

Resume for Callum McKenzie

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Personal Details

Name: Callum Roderick McKenzie
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Citizenship: New Zealand citizen

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I have spent the last ten years pursuing an academic research career and I am now looking outside academic circles for a job in industry.

As my research record shows, I have been involved in a diverse range of fields and adapt very quickly to new environments. I have also been exposed to a wide range of equipment and techniques. Years of lab-work, often involving home-made equipment, has made me an excellent trouble-shooter as well as a creative, and sometimes unorthodox, designer. I also have excellent programming skills in a wide range of languages and environments.

My work has either involved small teams or independent work. I work well in both circumstances. In most cases direct supervision has been minimal.

Academic Qualifications

2001 Otago Doctor of Philosophy in Atomic Physics
1997 Otago Master of Science in Physics with Distinction
1995 Otago Bachelor of Science with Honours (1st class) in Physics

Recent Employment

2002-present FRST NZ Science & Technology Postdoctoral Fellowship
2000-2002 Researcher at NIST, USA.
1997-2000 PhD Student at the University of Otago

Research Experience

- Numerical modelling of ice build-up (6 months).
- Experimental determination of drying rates for *pinus radiata* (3 months).
- Acoustic analysis of the structure and failure of sea-ice (1 year).
- Research into quantum degenerate gases and quantum information processing (7 years). This has included:

- Atom lasers
- Quantum chaos
- Quantum computing
- Photoassociation and ultra-cold molecules

Programming Experience

- Strong involvement in the open source community, specifically the GNOME project where I am one of the core maintainers.
- Experience writing control systems for a variety of hardware, including two completely automated experiments.
- Strong experience programming in C, Pascal, Scheme, C++, Python, Perl.
- Other languages used: Java, Visual Basic, Lisp.
- Assembly language experience with both microprocessors and microcontrollers (x86, PowerPC, 68HC11, Z80, Atmel AVR).
- I have programmed under Linux, Mac OS (9 and X) and Windows as well as some embedded systems.

Electronics Experience

- Interfacing computers to external devices (GPIB, serial, generic digital and analog I/O).
- Working with CCD cameras.
- PID controllers for temperature and current stabilisation.
- Frequency locking systems for lasers.
- RF electronics (everything up to 7 GHz).
- Designing and building circuits (including manufacturing the circuit boards).
- Teaching in digital electronics and advanced electromagnetism labs.

Optics Experience

- Extensive laser experience (diode lasers, dye lasers and gas lasers).
- Experience with modulating light (acousto-optic modulators, electro-optic modulators and direct laser modulation).
- Imaging optics.
- Detectors: photodiodes, CCD arrays.
- Fibre optics.
- Holography.

Teaching Experience

1994-2000 Laboratory demonstrating for a range of first, second and third year classes. These included electronics, electromagnetism, thermodynamics and general physics.

References

Please note that for the first reference email is the preferred form of communication for initial contact.

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