

Randolph Allen Bentson
808 N Proctor St
Tacoma, WA 98406-4936
bentson@holmsjoen.com
253 759 9461 home
206 910 8720 cell

Education

Ph.D. Computer Science, Colorado State University, 1994.
M.S. Computer Science, Colorado State University, 1982.
B.A. Math & Physics, St. Olaf College, 1970.

Career

As shown below, I've worked in a number of industrial and academic positions covering different aspects of computer programming, system design, system administration, team supervision, and teaching computer science. Some of these overlapped in time when I worked on concurrent consulting contracts, worked on my Ph.D. research, taught evening classes, worked on open source development projects, etc.

Positions held, and their duties:

University of Puget Sound, Tacoma, WA
Associate Professor -- July 2003-present
Department of Mathematics and Computer Science.
CSci161 - Introduction to Computer Science
CSci232 - Digital Electronics and Computer Hardware (AKA Physics 232)
CSci250 - Electronic Commerce
CSci261 - Computer Science II
CSci281 - Assembly Language and Computer Architecture
CSci340 - Software Engineering
CSci375/CSci381 - Computer Systems and Architecture Design
CSci481 - Compilers
CSci475 - Operating Systems
Math210 - Mathematics for Computer Science
Physics232 - Digital Electronics and Computer Hardware
Supervised summer student research projects: twice on aspects of modeling amorphous solid water, and twice on automating political redistricting to avoid misapportionment and Gerrymandering
Installed and maintained Linux on departmental servers and desk top systems.

VoteHere, Inc., Bellevue, WA
Principal Engineer -- May 2000-August 2002
Contributed to design of network based voting system, including identification of security threats. Implemented server/client protocol (HTML/MySQL). Wrote or modified Linux and X11 drivers for special hardware including storage modules, video display, touch screen, ADA buttons (for blind voters), and audio. Extended iButton (www.ibutton.com) drivers for specialized use. Analyzed software and processor performance. Wrote build scripts for entire application suite.

Telegnostic, Inc., Seattle, WA
product development -- March 1999-May 2000
Modified specific-use database supporting full text searching.
Improved performance by hundredfold in both indexing and searching
through structural changes. Wrote device drivers to support two
different SCSI scanners. Developed modest authentication scheme
for access control to document image collections.

Ioptics, Inc., Bellevue, WA
member of algorithms group -- April 1998-March 1999
Developed signal processing algorithms for new technology
optical storage system.

Gacha, Inc., Seattle, WA
system architect -- 1996-1998
Developed server side software for Internet based
multiuser game play.

Alternate Access, Seattle, WA
systems administrator -- 1996
Helped with system configuration and support of ISP.

self employed
author -- 1995-1996
Wrote "Inside Linux: a look at operating system
development", a gentle introduction to this computer
science topic for computer professionals and college
students.

Cyclades, Fremont, CA
contract systems programmer -- 1994-1998
Developed device drivers for Linux system. Retained
as a consultant for future products.

Incorporated Research Institutions for Seismology,
Seattle, WA and U.S. Geological Survey, Menlo Park, CA
contract application programmer -- 1993-1996
Implemented system to convert archival seismological
data to new international standard for data exchange.

Strobe Data, Inc., Bellevue, WA
contract systems designer -- 1992-1995
Wrote device drivers for synchronous communication and for
streaming tape drive; wrote applications on Novell network;
implemented task scheduler and device emulators for computer
emulation project; extended microcode emulation of Data
General computers to provide higher performance.

Seattle University, Seattle, WA
lecturer -- 1991-1994
Taught survey classes in operating systems, architecture,
and compilers for Software Engineering program.

Newt Seismic Systems, Inc., Seattle, WA
contract application programmer -- 1991
Modified existing software and created new software for
seismological data archive conversion.

Department of Computer Science,
Colorado State University, Ft. Collins, CO -- 1981-1994

As lecturer, 1982-1990:

taught courses in operating systems, programming methodology and
software engineering, advanced FORTRAN programming, and advanced
Pascal programming at the senior level and graduate level.

