

# Dale Rahn

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## Qualifications Summary

Software engineering developer experienced in working in fast-paced environments demanding strong organizational, technical, and interpersonal skills. Productive, trustworthy, and committed to quality. Confident and poised in interactions with individuals at all levels. Detail-oriented and resourceful in completing projects; able to multi-task effectively. Extensive experience in:

- BSD / Linux / Solaris / AIX
- Simulation / Virtual environments: processor, device modeling and infrastructure development
- Device Driver development
- C, C++, Python, ksh
- ARM, PowerPC, x86, SH, SPARC assembly
- Embedded Software
- Debugging / Bring-up on many architectures
- Mentoring / Leadership
- CVS, Subversion, Clearcase, Perforce

## Experience Highlights

### *Software Development*

- Device driver development on multiple architectures: OpenBSD, Linux, AIX.
- Developed/Enhanced Qt applications to simulation phone UI on desktop and phone device.
- Served as resident UNIX / BSD / Linux knowledge resource.
- LINUX development, WiMax driver modification, CRAMFS configuration, system builds.
- Porting OpenBSD to many different platforms and architectures:  
PowerPC systems: macppc, pegasos. ARM systems: cats (StrongARM), zaurus PDA (pxa270), armish (IOP i80xxx) NAS boxes. ARM phones: MXC and Omap2420 ports started, SH systems: landisk (sh4) NAS boxes. Port maintainer or co-maintainer for each port.
- Maintained and developed compiler, linker and dynamic linker tools. Including a prelinking system to securely accelerate dynamic application startup.
- Worked with Skype to build the first prototype WiFi Cell Phone with a Skype client.
- Headed team to develop ARM710 based PDA simulation: ARM7 core, UARTs, touchscreen, display. All necessary devices for running target embedded OS were simulated. Added ARM11 features later.
- Merged standalone DSP simulations (56k, StarCore) into MOOSE simulation environment, placed phone calls using L1 data with simulation running code on both AP and BP.

## Employment History

**Senior Software Engineer**, ASTC INC, Champaign, IL, 2008-Present

**Senior OpenBSD developer**, [www.openbsd.org](http://www.openbsd.org), 1995-Present

**Game Developer**, Volition INC, Champaign, IL, 2007-2008

**Principal Staff Engineer**, Mobile Devices Sector, Motorola Inc, Champaign, IL, 2004-2007

**Systems Programmer**, University of Pennsylvania, Distributed Systems Lab (DARPA Grant) 2001-2003

**Software Engineer**, Mobile Devices Sector, Motorola Inc, Urbana, IL 1997-2001

**Software Engineer**, Motorola Computer Group, Motorola Inc, Urbana, IL 1993-1997

## Education

Purdue University, West Lafayette, IN – Bachelors in Computer Science, School of Science 1993

## Detailed History

### *ASTC INC, Australian Semiconductor Technology Company Feb 2008 – Present*

Maintain and improve ARM simulation core developed at Motorola.

Processor instruction modelling for TI C55 DSP core.

Embed ARM core into SystemC simulation backplane.

Embed Qemu ARM simulation into SysemC simulation backplane.

### *OpenBSD Developer December 1995 – Present*

Port Maintainer for PowerPC/macppc, pegasos, cats, zaurus, armish platforms since their inception.

Added OpenBSD support for newer ARM chipsets including work in progress ports for OpenMoko GTA01 and Freerunner, gumstix verdix, and Cortex-A8 beagleboard.

Wrote and maintained numerous device drivers, dynamic linker, compiler/assembler/linker , VM subsystem, bringup, performance measuring and improvement.

### *Volition, a division of THQ INC, September 2007-Jan 2008*

Game development for PS3 and Xbox360.

### *Motorola Mobile Devices Sector, Technology Office October 2004-August 2007*

Worked with Future Wireless Mobile Group (WiMax), porting the Linux based WiMax driver to an embedded OS: MAPAL/TTPCom, Additionally performed maintenance work on the Linux driver and the associated debug software and flash tools. Trained coworkers on use of prototype boards.

Lead Engineer in UI Prototyping group. Implemented a desktop and hand-held version of a UI specification in a rapid prototyping environment in Qt to test and improve the UI design.

Worked with Skype, used their voice engine stack along with their embedded interface to build a Qt based application to run on a Linux-based WiFi enabled phone.

Ported Microsoft DRM to Linux/ARM for a DLNA (Digital Living Network Alliance) demonstration.

Assisted simulation group by adding ARM11 features (core specific and floating point) to ARM simulation, also simulation model debugging and maintenance.

Ported OpenBSD to PXA270, Freescale MXC, and OMAP chipsets as potential future phone platforms.

Acted as resident UNIX/BSD/Linux expert when there were questions in the operating system group to assist them in determining if bugs reported against the operating system were Linux errors or user land errors.

### *WhyWire Inc April 2004- October 2004 (contract)*

Adapted an open source IAPP, a WiFi Access Point roaming protocol, to OpenBSD based access points.

Modified PRISM WiFi OpenBSD driver wi(4) to work on a similar downloadable firmware WiFi card.

### *University of Pennsylvania, Distributed Systems Lab September 2001- November 2003*

Implemented dynamic linker and compiler/linker changes to allow W^X (Write xor eXecute) support for several OpenBSD platforms, i386/amd64/sparc/sparc64.

Updated OpenBSD/i386 to newer compiler/linker tool chain, moving it from the old a.out executable format to the more common ELF executable format, with custom modifications to allow W^X security feature.

Rewrote PowerPC virtual memory management code to optimize/simplify it. System build time reduced 20% as a result of the rewrite, some specific benchmark tasks increased in speed by 700%

*Motorola Mobile Devices Sector, Simulation Team June 1997 – September 2001*

Simulation modeling and core development. Developed an ARM710 CPU model and headed team which developed all peripherals for a phone device.

Developed technique to simulate a CPU which runs a different endian than the host CPU efficiently.

*Motorola Computer Group, AIX Fault Tolerant development, Feb 1996 – June 1997*

Developed IOFixup driver for fault tolerant AIX system to detect if an IO error occurred while talking to a peripheral device, giving the system a chance to recover from device failure.

*Motorola Computer Group, Languages and Tools, June 1993 – February 1996*

Maintained existing SVR4 assembler, linker and compiler front end.

Performed compiler and system benchmarking to compare m88k SVR3/4 systems to other SVR4/UNIX systems available in the market.