

Randolph Allen Bentson

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Professional skills

Languages

Programmed in C, Pascal, and Fortran for over 30 years. Used C, C++, Java and Python in most recent commercial projects. Programmed in PDP-11, VAX-11, and Intel x86 assembly languages for over seven years. Designed and implemented interpreter for the FP functional programming language. Worked with Perl, Ada, Eiffel, COBOL, BASIC, Prolog, PHP, and some other 4GLs. Taught Java, Fortran, Pascal and C at the university level. Reviewed textbook on C. Regularly use Borne 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, 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 assembly language programming staff of four for two years. Supervised Unix system administration staff of four for seven years. Managed department's Unix and Linux networked workstations, file servers and compute servers. Prepared proposals for equipment acquisition, then installed hardware and software. Advised campus groups on computing strategies. Configured NTP, DHCP, DNS, and HTTP (Apache) servers.

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. Implemented special application protocols using TCP and UDP on IP. Used tcpdump to diagnose network problems.

Signal Processing

Contributed to design of algorithms to extract bit stream from 2-dimensional image from optical storage system. Implemented ulaw codecs for embedded device and Java-based client.

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, advanced Pascal, and introductory digital electronics 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.

Other application software:

I've used MS Office products in addition to the OpenOffice suite.

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:

Avocent, Kirkland, WA

Senior Embedded Software Engineer, June-December, 2011

Added audio device interface for embedded devices and developed client-based test and audio playback software.

Debugged problems with existing products.

University of Puget Sound, Tacoma, WA

Associate Professor -- July 1, 2003-June 30, 2010

Department of Mathematics and Computer Science.

Taught ten different classes in Computer science from introduction Java programming to software engineering, advanced architecture, and operating systems.

Supervised summer student research projects.

Installed and maintained departmental servers and desktop systems.

VoteHere, Inc., Bellevue, WA

Principal Engineer -- May 10, 2000-Aug 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

head of product development -- 1999-2000

Modified specific-use database supporting full text searching. Improved performance by hundredfold in both indexing and searching through structural changes. Wrote Linux 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 -- 1998-1999

Developed signal processing algorithms for new technology optical storage system using Matlab and C++.

Gacha, Inc., Seattle, WA

system architect -- 1996-1998

Developed server side software for Internet based multiuser game play system.

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 on DEC PDP-11.

Kustom Electronics, Inc., Chanute, KS

systems programmer -- 1972-1976

Wrote drivers for digital radio CSMA/CD telecommunications. Modified electronics and 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.

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.

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.

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)

Publications:

books:

Inside Linux

The Linux Sampler

journals:

Linux Journal articles

January, 1999, January 1998, August 1995, January 1995, September 1994.