

Randall Graham, P.Eng. (ON)

Principal Software/Firmware Engineer at SurfBytes LLC

Summary

Seasoned Professional Engineer with a wide range of technical experience in several industries and a 'Get It Done' kind of guy.

Experience

Principal Software/Firmware Engineer

July 2007 - Present

Embedded solutions and Linux.

www.surfbytes.com

Software Engineer at IGT

June 2007 - July 2017 (10 years 2 months)

*** Live Electronic Table Game Team (ETG) ***

Support and develop embedded Linux component of ETG.

Refactored secure boot process for 3rd party embedded Linux (ARM) based system (bootrom, MBR, initrd, kernel, rootfs) to use ECDSA signed packages.

*** Communal Bank Devices Team ***

Implemented several proprietary communication protocols for Casino industry (e.g. Slot Accounting System (SAS))

Develop services in C# on secure embedded Windows 7 platform (Universal Controller - UC) to support slot games.

Worked with windows device driver developer to implement SAS layer for application interop.

Rewrote Clerk Validation Terminal (CVT) software written as embedded i960 app to run on embedded windows.

Created UI for CVT running on UC using WPF.

Refactored custom bios and boot loader for 3rd party embedded Linux SoC to improve security and performance of boot sequence.

Added USB logging functionality.

*** Dark Horse Game Studio - Bonus Game Development ***

Worked with creative teams to develop back end services for slot bonus games.
Developed bank bonus server game engine and provided rapid prototyping support.
Created and validated Paytable evaluator for reel slots.
Implemented core flash player functionality on AVP platform (QNX,C++).

*** Electronic Table Games - ETG ***

C++ development for recently acquired 3rd party embedded Linux controller that connects game terminal to back end host system (SAS).

*** Player tracking system - Advantage Bonusing Team ***

Supported C++ development for large Windows CE based embedded player tracking system.
Implemented SSL and OCSP for G2S client.
Solved critical problems with 3rd party Flash platform that threatened successful deployment.
Resolved issues with development tool chain which greatly improved the stability of product releases.

Senior Software Engineer at Maxxess Systems

April 2004 - May 2006 (2 years 2 months)

*** Access control systems - Embedded Linux ***

Reported directly to Engineering VP, responsible for architectural design and development of next generation embedded linux area control system interfacing to legacy hardware.
Developed robust, multi-threaded soft-real-time applications using C++, POSIX threads.
Embedded SQL (SQLite) and TCL scripting engine in product, allowing easy customization.
Developed various software-hardware interfaces including proprietary serial and TCP/IP protocols.

Software Engineering Consultant

June 2002 - April 2004 (1 year 11 months)

Provided software engineering services to various clients in Southern California.

*** Konica Minolta Lab, Huntington Beach, CA - Business copier systems ***

Assisted with development of business copier document management software using Java, XML, SOAP and web services.
Wrote specs for new product development and provided technical guidance to junior engineers.

*** Veric Software, Santa Monica, CA (Start-Up) ***

Assisted ex-CTO and ex-VP of Microvault with development of unique project management solution for Windows (Accompli).
Used MS Visual Studio and C++ with MFC, XML, SQL, SOAP.

*** MQ Solutions, Whittier, CA ***

Product developer for IBM MQ Series business partner applications.
Architected and developed a multi-threaded, component based, message oriented framework for a suite of Java applications that work with MQ Series.

Developed encrypted protocol handlers for working with encrypted files across a TCP/IP network Developed client/server components to support remote control and monitoring across TCP/IP.

Software Engineer

December 1999 - June 2002 (2 years 7 months)

*** Secure document delivery software startup ***

Responsible for full cycle design, development and implementation of premier secure document delivery product, NetCourier using JAVA, XML, Xerces, JavaMail, Cryptography extensions, LDAP, S/Mime, JavaScript.

Developed core proprietary self decrypting document technology (patent pending) .

Developed robust, multi-threaded high volume mail engine to build and deliver encrypted documents.

Integrated S/Mime encryption and digital signing certificates with LDAP support into product.

Developed remote console and API using TCP/IP sockets to remotely control and monitor server.

Software Engineering Consultant

February 1997 - December 1999 (2 years 11 months)

Provided software consulting services to various clients in Southern California

*** Disneyland Park Anaheim, CA ***

Scientific Systems and Ride Control Systems Group

Supported software development efforts for new theme park (California Adventure).

Wrote specifications and PLC software for changes to Monorail control system

Supported PLC and AB PanelView software troubleshooting efforts on Malaboomer (Space Shot) ride.

*** Excellon Automation, Torrance, CA ***

Designer and manufacturer of state of the art automated PCB drilling systems.

Wrote specifications, designed and developed control software and Visual Basic ActiveX controls to interface Laser Drilling equipment to automated robotic Autoloader.

Supported R&D and test groups in design and trouble-shooting efforts.

*** Yaskawa-Motoman Inc., Cypress, CA ***

Designer and manufacturer of unique modular robotic systems.

Responsible for software support and maintenance of modular robot control software (UNIX)

Wrote application software using MS Visual C++ and MFC for robot system configuration.

Wrote multi-threaded motion and I/O control software for multiple robotic manipulators.

Software Section Head

November 1992 - November 1996 (4 years 1 month)

Designer and manufacturer of sophisticated robotic automation systems for laboratories.

Worked with small software team developing state of the art robotics and control systems for sophisticated clinical laboratory and industrial automation systems.

Developed control system software, drivers and object oriented graphical user interfaces in C++ for robotic aliquotting station and instrument loading robotics.

Developed C++ control software and graphical user interface for robotic palletizing system. Developed line scheduling and dynamic path planning/obstacle avoidance algorithms to optimize robot motion paths through changing work envelope topologies.

Developed motion and I/O control software on various types of motion controllers, robot controllers and PLCs.

Control System Simulation and Analysis Engineer

November 1989 - November 1992 (3 years 1 month)

***Designer and manufacturer of the NASA Space Shuttle Remote Manipulator System (SRMS) robot arm

Responsible lead for design, test and implementation of major control system change to SRMS arm control software that significantly improved arm performance for heavy payload handling.

Changes incorporated into shuttle software for flight use in 1994.

Developed payload attitude control algorithms and implemented them in real time and non-real time simulators.

Organized and conducted astronaut training and control system evaluation in real-time simulator (SIMFAC) and performed support engineering simulations and analysis for the SRMS program.

Spearheaded development of Windows/C application for simulator configuration used at SPAR/NASA.

Presented monthly interim progress technical reports to NASA management.

Traveled to the Johnson Space Center (JSC) as required to discuss and present technical issues.

Received commendable performance review rating in 1992 (highest rating in-group of 12).

Research and Development Engineer - Robotics

September 1985 - October 1989 (4 years 2 months)

Designer and manufacturer of automated case handling equipment and robots.

Responsible for the design and development of a PC based multiple axis robot motion controller.

Designed, built and programmed embedded motor controller boards for use with Apple II+ and IBM PC based host controller.

Wrote control software in C, 8088 assembly, 6502, 6802 assembly language and burned EPROM's for use with 6802 controller boards.

Wrote a ladder logic compiler and simulator to perform functions of a programmable logic controller (PLC) to control and monitor external input and output devices.

Education

Queen's University

Bachelor of Science (BSc) with Honours, Mechanical Engineering, 1981 - 1985

Honors and Awards

NASA Group Achievement Award, Nomination for 1991 Technical Excellence Award for individual Achievement, Time Magazine Person of the Year 2006

Randall Graham, P.Eng. (ON)

Principal Software/Firmware Engineer at SurfBytes LLC



[Contact Randall on LinkedIn](#)