

Professional experience

2006—2007 Coffee Roaster
Alaska Coffee Roasting Company, Fairbanks AK.
<http://www.alaskacoffeeroasting.com/>

Responsibilities included roasting and cupping coffee from every major growing region. Placed among the very highest scores in Kenneth Davids' recent espresso review, on coffeereview.com.

2004—2007 Research Honorarium
University of Alaska Fairbanks, Fairbanks AK.
<http://www.staff.uaf.edu/fntak>

Multiple projects in multiple departments. According to university records, assigned the title of Project Director. Part-time engineer and DJ at KSUA, duties assigned include dancing in the production office, writing silly album reviews, and loading the soda machine with cans of turkey gravy. Under the direction of Dr. Ken Severin, Advanced Instrumentation Lab, assisted in qualitative and quantitative measurements using electron imaging and X-Ray spectroscopy. Manufactured instruments for research projects, and developed associated experimental methodology.

2001 Mathematician, Research and Development
LizardTech, Inc., Seattle WA.
<http://www.lizardtech.com/>

Consulted with groups and individuals at LizardTech regarding digital imaging technology, embedded systems development, image processing, color management, wavelet theory, and cryptography. Started work to port the LizardTech MrSID image compression code to the Digita OS, for use on digital cameras.

2000—2001 Senior software engineer
LivePostcard.com, Inc., Anchorage AK.
<http://www.livepostcard.com/>

Designed and implemented a custom application for the Kodak DC290 to enable photographers to tag photographs with customer data, and manage that data on the camera. Developed remote data terminals to provide secure transfer of images and data between cameras and a central server, and remote updates of camera software, across dialup or LAN connections. Implemented the LivePostcard WAN infrastructure, including a secure VPN, database services, email, CVS, bug tracking, storage management, and internet connectivity. Maintained servers collocated at Exodus, in San Jose, CA.

1998—1999 Research assistant
Institute of Social and Economic Research, Anchorage, AK.
<http://iser.uaa.alaska.edu/>

Fetches coffee and bagels. Worked on homework, and occasionally on research projects. Managed the ISER web site and relevant servers. Greatly improved juggling skill. Increased understanding and appreciation of 18th century fine art, Native Alaskan cultures, and the Japanese Salmon market.

Professional associations

- UAA Complex Systems Group member, since 2002.
- Green Party Strategic Planning Committee member, 2001.
- Alaska Quiet Rights Coalition (AQRC) member, since 1997.
- Mathematical Association of America (MAA) member, since 1997.
- Math Club representative, University of Alaska, 1997.
- KSUA (95.1 FM) DJ, University of Alaska, 1996.
- Juggling Club member, University of Alaska, since 1996.
- Amnesty International member, since 1996.
- Association for Computing Machinery (ACM) member since 1996.
- 2600 Club president, University of Alaska, 1996.
- Math Club member, University of Alaska, since 1994.
- Free Software Foundation (FSF) member and activist since 1992.
- Black belt in *Jinen-Ryu* Karate, 1992.

Research areas and projects

- **Nonlinear Dynamics**
Studies of oscillation and other complex dynamics in nonlinear chemical systems, and development of related mathematical models.
- **Wavelet Image Compression**
Implementation of work related to Lifting transforms by Daubchies, Cohen, and Faveau. The project eventually expanded to a full-featured image compression library.
- **Artificial Intelligence**
Thesis project, exploration of ideas related to proof systems, and algorithmic limitations of logic and computability.
- **Digital Character Recognition**
Use of Fourier descriptors for character matching in scanned text. This is still a work in progress, but is already competitive with commercial OCR software.
- **Holographic Optical Elements**
Development of on-axis diffractive optical elements as an alternative to larger optics assemblies.
- **Solar Energy**
Analysis of the efficiency of solar thermal collectors and storage systems. Development of software to accurately gauge solar potential energy at a given location, and to calculate thermal and photovoltaic system needs based on energy demands.

Hobbies and interests

backpacking, calligraphy, camping, cheese racing, chocolate, coffee, combat kites, cooking, compiler design, creative writing, crochet, cryptology, dumpster diving, environmental activism, functional programming, gardening, Go, hiking, holography, interactive fiction, juggling, knitting, massage therapy, nanotechnology, origami, photography, poetry slams, programming, puzzle games, reading, recycling, science fiction, sewing, storm chasing, sustainability research, Thai cooking, thoughtcrime.

Computer-related experience

Hardware platforms

Apple II, Apple IIc, Mac 512k, Mac SE/30, Mac Classic, Mac LC III, Power Mac 7500, Power Mac 9600, Apple Network Server 500, Apple Newton, iMac G3, Power Mac G4, Atari 800, Atari 800XL, Atari 1040ST, Atari Portfolio, Atari MegaST, Atari TT, Atari Falcon, Commodore VIC-20, Commodore 64, Commodore 128, Commodore Amiga 3000, Cray C90, Cray YMP-M98, Cray T3D, DEC PDP-8, DEC PDP-11, DEC VAXStation 2000, DEC VAX 11/780, DEC VAX 11/785, DEC Alpha 3000, DEC Alpha Multia, DEC AlphaServer 2100, HP 48GX, HP 9000/715, IBM AS/400, IBM RS/6000, Intel Paragon XP/S, various Intel x86 machines, Kodak DC290, NeXTStation Color, NeXTCube, Symbolics 3600-L Lisp Machine, SGI Indy, SGI Onyx, SGI Origin 2000, Sun SPARC-Station 4, Sun Ultra 2, Sun JavaStation-NC, Sun Enterprise 4500, TI 99/4A, Thinking Machines CM-200, 3Com Palm Pilot Personal, Palm III, Palm Vx, and many special-purpose embedded devices.

Operating systems

MacOS X, GNU/Linux, Solaris, VxWorks, QNX, Cisco IOS, OpenBSD, FreeBSD, NetBSD, MacOS 9, IBM AIX, HP-UX, SGI IRIX, Cray Unicos, DEC OSF/1, Compaq Tru64, Symbolics Genera, DEC OpenVMS, Microsoft Windows 3.0, 95, 98, NT, 2000, XP.

Programming languages

Objective C, Java, C++, C, AWK, Prolog, Scheme, Haskell, ML, Common Lisp, Smalltalk, Perl, PHP, SQL, Python, Fortran, Pascal, Forth, Logo, various assembly languages.

Software packages and development libraries

Scientific tools: AVS, FFTW, Fluent, LAPACK, Maple, Mathematica, Matlab, Maxwell SV, Pari/GP, XDrawChem.

Engineering tools: AutoCAD, Cadence, OrCAD, PCB, Spice.

Development tools: Apple Xcode (MacOS/G5), Wind River Systems Tornado (Vx-Works/PPC560), IBM Rational Rose, Metrowerks CodeWarrior (PalmOS/68k), Microsoft Visual Studio (Windows/x86).

Server applications: Apache, BIND, DHCP, CUPS, MRTG, Postfix, Samba, Sendmail, Mambo, Gallery.

Database systems: MySQL, PostgreSQL, ContentDM, Oracle.

Graphics tools: Adobe Acrobat, Adobe Illustrator, Adobe Photoshop, Blender, GIMP, Alias Maya, T_EX, POV-Ray, SodiPodi, Xfig.

Networking

Physical interfaces: EIA/TIA 568A, 568B; RS232, RS422/485, V.35.

Data Link protocols: IEEE 802.3, 802.11, X.25, Frame relay, ISDN, PPP, SLIP.

Network protocols: IPv4, IPv6, IPsec, IPX, AppleTalk; ICMP, OSPF, RIPv2.