

Electrical Engineering Résumé

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Résumé Capsule

Extensive experience as a team leader, project manager, lead hardware designer, and lead software developer in the creation of successful new embedded systems products. I also have a considerable amount of experience working directly with customers in business development and project management rolls.

The table below is a summary of the types of work that I've performed and the companies that I have worked for:

Career Overview

Company	Customer Interface (6+ years) ^{*1}	Project Management (20+ years)	Department Manager (6+ years)	Business Development (4+ years)	Technical Team Lead (20+ years)	Software Team Lead (15+ years)	Overall Technical Architecture (15+ years)	C-Software Development (18+ years)	C++ Software Development (11+ years)	Other SW Languages	Standards Development (8+ years)	Linux (2 years)	WinCE (3+ years)	Embedded RTOS (8+ years)	Hardware Design (20+ years)	VHDL/FPGA (3+ years)	Test Engineering (10+ years)	
<i>Bosch Automotive</i>		✓					✓	✓	✓		✓							<i>Automotive Aftermarket Service Solutions</i>
<i>IMRIS, Inc.</i>	✓	✓			✓		✓	✓	✓			✓	✓					<i>Medical Device Company, imaging solutions</i>
<i>Update Logic, Inc.</i>	✓	✓	✓	✓			✓				✓							<i>Consumer market software</i>
<i>Logic Product Development</i>	✓	✓		✓			✓	✓				✓		✓				<i>Medical, military, avionics, and consumer contracts</i>
<i>Acist Medical</i>							✓	✓		✓			✓	✓				<i>Angiography contrast injector systems</i>
<i>Fargo Electronics</i>		✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	<i>ID badge printers / encoders</i>
<i>Ecolab, Inc.</i>		✓			✓	✓	✓	✓	✓	✓	✓			✓	✓			<i>Chemical dispensing equipment</i>
<i>Aequitron Medical</i>		✓			✓	✓	✓		✓	✓			✓	✓				<i>Respiratory ventilators</i>
<i>Contract self-employed</i>	✓	✓				✓			✓					✓				<i>Misc. design contracts, self-employed</i>
<i>IBM Corporation</i>		✓			✓	✓			✓	✓				✓		✓		<i>AS-400 mid-sized office systems</i>

¹ NOTE: most of these are overlapping roles/responsibilities.

Experience History

02/2016 – Present	<i>General Dynamics Mission Systems, Bloomington, MN. <u>Senior Advanced Systems Software Engineer.</u></i>
<i>Responsibilities</i>	<ul style="list-style-type: none">• Embedded Linux software development• C/C++ embedded software development• Avionics interface software development (MIL-STD-1553, IEEE 1394)• Network (socket) and network protocol programming• Linux system level programming and device driver implementation
<i>Accomplishments</i>	<ul style="list-style-type: none">• Developed and implemented IPMI interface solution for out-of-band monitoring, diagnostics, and control.• Developed MIL-STD-1553 test software to validate new hardware platform.• Worked with key vendors to bring together software solution for critical customer demonstration deliver date.
06/2015 – 02/2016	<i>Bosch Automotive Service Solutions, Owatonna, MN. <u>Principal Firmware Engineer.</u></i>
<i>Responsibilities</i>	<ul style="list-style-type: none">• Embedded Linux and Android system development• C/C++ embedded software development for automotive diagnostic tools• Systems engineering• Systems level design documentation• Compliance test support• New product test and manufacturing support
<i>Accomplishments</i>	<ul style="list-style-type: none">• As part of a product improvement effort have designed and developed a Linux based Wi-Fi solution for reliable connection of service tool components. This effort has demonstrated significant improvements in product performance and overall system quality.• Have developed Hardware and Software Requirements and Design Documents and System Requirements Documents for new products.• Have developed software tool sets used for Wi-Fi and Bluetooth compliance testing and provided support to assist compliance test engineers.• Have been a key contributor in product development schedules and planning of new products.
04/2013 – 05/2015	<i>IMRIS, Inc., Minnetonka, MN. <u>Principal Software Engineer.</u></i>
<i>Responsibilities</i>	<ul style="list-style-type: none">• C/C++ embedded software development for medical devices• Systems engineer lead• Project management for Image Guided Therapy and Diagnostic products• FDA document creation and submission• Customer Service field assistance and technical support• New product test and manufacturing support• Win CE and Nut/OS operating system development for embedded applications
<i>Accomplishments</i>	<ul style="list-style-type: none">• Designed and developed on time and within budget software for Nut/OS based Operating Table system utilizing TCP/IP for command and status

communications. Personally developed and tested roughly 3500 lines of code in 2 ½ months, exceeding product performance expectations and delivery schedules.

