David Greenaway

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Education

2010 – 2015	**PhD (Computer Science), University of New South Wales**
	'Automated proof-producing abstraction of C code' — For this thesis I developed new tools to simplify formal verification of low-level C code, for high-security and safety-critical domains.
2003 – 2007	**BSc (Computer Science), University of New South Wales**
	Honours Class 1 and the University Medal
	Honours thesis: *Quantifying the effects of scheduling on IPC performance*

Work Experience

2009 – 2010	**Research Engineer, NICTA**
	Worked as part of a small team to port Linux to run para-virtualised on the seL4 microkernel.
	Worked as part of a small team to implement a prototype *secure access controller*, which securely switched between network instances using sandboxed Linux subsystems running on seL4.
	Formally modelled the design of the secure access controller, Isabelle/HOL and the Spin model checker to formally verify security properties of the model.
2007 – 2009	**Software Engineer, Open Kernel Labs**
	Worked in a small team to design and prototype a performance-optimised microkernel and supporting infrastructure used as a replacement to OKL's flagship product.
	Developed tools to automatically locate codepaths in a microkernel that potentially delayed interrupts for long periods of time. Used these tools to reduce worst case execution time of the kernel to meet strict real-time performance requirements.
	Designed and developed a tiny single address-space kernel, designed to be high-performance and support SMT architectures. Ported, tested and benchmarked the kernel on both ARM and a propriety SMT architecture.
2003 – Current	**Software Engineer, Purchasers Strata Inspections Pty. Ltd.**
	Designed and implemented from scratch a software system to replace a failing legacy system.
	The system is used by both office staff and remote inspectors, allowing building reports to be created, sent to inspectors, returned and published.
	Currently provide ongoing maintenance and development of the system to meet the constantly changing requirements of the company.

Technical Skills

- Programming languages, including C, C# (2.0), Python, ARM assembly, Isabelle/HOL, Spin (Promela), Java, SQL (Microsoft SQL Server).

- System administration, including GNU/Linux (Debian, Ubuntu), Apache, Postfix, iptables.

Teaching

2003 – 2010	**Tutor and Deputy Team Leader, Australian Mathematics Trust**
	Acted as a live-in tutor on programming camps for talented high-school students, lecturing in data structure and algorithm design.
	Deputy team leader for Australian team on the International Olympiad in Informatics, acting as coach for students on overseas competitions.
2004 – 2007	**Casual Academic Tutor, University of New South Wales**
	Taught students in both tutorial groups and labs in C and Haskell.
	Under the guidance of the course lecturer, designed and constructed computing assignments for over 200 students.

Publications

- David Greenaway, Japheth Lim, June Andronick, Gerwin Klein, *Don't sweat the small stuff: formal verification of C code without the pain*, in PLDI 2014. DOI: 10.1145/2594291.2594296

- Andrew Boyton, June Andronick, Callum Bannister, Matthew Fernandez, Xin Gao, David Greenaway, Gerwin Klein, Corey Lewis, Thomas Sewell, *Formally verified system initialisation*, in FMSE 2013. DOI: 10.1007/978-3-642-41202-8_6

- David Greenaway, June Andronick, and Gerwin Klein, *Bridging the gap: Automatic verified abstraction of C*, in ITP 2012. DOI: 10.1007/978-3-642-32347-8_8

- June Andronick, David Greenaway, Kevin Elphinstone, *Towards proving security in the presence of large untrusted components*, in SSV 2010.

- Kevin Elphinstone, David Greenaway, Sergio Ruocco, *Lazy scheduling and direct process switch – merit or myths?*, in OSPERT 2007.

Awards

2007	Computer Science University Medal, University of New South Wales
2005	Aurema Operating Systems Prize, University of New South Wales
	Best performance in an advanced level operating system's course
2004	ACM Programming Competition, South Pacific Winner, *Shanghai, China*.
2002	International Olympiad in Informatics, Silver Medalist, *Yong-in, South Korea*.
2000	International Olympiad in Informatics, Bronze Medalist, *Beijing, China*.