

Overview

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For many years I have been a software developer. I analyze technical problems, I devise, implement, test and maintain solutions, and I provide technical and user documentation. I have often had to solve difficult research problems, where I had to learn through independent study, then create an original approach. I can manage my own tasks, I can work with colleagues, partners and customers, and I remain productive while telecommuting.

I have a general interest in complex engineered systems: creating, studying and maintaining such systems, and supporting their users. This includes system administration, which has often been part of my job. I have been using Unix since 1993 and running Linux since 1995.

Experience

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Co-Founder, *Action Technologies*, Ohio, 2000 – 2010

*Activities –*

Business: assist with management decisions & business planning, review legal documents, interview employment applicants

Projects: conceive, propose, find partners & funding, lead, execute, manage problems

Programming: design, implement, test, maintain, revise; independently, and as part of a team

Writing: project proposals, design documents, technical reports, user documentation, academic papers, legal documents, mathematical illustrations, diagrams

SysAdmin: set up hardware, install software, write scripts, diagnose problems, help users

*Technologies –*

Programming: mostly Haskell, some C, Java (with AWT, Swing), Bash, Perl 5, XML, DarcS

Writing: L<sup>A</sup>T<sub>E</sub>X, LyX, Basser Lout, PostScript, (X)HTML, CSS

SysAdmin: Debian GNU/Linux, Apache, Exim, BIND, NFS, NIS, iptables, wireshark

*Application domains –* molecular docking, drug screening, investment portfolios, geocoding, source reliability, network disruption, antenna manufacturability, aircraft maintenance, tactical enemy intent inference, sonar multi-pathing, multi-modality sensor fusion, abductive inference

Senior Technical Officer, *European Bioinformatics Institute*, England, 1998 – 1999

Used OKBC and Common Lisp to represent and query genomic data in knowledge bases. Created frame representation for genes, proteins, complexes, biological function. Used Perl 5 for taxonomy inference from co-occurrence of terms in database records. Maintained IRIX workstation.

Visiting Scholar, *Lab. for Artificial Intelligence Research, The Ohio State University*, 1996 – 1998

Used Modula-3 and C to implement a robust, distributed computation system to support engineering design optimization. Used SQL with Sybase. Maintained HP-UX workstations.

## Experience, continued

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### Other projects

Implemented applications:

- a featureful language for composing functional models, incorporating a rich type system and automated solving of conditional equations
- file archiving: file system traversal, compression, strong encryption, error correction
- adaptive Morse code encoding and decoding
- a display driver fully integrated with the operating system's interactive functions
- double-entry book-keeping system for small businesses
- electronic mail system that incorporated access control and asymmetric-key cryptography
- graphical user interface work on a process-based engineering design support system

The above projects used Modula-3, C++, OpenGL, 6502 assembler, BBC BASIC, QuickBASIC.

## Education & Qualifications

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2008 – Chartered Information Technology Professional (CITP)

2007 – Professional Membership of the British Computer Society (MBCS)

1996 – Graduate Record Examination: scores in the general test, each out of 800:

Verbal ability: **610** (top 15%)

Quantitative ability: **800** (top 2%)

Analytical ability: **800** (top 1%)

1996 – B. A. (Hons) 2.ii, Computer Science, King's College, University of Cambridge

1993 – A-Level: Pure Mathematics (A), Applied Mathematics (A), Physics (A), Chemistry (B)

1991 – GCSE A grades: English, Mathematics, Physics, Chemistry, Astronomy, Computer Studies, Media Studies

## Selected Publications

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Co-inventor on U. S. patents for multi-criterial optimization, nos. 6,771,293, 7,155,423, 7,437,343.

“Tradeoffs on the Efficient Frontier of Network Disruption Attacks”, M. T. B. Carroll, J. R. Josephson, J. L. Russell, *IEEE Symposium on Computational Intelligence in Multi-Criteria Decision-Making*, 2007

“Toward a Generic Architecture for Multisource Information Fusion”, John R. Josephson, B. Chandrasekaran, Mark T. B. Carroll, *US Army Research Laboratories Collaborative Technology Alliances Conference on Advanced Decision Architectures*, 2003

“An Architecture for Exploring Large Design Spaces”, John R. Josephson, B. Chandrasekaran, Mark Carroll, Naresh Iyer, Bryon Wasacz, Giorgio Rizzoni, Qingyuan Li, David A. Erb, *Fifteenth National Conference on Artificial Intelligence*, ISBN 0-262-51098-7, 1998