- As Team Lead have contributed to several new releases of Win CE MRI Mover software. These efforts have resulted in on time installation and successful release to customer, meeting or exceeding expectations in all cases.
- Have developed DVT plans and documentation to support FDA submission resulting in approvals necessary for new product release. Have also been a key provider of documentation development for domestic and international regulatory approval.
- Am leading ongoing refactoring and redesign effort of C/C++ code for existing products. This effort has demonstrated significant improvements in product performance and overall system quality.
- Have provided hands-on, on-site support to help Customer Service for installation and troubleshooting of new product installations. This is somewhat outside my *normal* job function however has been necessary to achieve customer release dates and meet company revenue targets.
- Have provided technical support to worldwide Customer Support team resulting in successful resolution of issues and successful implementation of customer requested product enhancements. This has resulted in improved customer satisfaction and generation of new business referrals.
- Have been a key contributor in the investigation and generation of timely solutions of several CAPA (*Corrective Action/Preventive Action*) issues on new and legacy products.

08/2012 – 04/2013 *Update Logic, Inc., Plymouth, MN. Product Services Engineering Manager.*

Responsibilities

- Project Management
- Customer/Partner Relationship Management
- Personnel Management
- Design Policies, Procedures and Workflows
- Liaison to Other Departments (Operations, Development, Sales)
- Provide technical expertise and mentoring for the team
- Coordinate technical activities across team members
- Perform engineering and software responsibilities

Accomplishments

- Helped secure business relationship with major new customers/partners resulting in achievement of revenue goals and company business objectives.
- Managed and brought to successful completion several strategic software integration projects. Had to work closely with customers and third party off-shore developers in order to complete.
- Successfully filled department staffing needs on several positions. New hires proved to be valuable additions to our team.
- Developed and implemented optimal solutions for software defects on Linux OS based product.

10/2008 – 08/2012 *Logic Product Development, Minneapolis, MN. Principal Systems Engineer, Program Manager.*

Responsibilities

- New business development, direct customer interface.

- Lead product design engineering, and system architecture development.
- Project/program management, team lead
 - Schedule, cost, resource planning and tracking.
 - Statement of Work, Terms & Conditions, financials, project plan development.
 - Configuration management (track, revision control, hardware and software development environment and tool setup).
 - Quality standards (ISO 13485:2003) adherence.
- Hardware and software low-level design and development.
- Member of Logic's Project Management team and Software Development group.

Accomplishments

- Successfully managed \$1M product development project involving a cross-disciplined (electrical, mechanical, and software) team of ten engineers. Customer has requested follow-on project work and future product development opportunities with Logic.
- Completed on time and within budget four hardware design projects based on TI-OMAP "System on Module" for Avionics, military, and medical applications. All customers have requested follow-on project work and future product development with Logic.
- Developed several "winning" project proposals and worked closely with customers to refine product technical requirements.
- Successfully architected serial communication scheme and developed WinCE drivers to facilitate high-speed video data transmission between two ARM processor sub-systems. Drivers were designed to interface seamlessly with existing WinCE network software layers.
- Developed WinCE test applications used for device verification and product manufacturing test.

09/2006 – 10/2008

Acist Medical Systems, Inc., Eden Prairie, MN. Principal Electrical Engineer – Hardware and Software Design and Development for Medical Electronics.

Responsibilities

- Project management of software and hardware development on new medical devices.
- Lead hardware design engineer responsible for ARM7 based Contrast Injector System electronics used in Angiography procedures.
- Responsible for Board Support Package (BSP) C++ software development using Model-Driven Development (MDD) tools for real-time Embedded applications.

Accomplishments

- Successfully completed ARM7 embedded hardware design and documentation on schedule and per requirements for a new Angiography Dye Injector System.
- Successfully managed electrical and mechanical EMI/EMC design effort for the company to insure compliance for new products. Contracted with outside contractors to complement areas of expertise within company.
- Designed and implemented several low-level software driver components including a Flash File System, interrupt handlers, SPI driver, and user interface drivers using C++ running on Nucleus RTOS.

