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Summary: Seeking opportunities to design and develop interesting computer software and to provide technical leadership.

Qualifications: Graduate degree in Computer Science, including compiler and operating system development projects, as well as courses in communications and networking. Over 40 years experience with different Unix systems, Linux, MS-Windows, and C/C++ programming, in both academic and production environments. This includes extensive scripting experience in shell, awk, and the general Unix toolkit, as well as Python and Go. Many years experience developing products in deadline-based environments. Extensive System and Network Management experience, knowledgeable about Unix and Linux system internals. Excellent written and spoken communication skills. Very organized and detail-oriented, while also able to see the big picture.

Open Source / Free Software:

I maintain GNU Awk (*gawk*) and its documentation. I have been working with *gawk* since 1988 and have been the sole maintainer since 1994. *gawk* comes with almost every known Linux distribution. Literally millions of systems run my software. (See <https://www.gnu.org/software/gawk/>.) I have been active in the Unix and USENET communities since the early 1980s.

See <https://www.github.com/arnoldrobbins>, for various other smaller programs that I have written or ported.

Experience:

9/22 to present: **Akamai Technologies.** I am a *Senior Software Engineer*, in the Microsegmentation group (formerly **Guardicore**) where I work developing support for Kubernetes clusters within the company's microsegmentation product named Centra. Tasks include researching support for new CNIs, bug fixing, development and enhancement of field diagnostics, and more.

6/18 to 8/22: **SCADAfence.** I held the position of *Senior Software Engineer*, where I worked on the backend of the company's Continuous Network Monitor (CNM) product. The product provides security for industrial and manufacturing networks. Software development is done on Linux, using modern C++ and Python. My work includes fixing bugs, adding new features, and mentoring of less senior team members, including code reviews.

Significant projects that I have done include: performance measurements and improvements (including installation of a test server); productization and deployment of packet deduplication; significant refactoring and simplification of the mechanism for adding new alerts to the system; development of a configuration mechanism providing default values and easy user-overrides; transition of the product from Ubuntu 14.04 to Ubuntu 18.04; transition of the product from MongoDB 3.0 to MongoDB 4.2; and development and stabilization of a PCAP recording facility and the product's centralized licensing system.

7/97 to Present: **O'Reilly Media, Inc.** and **Prentice Hall.** Since moving to Israel with my family in 1997, I have authored or co-authored a number of books for O'Reilly Media, Inc. (formerly O'Reilly and Associates), and Prentice-Hall. See the details, below. I also have done contract programming.

10/15 to 3/18: **McAfee (formerly Intel Security).** I held the position of *Senior Software Engineer*, where I worked on the security agent part of company's database security product. All code (over 400,000 lines!) was in C++. The product is supported on Windows, Linux, Solaris, AIX and HP-UX. I added support for several databases (alone and with other team members), fixed bugs, and enhanced or rewrote significant features of the product, where I was responsible for design and implementation of the work. I maintained and enhanced an audit plugin for MySQL, and wrote from scratch an audit plugin for PostgreSQL. The work often involved interaction with customers to understand their needs and issues.

Experience (continued):

