2018 I participated in an exchange program at the University of Connecticut. I chose Connecticut primarily as a result of their agreement to allow me to audit their graduate course in Quantum Computing, taught by Assistant Professor Walter Krawec - a course I thoroughly enjoyed.

In addition to my educational experiences, I have also been involved in academic research during my time as a Winter Research Scholar in UQ's Social Robotics Laboratory under the supervision of Dr Gautier Durantin and Dr Janet Wiles. As a winter scholar I worked on the NgukurrOPIE Indigenous Language Project, producing tools to accelerate the language resource production process. The resulting software was later transferred to the ARC Centre of Excellence for the Dynamics of Language and I was invited to continue my work in the lab. In addition to these duties, I have also recently been engaged by UQ as a tutor for introductory engineering courses and while I have only been in this role for a short time, it has already proved to be a rewarding experience.

In the long-term, I intend on pursuing a career in academia and research, working generally in computer science and more specifically in quantum information processing. After graduating from my undergraduate degree in June 2020, I mean to pursue a PhD in this field. My desire to teach comes from the distinct sense of fulfilment I get out of my experiences tutoring as well as volunteering as a mentor with organisations like DjangoGirls and Robogals. This desire to give back has also led to me becoming an active member of my University?s computing society (UQCS), where I have contributed to the organisation of events and have given lightning talks on various technical topics.

Thank you for taking the time to consider my application for this role. Should you require any further information, please contact me at any time via phone (0407 980 730) or email (nick@ndl.im).

Kind regards,

Nicholas Lambourne

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Education

The University of Queensland — St Lucia QLD, Australia
Bachelor of Engineering (Hons) (Software Engineering) — Feb 2016 - June 2020
Bachelors of Commerce/Science (Finance & Psychology) — Class of 2015

Experience

The University of Queensland - Faculty of Engineering, Architecture & IT — St Lucia, QLD
Engineering Tutor — Jul 2018 - Present

- Responsible for several teams of first-year engineering students taking the course *Engineering Modelling and Problem Solving* in which they utilise industry tools including CREO and Matlab to design, build and test a model UAV.
- In addition to supervising students in practical sessions, I am also responsible for marking student assignments and facilitating various other forms of assessment.

The University of Queensland - Social Robotics Lab — St Lucia, QLD
Winter Research Scholar — Jun 2018 - Aug 2018

- Worked in an interdisciplinary team with linguists and engineers to produce software for the Ngukurr OPIE Social Robot Project (see Hermes, below) which was later transferred to the ARC Centre of Excellence for the Dynamics of Language.
- Produced an academic poster and conducted workshop tutorials with end-users demonstrating the produced software.

ADLED Pty. Ltd. & SS Signs — Cleveland, QLD
Technical Advisor — Oct 2015 - Dec 2017

- Managed technical aspects of a network of LED billboards across South-East Queensland.
- Developed and maintained a real-time online resource monitoring portal for the LED network (see projects, below).
- Compiled financial reports and worked with industry groups to lobby local governments on legislative issues.
- Headed an extensive technical and financial review of digital advertising content management systems.
- Developed software to control the rotation of LED billboards to face oncoming traffic (see projects, below).

Skills

Programming Languages

Familiar:	Python, Java, C, JavaScript, SQL, LaTeX, HTML/CSS
Encountered:	Matlab, Ruby, AVR Assembly, SML, Smalltalk, Prolog

Other Skills

Tools:	VCS (Git, SVN), Web Frameworks (Django, Flask, ExpressJS), NodeJS, Jupyter, REST APIs, Linux (Ubuntu), Web Servers (nginx, Apache), SQL DBs (PostgreSQL, MySQL), NoSQL (MongoDB), CI/CD (Jenkins), Wordpress, Cloud Platforms (AWS EC2, S3, EB; Heroku)

Projects

Hermes - The Language Resource Creator (https://github.com/CoEDL/hermes)

- As part of the UQ Winter Research Scholarship I developed a cross-platform Python application, using the Qt GUI library, for creating language resources from ELAN linguistic analysis files and associated media.

ndl.im (https://github.com/nicklambourne/personal)

- Personal website built using NodeJS, ExpressJS and MongoDB with an automated build pipeline and Jenkins for CI/CD, hosted on Heroku.

uqcsbot (https://github.com/UQComputingSociety/uqcsbot)

- Contributed new scripts and script overhauls to my university computing society's Slack bot, originally written in JavaScript and later ported to Python.

adled-io (Proprietary/Closed Source)

- Built a proof-of-concept web portal for monitoring an LED billboard network. Used various APIs to provide real-time status monitoring and live video feeds. Built using Python, Django, PostgreSQL. Hosted on a VPS using Gunicorn/nginx.

LED Billboard Rotation System (Proprietary/Closed Source)

- Developed a system for controlling the rotation of large-format LED billboards. It utilised a daemonized Python process running on a Unix-based device. Later upgraded to include a GUI element and concurrency-based features.

Volunteering

Node Girls/Django Girls/Robogals - Brisbane Chapters — 2017 - Present

- Provided mentorship in web and robotics technologies in an effort to increase female representation in technology.

University of Queensland Computing Society — 2015 - Present

- I have given lightning talks, assisted with events and contributed to open source projects (websites, Slack bots etc.).

YOW! Developer Conference — 2017-Present

- Participated as a student volunteer assisting with conference organisation and preparation.

Awards

UQ Winter Research Scholarship — The University of Queensland
Dean's Commendation for Academic Achievement — The University of Queensland
UConn Innovation Quest - Finalist — The University of Connecticut

References available on request