

Gerald T. Rigdon

E-mail: mail@rigdonhouse.com

LinkedIn: <https://www.linkedin.com/in/gerald-rigdon-83882910/>

Website: <https://rigdonhouse.com>

Experience Summary

I have over 35 years of experience in safety critical software driven real-time embedded systems spanning multiple diverse industries, Process Control Instrumentation, Burner Controls, Dynamically Stabilized Balancing Machines, and Medical Devices.

I spent 11 years leading software development in a small private industrial instrumentation company, 2 years owning burner control projects, 6 years wearing numerous hats in a renowned startup company, and presently 19 years in a senior technical leadership position for a large publicly owned medical device corporation.

Hands-on in all stages of the software development process in dynamic safety/security critical environments with breakthrough technologies.

Core

- General Purpose Programming
 - C#, Perl, Python, Java, Kotlin, SQL, VB, Lab Windows CVI
- Web Development
 - JavaScript, HTML, CSS, Bootstrap
- Mobile Development
 - Xamarin X-Platform & Bluetooth Low Energy

Safety Critical

- Embedded Systems & Real-Time Programming
 - C, C++, Assembler for 8088/PIC/ST/HC11
- Software Design Patterns, Full SDLC, Agile, Systems Engineering Practices, Risk Management
- Software Unit, Integration, Verification, Validation Testing
- Static Analysis Tools/Custom Techniques, MISRA, Coding Standards, AI/ML
- Product Safety Recalls, Accident Investigations, Defect Analysis, CAPA, Post-Market Surveillance
- Class III Medical Devices, Regulatory, Business Acumen, Marketing Research and Specifications
- IEC 62304, ISO 14971, ISO 13485, TR 80002-1, FDA Design Controls

Security

- Embedded Systems & Enterprise
- Secure Coding Standards, TIR 57, IEC 81001-5-1, JSP, NIST SSDF, FDA Cybersecurity Guidance
- Cryptography, Secure Product Development Frameworks
- Kali Linux Toolchain, Nmap, Traceroute, Metasploit Netcat, WinSCP, Social-Engineering Toolkit (SET)
- Cyberwar Simulations – Denial of Service, Water Hole, Ransomware, Endpoint Detection, Honeypots

Blockchain

- Solidity, React, Node.js, Ethers.js, Web3.js, JSX
- Truffle, Hardhat, Redux, Mocha, Chai, Ganache, MetaMask, Remix, Open Zeppelin, Infura

AI/ML

- Python, Streamlit, LangChain, LangGraph, CrewAI, AutoGen, RAG, GraphRAG, Indexing & Vector DB, Eval Metrics, MCP, Agentic Workflows, AWS, Azure

Entrepreneurial Endeavors

- Created a Medical Device Software Process Training Course on Udemy – 2023
<https://www.udemy.com/course/medical-device-software-process-blackbelt/>
- Designed the e-Commerce Store <https://thinkairpurifiers.com/> – 2020
- Designed and engineered a commercially available product called “Tune Tutor & Tools”, a hardware/software integrated PID educational package. This taught me a lot about R&D from the ground up including first-hand experience in the sales and marketing of my very own product. – 1996

Work Experience

Boston Scientific, MN

Fellow, Implantable Firmware Engineering (2007-Present)

- Firmware design advisory role which has included solving difficult technical issues across multiple projects, oversight of safety critical software design patterns, coding standards, static analysis techniques, cybersecurity, and AI/ML
- Hands-on development for implantable Class III medical device firmware and external infrastructure
 - Pacemakers, Defibrillators, Diagnostic Recorders, Urology Research Controls
 - Mobile Device Apps, Device Programmers, Cloud Connectivity, AI Ecosystem
- Other key responsibilities as a Technical Fellow per HR description:
 - Principle leadership role in functional area using technical expertise to support new technology
 - Conducting research, managing major projects, firmware design and implementation
 - Determining emerging technological trends by reviewing scientific data
 - Supporting documentation effort for regulatory submissions
 - Maintaining substantial knowledge of state-of-the-art principles and theories in area of expertise

Segway, NH

Team Leader / Project Leader / Software Engineer V (2001-2007)

- Original member of the product development team of a highly visible startup company that created the world’s first commercially available dynamically stabilized balancing machine; the Segway Personal Transporter. At Segway I enjoyed a wide variety of work experiences from concept creation to product development and release, to manufacturing and serviceability tools, as well as leading investigations for issues in fielded products and subsequent software maintenance releases.
 - Led the early D3 prototype software team
 - Created requirements, design, implementation, and testing of the Segway PT firmware safety kernel
 - Developed the release test software fault handling validation suite
 - Delivered manufacturing line testers and designed service tool software
 - Analyzed root cause of field issues, provided reports for legal department, recall management

Invensys, CO

Software Project Leader (1999-2000)

- Project Leader for the successful submission of a micro-controller-based gas ignition product line in compliance with the UL 1998 software safety requirements.