- 2/08 to 10/15: **Intel.** Position of *Software Engineer* at the Intel Design Center in Jerusalem. I worked in several teams, doing a variety of tasks, such as developing new CIM frameworks in C# and C++ for Intel AMT (Advanced Management Technology), participating in proof-of-concept tasks for an advanced Intel architecture, and working on DRM and video applications, including serving as the team-lead for the video encoder component. In the *Video and Parallel Group*, I worked on device drivers, and led a cross-geo project on 2D Gesture Recognition.
- From Q2 2014 I was part of the *Perceptual Computing* group, working on Enhanced Photography (computational photography applied to 3D stills and videos). Deliverables were for both Windows and Android. I held the position of *Software Microarchitect* for this group, where I was responsible for API design and coordination of deliverables across multiple groups within Intel.
- Throughout my tenure at Intel, I often provided trainings to my teams and others in topics related to C and Linux software development.
- 3/05 to 1/08: **Ness A.T. Ltd / TSG.** Position of *Team Leader, Simulation*. Responsible for the simulation component of a large Command and Control system being developed for the Air Force of a democratic country. Duties included supervision of a junior developer, writing Requirements and Design documentation, and designing and writing software in C++, using both Visual C++ on Windows XP and GCC on Linux. Development was done primarily on Windows, using Qt as the multi-platform windowing toolkit, but interim and final deliverables were on Linux. As the resident Linux expert I was also responsible for making sure that all the software remained portable to Linux, as well as for anything else related to Linux. This included writing scripts and doing other work to make installation of the delivered programs go smoothly. I acquired proficiency with Visual Studio and Microsoft Word. I also acquired experience learning and working with a very large C++ code base, consisting of close to four million of lines of code.
- 10/99 to 9/01: **Applied Microsystems Inc.** I worked as a contract programmer on two separate projects, both in C++. Both projects were *program instrumenters*: programs that read source code, add instrumentation calls, and write out the modified source code. The first project was to write an instrumenter for Ada 95. The second project involved adding a type system, similar to that of a full compiler, to the existing C instrumenter. I began work on a type system for the C++ instrumenter, but the project was stopped when they had to cut costs. Both projects involved verifying that the instrumenters worked under Windows NT; that development used Microsoft Visual C++ from the Cygwin environment.
- 1/95 to 6/97: **Star Imaging LLC.** Position of *Software Engineer, Team Leader*. Primary accomplishments include integrating drivers for three electronic color copiers into the company's PostScript interpreter, shell script improvements to speed up the processing of files, integrating support for the Summagraphics Summachrome thermal wax printer into the company's Windows product, and improving the Unix product's Summachrome support. Notable work included significant enhancement to the Windows product's Summachrome and Inkjet printer support, and threading of the PostScript interpreter to speed up printing on color copiers from the Unix product. All Unix development was done using Solaris 2.4, 2.5, and 2.5.1 on SPARC platforms. In the spring of 1996, I was given the position of team leader for the Sun product. From the fall of 1996 through the summer of 1997, I played a key role in the development and integration of the company's Unix product, **colorstar**TM 4.0, 4.01, 4.02, 4.02c and 4.02e, including release management.
- 10/91 to 12/94: **Georgia Tech College of Computing.** Position of *Research Scientist II*, teaching and developing courses in the College's Continuing Education division. I co-developed and taught courses for IBM in multi-vendor (Sun, DEC, HP, and IBM) Unix system network integration and multi-vendor Unix system network problem solving. I co-developed a course on the *Fundamentals of TCP/IP Networking* and co-developed a course for HP in *Multi-vendor Unix System and Network Administration*, focusing on migrating to the HP-UX environment. I developed on my own and taught the *Introduction to C* class, the *Intermediate C* class, the *Introduction to Networking* class, and the course on *OSI Networking*. I taught and updated other Unix courses, including *Introduction to Unix*, *Unix Shell*, *Unix Tools*, and *Unix System Administration*. I gained good course development skills and teaching skills.

Experience (continued):

- 11/89 to 8/91: **AudioFAX, Inc.** Position of *Senior Software Engineer*. Participated in the design and implementation of the company's first Unix-based product, an enhanced Audio and Facsimile platform. Honed my design and development skills, and acquired good experience in working in a team environment. Development work was done on Intel 80386-based systems under Unix System V Release 3.2. Some work was also done on beta versions of System V Release 4.
- 2/86 to 11/89: **Emory University, Information Technology Division** (formerly the Computing Center). Position of *Systems Programmer III*. Responsible for the day to day management of a Sun 4/280 and a Microvax-II. In January of 1989, these replaced two DEC VAX 11/780s. In the summer of 1988, installed and continued to manage the campus's link to NSFnet via SURAnet. Also responsible for assignment of host names and IP network numbers to all campus machines using TCP/IP protocols. Upgraded both VAX systems in the summer of 1986 from 4.2BSD to 4.3BSD with Sun's NFS, from Mt. Xinu. Installed and maintained the X.25 connection to CSnet in the fall of 1986. EUCC was the first site to run this software under 4.3BSD; I was very involved in the software fixes to make this happen.
- 1/84 to 1/86: **Georgia Institute of Technology, School of Information and Computer Science**. Position on lab staff, maintaining, porting, and writing applications for the department's VAX/Unix systems (4.1 and 4.2BSD), Prime computers, AT&T 3B2 and 3B20A computers (System V Release 2), and the Institute's Pyramid 90x (Unix 4.2BSD and System V). Applications included a screen editor and text formatter. Completed extensive improvements to the Bourne shell (including a history mechanism) and the porting of a large backup system from System V to 4.2BSD. Acquired a good working knowledge of `nroff` and `troff`.
- 12/81 to 11/82: **Southern Bell**. Part-time programming consultant. Developed two on-line information retrieval systems in C, under Unix 4.0 on a DEC PDP-11/70.

Publications:

Prentice Hall Open Source Software Development Series. I am the Series Editor for this series of books from Prentice Hall that focuses on Open Source software development. (See <https://www.informit.com/opensourcedev/>.) The series currently includes 20 books, with more on the way.

Learning the vi and vim Editors, Eighth Edition, ISBN 978-1-492-07880-7. O'Reilly Media, Sebastopol, California, 2021. For the sixth edition, I revised the basic text of this book, and wrote five new chapters and a new appendix. The new material covered four vi clones (`nvi`, `elvis`, `vim`, and `vile`), and vi in the larger Unix and Internet culture. The book more than doubled its original size. The seventh edition updated all this coverage and added additional material on vim. The eighth edition removed coverage of the clones and added multiple new chapters, focussing exclusively on vim. (See <https://learning.oreilly.com/library/view/learning-the-vi/9781492078791/>.)

Robust Shell Scripting, Infinite Skills (O'Reilly Media), 2017. This video course teaches shell scripting, with a focus on writing robust scripts. (See <https://learning.oreilly.com/videos/robust-shell-scripting/9781491962527/>.)

