Franklin J. Rudolph, P.E., Ph.D.

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15+ years of embedded systems software development: Multi-threaded applications using object-oriented paradigms under Embedded Linux, commercial RTOSes and hand-crafted real-time non-O/S microprocessor-based platforms. Software solutions for engineering, industrial and commercial applications.

Professional Skills:

Experience Areas:
Technical lead, project planning, research and feasibility, presentations, system analysis, client interaction, multi-tier architecture, object oriented design, software development, software testing, software maintenance, technical and sales support to customers and technical documentation. Digital electronics circuit design and schematics. Laboratory equipment expertise: Analog and mixed domain oscilloscopes, spectrum analyzers, signal generators, power supplies, CANBUS Canalyzer, GEMAC CAN Tester and logic state analyzers.

Tools & Technologies:
C/C++, Linux Kernel Module Programming, Linux Socket Programming, Accurev, Clearcase, Seapine Surround and TestTrack, Microsoft Project, Visio, Word and Excel, HTML, XML/XSLT, Qt, SQL, Visual Studio, gcc, g++, bash scripting and Python. TI 2000 family DSPs, Intel x86, Z80, 8251, Arm and MC68xxxx family.

Experience:

Beacon Power, LLC (www.beaconpower.com) – Senior Engineer, Embedded Software, S/W Team Leader (Feb 2005 to present)
Utility grade energy storage systems using high speed/high energy flywheels.

Project: *Smart Energy Matrix*

- Designed and implemented a distributed control system based on a hierarchical network of 21 Linux computers and 600 DSPs controlling power flow in/out of 200 flywheel-based mechanical batteries, grid-tied to the utility grid via a 3 phase, 480V interconnect, which is, in turn, connected to high tension lines via step up trans-formers.
- Technologies used: Embedded Linux, C/C++, bash scripts, TCP/IP, UDP/IP, CANBUS, MODBUS/TCP, TMS320F2812 DSPs, x86, CodeComposer, Accurev, Surround and TestTrack.

Schneider Electric – Senior Firmware Engineer, contract position (January, 2001 to May 2002)

Project: *Twido PLC,*

- Technical Lead for firmware. Designed and implemented the first low cost PLC ever marketed by Schneider. (base price = $99)
- Technologies used: Mitsubishi M16-C microprocessor, Fairchild F8 Microprocessor, Paradigm debugger, Clearcase, Clearquest.

Monarch Instruments – Software Manager (Sep 1999 to Feb. 2001)

Project: *Datachart*:

- Oversaw the migration of the DataChart from pure assembly language to newer modular design
- Technologies used: MC68331, SuperI/O and Rabbit processors.

MKS Instruments – Senior Software Engineer (1993 to 1995)

Project: *Adaptive Pressure Controller*:

- Ported a hand-crafted, pre-emptive RTOS in ANSI C, from Intel 90196 microcontroller to Intel 80188-EB microprocessor.
- Technologies used: Intel 8251, 80196, 80188EB, Paradigm Debugger, C and assembly language.

Education:

Ph.D., Engineering, University of New Hampshire, 1992

Cross-disciplinary degree from CS and ECE Departments: Adaptive Control, Artificial Intelligence, Artificial Neural Networks and Robotics.

During this time I also managed Cybertronix Corp., a small engineering consultancy while being a self-funded graduate student, Research Assistant and Teaching Assistant.

B.S., Mechanical Engineering, University of South Alabama.

Tulane University, Math Major, Music Minor.

Timeline Gaps: Being an entrepreneurial person, during gaps in formal employment, due to intentional career changes and periods between software contracts, rather than being ”unemployed”, I filled gaps in my professional timeline with various short-term assignments:

- Manager and Software Consultant for Cybertronix Corp. before and during graduate school and Controlsmith, LLC, afterwards.
- Adjunct professor of Mathematics, Computer Science, Electro-mechanical Technologies and Aviation Electronics – at UNH, UNH Manchester, Rivier College, SNHU, Hesser College, Plymouth State University and Nashua Community College.
- During 1995-1999, I was a full-time Certified NH Public School Teacher of AP Physics, AP Calculus, Math and Physical Science, at Gilford High School, Gilford, NH and Souhegan High School, Amherst, NH.
- Self-taught Luthier: Buying, repairing and selling antique violins (2000 to present)
- Violin/Fiddle Teacher: At my own studio, Rudolph Violins, and the Nashua Community Music School. (2000 to present)

Certifications:

Certified Professional Engineer, NH #8420, 1992 – Present