Electron Machine Corporation, FL

Lead Software Engineer (1988-1999)

- Designed and implemented real-time software applications for use in embedded systems to provide feedback for process control instrumentation in safety critical areas of industrial environments.
 - Refractometers, X-Ray Gauges, CO2 Analyzers, Black Liquor Recovery Boiler Monitors

Education/Degrees

Doctorate Cybersecurity	Marymount University	Ongoing
Dissertation: "Exploring LLM Viability for Use in Static Code Analysis of Software Security Vulnerabilities"		

Master of Science in Regulatory Affairs	Northeastern University
Master of Business Administration	Regis University
Bachelor of Science in Computer Systems	Regents College
Electronics Diploma	Cleveland Institute of Electronics
Associate of Science Computer Science	Lake Sumter State College

Professional Certifications

Certified Agentic AI Pioneer	Analytics Vidhya
Certified Cybersecurity Expert	Global Tech Council
Certified Computing Professional	ICCP
Certified Solidity Developer	Blockchain Council
Certified Ethereum Developer	Cadena

Specialized Training

- Agentic AI Pioneer Program from Analytics Vidhya – 150 hours, 12 projects
- MISRA Standard from Perforce
- EKG Rhythm Interpretation Black Belt from Med Mastery
- Safety Critical Software by Nancy Leveson

Notable Medical Device Static Analysis Projects

- Requirements architect and project lead for two customized static analysis projects with an industry leading tool vendor to facilitate the domain specific analysis of Class III medical device firmware.
 - Reference <https://rigdonhouse.com/docs/GrammaCaseStudy.pdf>

Published Works

AI/ML Papers & Presentations

- “Rendered document indexing vs. structured source indexing: A comparative study for design-document multimodal RAG”, Research Paper, IACIS, 2026
- “Sky Unit: An LLM-driven unit test generator for embedded C”, Research Paper, IACIS, 2026
- “Proposals for AI Use in Medical Device Software Development”, Medical Device Summit, Conference White Paper, 2026
- “Evaluating LLM Use In Identifying OSS Packages Linked to Cybersecurity Vulnerabilities for HAVOSS”, The Data Scientist, 2026
- "Custom AI Tool Development in Regulated Industries: Why Off-The-Shelf LLM Solutions Fall Short", Analytics Vidhya, 2026
- “An AI Case Study on LLM Use for a Graph Theory Related Application”, Developer Zone, 2025
- “Blue Sky LLM Project Story”, Presentation at INCOSE Conference, 2025
- “A Heart Disease Multi-Dataset Analysis With Random Forest Classification and Reduced Dimensionality of the Most Positive Correlated Data”, Marymount Project Paper, 2024

Cybersecurity Papers & Presentations

- “Cybersecurity Monitoring With LLMs”, Presentation at INCOSE Conference, 2026
- “CPAMS: A Cybersecurity Post-Market Analysis Monitoring System”, The Data Scientist, 2026
- "Cybersecurity: Developing a NIST SSDF-based Profile for low and moderate risk medical device applications in the USA", Journal of Medical Device Regulation, 2025
- “FDA Cybersecurity Guidance for Medical Devices – A Brief on the Law, SPDF, JSP, and NIST SSDF”, Medical Device Summit, Conference White Paper, 2024
- “Understanding the FDA Cybersecurity Final Guidance”, Presentation at Medical Device Summit, 2024

Other Technical Papers & Presentations

- “Static Analysis”, Presentation at Perforce Conference, 2018
- “An Analytical Approach to Identifying Software Initialization Issues”, White Paper, 2012
- “Streamlining Analysis of Medical Device Software”, Case Study, 2010
- “Static Analysis Considerations for Medical Device Firmware”, White Paper, 2010
- “Static Analysis Considerations for Stack Usage”, White Paper, 2010
- “Static Analysis”, Presentation at Embedded Systems Conference, 2010

PID and Closed Loop Control

- “Control Training with its Own Process”, Software Review, Control Engineering Magazine, 1996
- “Tune Tutor”, PID educational hardware and software toolkit, U.S. Copyright TXu 792-019, 1996

Patent Submissions

- 25-0540US01 – “Controlling an Inflatable Medical Device Using a Model-Based Pressure Signal”
- 25-0542US01 – “Mixed On/Off Control With PID Control for Urology Fluidics System”

Fiction

- “High Striker” - Novel, 2012 & Screenplay, 2019 (Film Crash 1st Place Award)

Interests

- Physical Fitness, Philosophy, LLMs, Blockchains, Billiards, Basketball, Football, SCUBA