As the department's systems administrator, 1981-1990:

supervised the growth to over fifty networked Unix systems,
advised other departments on campus, managed up to four
graduate assistants; developed and co-taught a 52 hour program
titled "Comprehensive Unix" through the National Technological
University. Returned after leaving in 1990 to assist while
second replacement administrator was found.

As Ph.D candidate, 1984-1994:

implemented and instrumented functional programming language
designed to operate on a high-performance multi-processor.
Successfully defended in 1994.

Department of Atmospheric Science,
Colorado State University, Ft. Collins, CO
contract application programmer -- 1980

Wrote data collection software to extract weather information
delivered from remote sensor to ground station via satellite
link.

Vydec, Inc., East Hanover, NJ
systems programmer -- 1978-1980

Implemented special purpose operating system as basis for
network file server, maintained and enhanced UCSD P-system.

Rapidata, Inc., Fairfield, NJ
systems programmer -- 1976-1978

Ported network concentrator code for timeshare system.

Kustom Electronics, Inc., Chanute, KS
systems programmer -- 1972-1976

Wrote drivers for digital radio CSMA/CD telecommunications.
Extended firmware to add features to character display terminal.

Materials Test Systems, Minneapolis, MN
contract application programmer -- 1971-1972

Wrote software for real-time collection and analysis of
5000 sample per second data stream.

Professional activities:

Member of ACM from 1976 to 1996, 2006 to present. Co-founded the
Greater Seattle Linux User Group. Board member of the Seattle/Unix
Group for over ten years.

Patent applications:

Electronic voting system, #20020078358, June 20, 2002.

Serial No.: 989989

Abstract: A facility for conducting an election is described. The facility establishes a public key infrastructure for use in the election. The facility then employs the established key infrastructure in the operation of a voting site.

Inventors: Neff, C. Andrew; (Bellevue, WA) ; Adler, James M.; (Redmond, WA) ; Bentson, Randolph A.; (Seattle, WA) ; Berg, Andrew C.; (Kirkland, WA) ; Hornbaker, John H. III; (Seattle, WA) ; Janke, Leonard C.; (Bellevue, WA) ; McCann, James R. III; (Seattle, WA) ; Peterson, Eric A.; (Bothell, WA)

Presentations and Publications:

Thornton, R. and Bentson, R., Listen Up: Audio Tools in Moodle, NITLE Moodle Community Meeting, Denver, CO, 2007.

Bentson, R.A., The Proper Image for Linux, Linux Journal, January, 1999.

Bentson, R.A., Product Review: Ricochet Modem, Linux Journal, January, 1998.

Bentson, R.A., Inside Linux: a look at operating system development, Specialized Systems Consultants, Seattle, 1996.

Bentson, R.A., Interview: Linux Goes to Sea, Linux Journal, August, 1995.

Bentson, R.A., History of Linux, The Linux Sampler, Frazier and Tucker, Eds., Specialized Systems Consultants, Seattle, 1994. (also appeared as The Humble Beginnings of Linux, Linux Journal, March 1995, Issue 11)

Bentson, Randolph, Book Review: Unix Systems for Modern Architectures, Linux Journal, January 1995.

Bentson, R.A., The Efficient Placement and Scheduling of Tasks in a Processor Rich Environment, Ph. D. Thesis, Colorado State University, 1994.

Bentson, R.A., Writing an Intelligent Serial Card Driver, Linux Journal, September 1994, Issue 5.
Writing an Intelligent Serial Card Driver [5:28]

Bentson, R.A., The Purdue Parallel Benchmarks in FP, TR CS-93-126, Department of Computer Science, Colorado State University, 1993.

Bentson, R.A., The Implementation of an FP System with Parallel Execution, TR CS-92-108, Department of Computer Science, Colorado State University, 1992.

Bentson, R.A., Chairman, Campus backbone review committee, Proposed design of the CSU Campus Backbone Network, December 1986.

Bentson, R.A. and Bentson, C.A., Reality Based Teaching, 12th Annual ACM Mountain Regional Conference, April 27-28, 1984, Phoenix, AZ.