Bash Pocket Reference, Second Edition, ISBN 978-1-4919-4159-1. O'Reilly Media, Sebastopol, California, 2016. This pocket reference provides complete coverage of the Bash shell. (See <https://learning.oreilly.com/library/view/bash-pocket-reference/9781491941584/>.)

Effective AWK Programming, Fourth Edition. ISBN 978-1-491-90461-9. O'Reilly and Associates, Sebastopol, California, 2015. The book fully explains the Awk programming language, as well as serving as the documentation for GNU Awk. It is over five times the size of the preliminary draft I started with. (See <https://learning.oreilly.com/library/view/effective-awk-programming/9781491904930/>.)

vi and Vim Editors Pocket Reference, Second Edition, ISBN 978-1-4493-9217-8. O'Reilly Media, Sebastopol, California, 2011. This is a "quick reference" for vi and ex, a companion volume to *Learning the vi and Vim Editors*. (See <https://learning.oreilly.com/library/view/vi-and-vim/9781449303082/>.)

Publications (continued):

UNIX In A Nutshell – GNU/Linux, Mac OS X, and Solaris, Fourth Edition. ISBN 978-0-596-10029-2. O'Reilly Media Inc., Sebastopol, California, 2006. This is my second revision of this book. It now covers the current generation of Unix and related systems. Besides coverage of three operating systems, I added new information on the vim editor, the Bash shell, the GDB debugger, GNU Make, and much more. (See <https://learning.oreilly.com/library/view/unix-in-a/0596100299/>.)

GDB Pocket Reference. ISBN 978-0-596-10027-8. O'Reilly Media Inc., Sebastopol, California, 2005. This pocket reference is a comprehensive quick reference for the GDB debugger. GDB is the standard debugger on GNU/Linux and BSD systems and works on practically all known Unix systems, as well as on Windows. It is the de-facto standard debugger in the Open Source world. (See <https://learning.oreilly.com/library/view/gdb-pocket-reference/9780596100278/>.)

Classic Shell Scripting. ISBN 978-0-596-00595-5. O'Reilly Media, Sebastopol, California, 2005. This book is co-authored with Nelson Beebe, of the Mathematics department at the University of Utah. It teaches how to do shell programming, focusing on the Unix “toolbox” approach. (See <https://learning.oreilly.com/library/view/classic-shell-scripting/0596005954/>.)

Linux Programming by Example: The Fundamentals. ISBN 0-13-142964-7. Prentice Hall PTR, Upper Saddle River, New Jersey, 2004. I wrote this book from scratch. It teaches the fundamental Unix and Linux system calls, using a “by example” approach. Wherever possible, the demonstration code is extracted from either the V7 Unix system or from GNU programs. (See <https://www.informit.com/store/linux-programming-by-example-the-fundamentals-9780131429642>.)

Learning the Korn Shell, Second Edition. ISBN 978-0-596-00195-7. O'Reilly and Associates, Sebastopol, California, 2002. I updated this book for the 1993 version of the Korn shell, including the many new features added in recent releases from AT&T Research. The book now covers all the features of the Korn shell. (See <https://learning.oreilly.com/library/view/learning-the-korn/0596001959/>.)

Sed & Awk Pocket Reference, Second Edition. ISBN 978-0-596-00352-4. O'Reilly and Associates, Sebastopol, California, 2002. This is a “quick reference” for sed, awk and gawk, and for Unix regular expressions. It is a companion volume to *Effective AWK Programming*, and *sed & awk*. (See <https://learning.oreilly.com/library/view/sed-and-awk/0596003528/>.)

Sed & Awk, Second Edition, ISBN 978-1-56592-225-9. O'Reilly and Associates, Sebastopol, California, 1997. I prepared the second edition, fixing many mistakes, and updating it for POSIX awk. I thoroughly revised the entire book, and added an entire new chapter. (See <https://learning.oreilly.com/library/view/sed-awk/1565922255/>.)

Event Driven Monitoring of Distributed Programs, with R.J. LeBlanc. Proceedings of the IEEE Fifth International Conference on Distributed Computing Systems, May 1985. Reprinted in the IEEE-CS tutorial *Distributed-Software Engineering*, IEEE Computer Society Press, 1988. This paper was derived from my M.S. thesis, and describes the design of a monitor for distributed programs.

Personal: Married. Four children. U.S. and Israeli Citizen. Moved to Israel: 31 October 1997.

Education:

1983 GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta, Georgia. M.S. Information and Computer Science. The M.S. work included a thesis on the design of a distributed program monitor.

1981 YESHIVA UNIVERSITY, New York, New York. B.A. Information Science.

Miscellaneous: I am a member of Usenix and a former member of the IEEE Computer Society, and the ACM. I was also a member of the balloting group for the 1993 IEEE POSIX 1003.2 standard (command language and utilities).

Languages: English: speak fluently, with excellent writing and speaking skills.
Hebrew: read, write and speak comfortably.

References: Available upon request.