Keith WANSBROUGH

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Tel:	+44 (0)7967 814 411 (M) +44 (0)1324 718 019 (H)	**Born:** **Nationality:**	27 July, 1974 (Auckland) New Zealand (UK work permit *not* required)

Overview

I am a software developer with eight years of industry experience, built on a PhD in programming languages and four years of post-doctoral research.

I believe software is a craft. I am passionate for technical excellence, and seek to find the pragmatic balance between immediate business needs and the long-term costs of technical debt. I am also passionate about education: by helping others avoid repeating mistakes I've made, and showing them how to take advantage of existing libraries and techniques, I can multiply my net contribution.

Experience

Coming from a programming languages background, I have experience in a wide variety of programming languages, and can quickly become expert in new ones. Recently I have worked extensively with Java, C++, Javascript, and Perl, with a moderate amount of Python, Ruby, SQL, and Bash thrown in. In other projects I have worked with extensively with Haskell and OCaml, and also with Scala, Processing, x86 assembler, VBA, Elisp, Scheme, TEX, PostScript, awk, sed, Logo, and a host of others. I am teaching my children Scratch (graphical Smalltalk), Arduino (gcc), and Javascript.

I have particular expertise in telephony and in networks, but I have a broad and deep understanding of computer systems generally, from the Linux kernel, to i18n, to designing an efficient JSON API.

Key qualities

Problem-solver, listener, communicator, quick learner, enabler. Reflective and self-improving.

Interests

Hiking, camping, home automation, cooking, reading, DIY, appliance repair, gardening.

Employment

2005 – present **Metaswitch Networks (Data Connection Ltd), London and Edinburgh**
Software Developer

Working as part of a team enhancing and maintaining a voicemail system and call feature server (on Linux and Solaris), a multimedia conference server (on Windows), and a cloud project. Largely server-side but some client-side development as well (native, browser, applet, and mobile).

Project sizes have varied from three to 50 developers, and I've worked both remotely and in the office. Experience of architecture, design, development, testing, professional services, and level 3 customer support, and both waterfall and Scrum methodologies. Technical lead and/or component owner for a number of features and areas. Host a long-running series of internal educational talks; currently starting up a more formal course.

2003 – 2005 **St Catharine's College and the Computer Laboratory, University of Cambridge, England**
Michael and Morven Heller Research Fellow

Designed and prototyped the programming language *Acute*, for building reliable distributed systems, combining novel ideas and the best current research into a practically useful system.

Constructed a formal specification of TCP/IP and sockets, including failure behaviour. Used a custom symbolic model checker to validate this specification against the Windows, Linux, and BSD implementations. Design, implementation, and maintenance of distributed analysis and validation system.

Publications in POPL, SIGCOMM, TACS, ESOP, and others. Led team of five developers.

2000 – 2003 **Computer Laboratory, University of Cambridge, England**
Research Associate, with Peter Sewell and Robin Milner

Developing formal semantics for distributed systems, as a foundation for distributed middleware development and reasoning about failure-tolerance, reliability, and security.

Funded by EPSRC and EU project PEPITO (peer-to-peer computing). Publications in JFP and ICFP.

Education

1997 – 2002	**Clare Hall, University of Cambridge, England; transferred from Glasgow 1998** **PhD** (Microsoft Research and University of Cambridge Computer Laboratory)

Worked under Simon Peyton Jones on designing and implementing a program analysis and compiler optimisation for Haskell and related functional languages. Type and constraint systems; operational semantics. Part of the Cambridge *Theory and Semantics* research group. Funded by a Commonwealth Scholarship. Publications in POPL and TIC.

1996	**University of Auckland, New Zealand** **MSc with Distinction** (and Dean of Science prize)

Research into a synthesis of two specification methods for domain-specific languages, with a prototype implementation. Elective courses in ancient Greek history, parallel and distributed computing.

1992 – 1995	**University of Auckland, New Zealand** **BSc(Hons) First Class** (and six prizes and scholarships)

Major: CompSci (compilers, algorithms, information theory, AI, program derivation). Minor: Maths (CS foundations, algebraic structures, statistical theory, topology). Average A+. Elective courses in physics, chemistry, English literature. Final-year project on *Tracing Lazy Functional Languages*.

1987 – 1991	**Selwyn College, Auckland, New Zealand** **Senior Scholar (co-*dux*)**

University Bursary (final year): Chemistry, English, Calculus, Statistics, Physics (all A+).
Sixth Form Certificate (penultimate): Chemistry, English, German, Physics, History, Graphic Design.

Other activities

2006 – present	**Parent Council member – Wallacestone Primary School, Falkirk**
2006 – present	**Sunday School co-leader – Brightons Parish Church, Falkirk**

Plan and deliver a weekly education and personal/spiritual development session for 11–14 year olds.

1998 – 2005	**Supervisor (tutor) – University of Cambridge, England**
1991 – 1997	**Product Specialist – Roland Corporation, Auckland, New Zealand**

Systems and network administration; technical support within the company; on-site technical support for computer-aided signwriting machines and software; graphic design of promotional materials; preparation of demonstrations; database and spreadsheet development for sales and management; liaison with product development team in Japan (including a visit to Hamamatsu in 1994).

1991 – 1997	**Sound System Coordinator – Auckland Baptist Tabernacle Church, Auckland, New Zealand**

Live sound mixing for a variety of events; training and supervising operators; coordination with church management team; purchases and upgrade proposals; repairs to audio equipment.

1991 & 1996	**ACM Programming Contest 1996 and International Mathematical Olympiad 1991** **Member of New Zealand national team**
1994 – 1996	**Small Group Leader – Auckland University Christian Union, Auckland, New Zealand**

Preparing and leading participatory Bible studies; facilitating group communication; pastoral care.

1993 – 1995	**Contract programmer – Reticulation Development Limited, Auckland, New Zealand**

Writing and maintaining job accounting and sales tracking databases.

Referees

Available on application.

Falkirk, Scotland, Tuesday, 29 January, 2013