- Completed all design documentation required for FDA approvals on schedule.
- Successfully qualified and implemented Configuration Management tools and processes required for product development and FDA approvals.
- Have published Work Instructions and Operating Procedures related to new product development of Medical Devices.

08/98 – 09/2006

Fargo Electronics, Inc., Eden Prairie, MN. Sr. Principal Electrical Engineer - Technical Team Leader - Dye-Sublimation Card Printer Development

Responsibilities

- Technical team lead
- Personnel manager
- Software development
- Project manager
- System Architect
- Electrical hardware design

Accomplishments

- Architected and managed firmware and hardware development for Fargo's HDP 8xx and DTC 5xx series printers. These products were highly successful in the marketplace and have stayed in production for over 8 years.
- Designed the first generation circuit boards for all of the new printers based on Freescale 16 bit and 32 bit processors.
- Designed, developed, and debugged over 27,000 lines of C and C++ firmware. Some of this code was used across several platforms and in several versions of products. Much of this software has remained "in service" for over 15 years.
- Developed over 3000 lines of VHDL/ FPGA code. This code replaced time-critical functions previously written in C and handles all of the lower level stepper and DC motor drive, sensor management, and the coordination of these in the overall system.
- Achieved the highest number of bug fixes on the team (approximately 250) on the latest project, both in my area of development as well as in support of other engineers on the team.
- Successfully coordinated and managed overall project activities and assignments, technical issue resolution, and schedules for all firmware and electrical hardware development. Was instrumental in constantly pushing projects forward and made sure that the electrical and firmware team met schedules and requirements.
- Developed *Coding Standards, Configuration Management Plan, and Software Development Protocol* documents used in new product design.
- Helped specify and set up initial tools for bug tracking, and helped lead the effort to establish a document/ revision control methodology.
- Worked with the quality group to develop a test system/ methodology for the testing of new printer firmware, and system verification. This resulted in very low operating failure rates required for the product.
- Have spearheaded the investigation and implementation of new development tools and methods (ea. UML, compilers, debuggers, test and measurement tools, failure analysis, etc.) which have greatly improved our ability to get to market faster, with improved quality.

04/94 - 08/98 ECOLAB, Inc., Mendota, MN., Principal Electrical Engineer/ Manager Embedded Software Development - Dispensing Systems Engineering.

Responsibilities

- Software manager
- Hardware and software design and development
- Project management
- Documentation and Standards development
- Department/ division software lead

Accomplishments

- Successfully managed all aspects of firmware/ software development for Dispensing Systems Engineering products.
- Developed *Software Development Protocol and Software Documentation Standards*. Standards were adopted for use by Dispensing Systems organization.
- Designed and developed C and C++ firmware and hardware for microprocessor based chemical dispensing systems. Systems proved to be very robust and set the standard in the industry for chemical dispensing systems.
- Received Ecolab's *Outstanding Achievement Award* for my work on industrial PC based system for the dispensing and mixing of chemicals used for equipment cleaning and sterilization in the food processing industry. Met all product design requirements, and delivered the systems to production months ahead of schedule.

06/91 - 04/94 Aequitron Medical, Plymouth, MN., Senior Electrical Engineer - Ventilator Product Development.

Responsibilities

New respiratory product hardware and firmware design and development, and software maintenance and updates to existing respiratory products to meet FDA guidelines for life-support medical products.

Other Employment

FSI International, Chaska, MN., Senior Electrical Engineer - New Product Development.

Responsibilities

Project planning, hardware design, debug, and documentation of microprocessor controlled semiconductor processing equipment

Self-employed Contract Work, Hopkins, MN., Self-employed.

Responsibilities

Various contract employment activities around the Twin Cities. Responsibilities included hardware and firmware design and development for low-cost high-volume microprocessor based products.

IBM Corporation, Rochester, MN., Staff engineer - New Product Development.

Responsibilities

Project planning, manpower and assignment breakdown planning, firmware architecture design, low-level firmware design and development, hardware design and project documentation for subcomponents of the AS/400 and its predecessors. Also worked in the Test Engineering group developing testers for product circuit boards and sub-assemblies.

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Michigan Bell Telephone Co., Southfield, MI., Project Engineer - Microwave Communications Department.

Responsibilities

System level design and specification of microwave communications equipment required for point-to-point microwave facilities, and acceptance testing of the installed equipment.

Education

Michigan State University, East Lansing, MI., BSEE degree with high honors (3.86/4.0).