

Brian G. Neal

Software Engineer

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Professional Experience

Rockwell Collins, Inc.

Cedar Rapids, Iowa - July 1999 to Present

At Rockwell Collins I am a senior software engineer, primarily working on communication products in a real-time, embedded systems environment. Here are some highlights of my work experience:

- Implemented a DSDV-based network routing protocol for an airborne, ad-hoc network.
- Primary architect of a SATCOM protocol message processor. The design was reused on several subsequent programs within the department.
- Championed the use of open source software within the department. Created an open source model for code sharing across teams within the department.
- Participated in flight testing at China Lake Naval Base.
- Experience with porting prototype code to a new hardware platform, maturing the code in the process.
- Extensive debugging, software-hardware integration, and performance optimization experience.
- Designed and implemented a network ingress protocol for an airborne, ad-hoc network.
- Lead engineer for a team of 9 programmers. Led the team through requirements analysis, design, coding, and integration efforts.
- Primary author of a software requirements document for a large software radio waveform.
- Created operating system and architecture abstraction libraries used on multiple programs within the department.
- Considered to be one of the department's C++ experts.
- Mentored programmers in C++. Acted as an advisor to trainers developing in-house C++ training.
- Our team won the Rockwell Collins Chairman's Team Award in 2005.
- Regularly participated in issue resolution with other software, hardware, and systems teams.
- Performed cost-accounting and scheduling duties for a small software team.
- Led several software-hardware integration efforts.
- Written device drivers to interface with cryptographic hardware, serial ports, GPS units, compass & inclinometers, and motorized gimbals.
- Wrote code to load cryptographic keys into hardware crypto-unit.
- Created PC-based simulations of routing protocols.
- Created PC and Python based tools to aid in integration, testing, and debugging.
- Presented training on Python to the department.
- I have represented Rockwell Collins at industry meetings and working groups.

Commonwealth Edison

Braidwood, Illinois - June, 1992 to July, 1999

- Maintained and created simulation models of nuclear power plant systems for six full-scale operator training simulators in FORTRAN, C, and C++.
- Interfaced power plant equipment to training simulators using various real-time embedded systems; utilized serial, shared-memory, and TCP/IP communications.
- Designed and implemented a three-tier client/server database system to manage maintenance requests for the simulators.
- Received Individual Excellence Award in 1996 for creating a simulator computer to plant process computer interface under a very compressed schedule.
- Developed various tools for instructors to test simulator operations.
- Developed embedded software in C on a custom VME board to control thousands of I/O points in a power plant simulator.

Non-Professional Work

I have recently become fascinated with all things involving Python and web development. In my spare time, I have created and deployed a small community website based on Python and Django. I am constantly reading about, experimenting, and implementing projects in Python. I have made several small contributions to Django and other open source projects and hope to do more as my experience in this area grows.

Technical Skills

Programming Languages:	Near expert in C++, proficient in Python, C, & Javascript. Familiar with PHP, Ada, Perl, Fortran, various assembly languages, shell scripting, & SQL.
Operating Systems:	GNU/Linux, INTEGRITY, VxWorks, Windows, LynxOS, pSOS+, OS/9
Technology Areas:	Real-time and embedded systems, web development, networking, device drivers, object-oriented design, CORBA
Web Development:	Python, Django, Javascript, jQuery, HTML, CSS, MySQL, Redis, Memcached, PHP, SQL
Tools:	Subversion, Mercurial, Apache, Rational Rose, DOORS, many GNU/Linux tools, Vim, Rational Clear Case, MS-Office

Education

- 1990 - 1991:** University of Iowa, M.S. Computer Science
- 1985 - 1989:** University of Northern Iowa, B.A. Computer Science, Physics Minor

Hobbies

Web development, Python, open source software, instrumental surf music, live music, PC gaming