Bentson, R.A., and Oldehoeft, R.R., Comparison by Example of Languages with Parallelism, Tech Report CS-83-03, Colorado State University, 1983.

Professional skills

Languages

Programmed in C, Pascal, and Fortran for over 30 years. Used C++ and Python in most recent commercial projects. Programmed in PDP-11, VAX-11, and '86 assembly languages for over seven years. Designed and implemented interpreter for the FP functional programming language. Worked with Perl, Ada, Eiffel, COBOL, BASIC, Prolog, and some 4GLs. Taught Java, Fortran, Pascal and C at the university level. Reviewed textbook on C. Regularly use Bourne shell, and have experience with C shell and familiarity with Korn shell. Written documentation in troff, TeX, and HTML. Recently started study of Haskell functional programming language.

Operating Systems

Implemented embedded operating systems for DEC PDP-11 and Intel 486. Worked on Unix internals up to 4.1c BSD and Linux kernel since May 1994. Used and programmed for BSD, HP-UX, Ultrix, SunOS, and Dynix versions of Unix. Wrote a book titled "Inside Linux: a look at operating system development." Presented seminars on Unix in industrial and international academic settings. Reviewed Unix and POSIX textbooks. Wrote Linux device drivers for SCSI scanners and multiport serial cards and repaired Linux device driver for sound system.

Hardware

Extensive experience with DEC PDP-11, DEC VAX-11, HP9000/300 through HP9000/800, Intel 8008 through recent Intel models, Motorola 680xx, Sequent Balance 21k, Sun-3, Sun-4, Transmeta Crusoe, and Zylog Z80. Some experience with DEC PDP-8, Cyber-170, Cyber-205, Denelcor HEP, HP3000, and RCA 1802. Used Tera MTA simulator for program design.

Management and Systems Administration

Supervised programming staff of four for two years. Supervised system administration staff of four for seven years. Managed fifty networked workstations, file servers and compute servers. Prepared proposals for equipment acquisition. Advised campus groups on computing strategies.

Networking

Implemented host-side of network virtual terminal under Novell network. Implemented customized network protocol for time-share service. Designed hardware and software for parallel port TCP/IP interface between VAX systems. Chaired design of campus-wide backbone network. Installed departmental LAN with interconnection to backbone. Installed and configured http server daemon and html home pages. Wrote CGI scripts in PHP, Perl, and Python to process order forms and generate HTML-based responses to web browsers.

Signal Processing

Contributed to design of algorithms to extract bit stream from 2-dimensional image from optical storage system.

Telecommunications

Directed installation of telecommunications for department-wide system. Installed and managed modem pool and network terminal server.

Teaching

Taught operating systems, computer architecture, software engineering, program management, compilers, introductory and intermediate Java, introductory C, advanced Fortran, and advanced Pascal at the university level. Taught seminars on Unix use both commercially and to university students, staff, and faculty both in U.S. and abroad. Designed and co-taught 52 hour video course on Unix which was distributed by the National Technological University.

Real Time

Programmed real-time data acquisition and analysis program for non-destructive testing of railroad couplers.

Database

Ported 3CI's relational data base Infocen to Ultrix. Worked with both Informix, Ingres, MySQL, and GNU database manager. Extended Isite database. Used Python to manipulate MySQL database holding voter information. Built batch order file for customer's order management system.

Graphics display environment

Worked in an X window environment for twenty-five years (and installed early releases of X on department systems). Wrote Perl/Tk program to mimic PC based GUI. Wrote Python/GTK GUI to control scanner, database access, update PKI (public key infrastructure) data, and write to CD-R. Added touch screen device driver to X11.

Open source distributed software:

cyclades.c : Linux kernel device driver for Cyclades Cyclom-Y and Cyclom-Z asynchronous multiplexers.
gd2 : application to exchange waypoints, tracks, and other information with various Garmin handheld GPS devices.
sp15 : drivers for Scan Partner 15c flatbed scanner to be used in the SANE (Scanner Access Now Easy) project.