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SUMMARY

- First class software engineering skills and experience for advanced computing applications
- Specializing in OS internals, communication protocols, embedded software, and hardware bring-up

EXPERIENCE

Jan 2020 - Jan 2024 **Senior Firmware Engineer**
Grayshift Roswell, GA

Developer of system software for digital forensic access systems.

- Technical areas: Microcontroller firmware and boot code, embedded systems design, prototype hardware bring-up, Linux internals, device drivers

Oct 2009 - Jul 2019 **Platforms Software Engineer**
Google Sunnyvale, CA

Developer of system software for megascale data center computing.

- Technical areas: Linux internals, firmware and boot code, new hardware bring-up, device drivers, hardware accelerators, PCI Express, cloud computing, machine learning

Oct 2006 - Aug 2009 **Member Technical Staff**
ConSentry Networks Milpitas, CA

Developer of firmware, embedded Linux and other system software for networking equipment.

- Technical areas: Linux internals, firmware and boot code, new hardware bring-up, device drivers, Ethernet switching
- Developed platform software for Ethernet switch products.
- Developed firmware based on U-Boot for multiple hardware platforms.
- Brought up Linux 2.6 and cross-development tool chain from scratch on proprietary Power-PC platforms.

Oct 1997 - Oct 2006 **Senior Staff Engineer**
Sun Microsystems Menlo Park, CA

Developer of Solaris networking and security components. Architect for packet filtering and encryption software products.

- UNIX internals and device drivers
- Network security and encryption

- Operating system security
- Operating system virtualization
- Java networking and GUI development

Dec 1995 - Oct 1997 Software Engineering Consultant
 Omnicron Data Systems Herndon, VA

Independent consulting business specializing in software engineering and system integration for UNIX, Internet, and embedded systems.

- Software engineering and consulting
- UNIX internals and device drivers
- Internet server installation, configuration, administration
- Projects included work in IP and ATM protocols and equipment, device drivers for IRIX, Solaris, and embedded systems, and Internet server integration.

Jul 1994 - Dec 1995 Senior Software Engineer
 Newbridge Networks Herndon, VA

Developer of UNIX device drivers and other system software for Asynchronous Transfer Mode networking equipment.

- Technical areas: UNIX internals, device driver development and porting, TCP/IP and ATM networking.
- Developed the system software for ATM network interface cards for Sun, Silicon Graphics, and other UNIX workstations.

Oct 1991 - Jul 1994 Member of UNIX kernel development group
 Unix System Laboratories Summit, NJ

Member of software development team responsible for the process management subsystem of the UNIX SVR4.2 Multiprocessor kernel.

- Technical areas: UNIX internals, multiprocessor kernel techniques, open systems standards.
- Responsible for signals, process creation/termination/synchronization, job control and the /proc file system.

Aug 1988 - Oct 1991 UNIX Systems Software Architect
 Commodore-Amiga West Chester, PA

Lead designer and kernel hacker for Amiga port of UNIX System V Release 4.

- Technical areas: UNIX internals, device driver design and development, kernel and user software porting, system design, graphics, networking protocols and drivers, STREAMS, open systems standards.
- Designed and implemented Amiga UNIX graphics system and device drivers. Developed graphics system API and presented to software developers, technical conferences, and other kernel engineers.

- Interacted with hardware engineers during development of computer hardware systems and peripherals.
- Worked closely with AT&T as an early-access SVR4 developer. Ported pre-release SVR4 kernel to Amiga hardware. Reported and corrected major kernel bugs.

Nov 1987 - Jul 1988 Senior Systems Programmer
International Robomation Intelligence Carlsbad, CA

Development of system software, application software and real-time operating system for computer vision systems.

- Technical areas: Computer vision, graphics, operating system internals (UNIX, Regulus, IRI RT/M), telecommunications.
- Interacted with hardware engineers during design of vision systems.
- Created cross development environment under UNIX for target vision hardware. Adapted compilers, assemblers, and other tools.

Nov 1985 - Oct 1987 Systems Programmer
CliniComp Intl. La Jolla, CA

Development of clinical charting systems for use in hospital intensive care units.

- Technical areas: Graphics, IPC, UNIX systems programming, TCP/IP, BSD Sockets, ISAM, data acquisition, telecommunications.
- Modified, configured, and installed UNIX kernel, device drivers, and system programs.
- Tested and evaluated UNIX operating system ports, interacting with kernel developers.
- Designed and implemented subsystems for data acquisition, PostScript printing and custom database system and API.

Sep 1984 - Nov 1985 Game Programmer
Cinematronics, Inc. El Cajon, CA

Design and development of microprocessor-based coin-operated video games.

- Technical areas: Hardware control, graphics, multi-processor systems software, operating system internals.
- Designed and implemented graphic operating system for use by other game programmers. Prepared written programmer's documentation and oral presentations about game hardware and operating system software.
- Advised hardware engineers during development of new game hardware.
- Implemented communication systems between UNIX development computers, microprocessor emulators, and other devices.

PERSONAL ACTIVITIES

- Hobbies include open-source software development, retrocomputing, electronics design, mu-

sic, carpentry, and home improvement.

- *Extra* class Amateur Radio operator.