JOSHUA DAVID BUTLER

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PROFESSIONAL SUMMARY

Strategic systems-level technology innovator and engineering team leader with 20+ years of experience in healthcare technology, hardware, firmware, software, and embedded systems. Developed a closed-loop AI-first methodology enabling rapid modernization of large-scale enterprise codebases (500K+ LOC). Successfully directed multiple cross-functional teams in complex system implementations, delivering productivity improvements of 10-20x through innovative AI-driven approaches.

KEY QUALIFICATIONS

- **Strategic Leadership:** Led multi-team initiatives driving large-scale technical transformations with measurable high-impact outcomes
- **Technical Team Management:** Coordinated a variety of 5-10 cross-functional development teams across complex projects over 15 years
- **AI-First Innovation:** Developed advanced manual and automated agentic extensible systems-level methodologies for LLM APIs, accelerating development cycles by 10-20x, along with training courses on these methods
- **Healthcare Expertise:** Curated deep understanding of medical device development, regulatory requirements, and manufacturing

PROFESSIONAL EXPERIENCE

STERIS, Richmond, CA
Principal Firmware Engineer | *3/2022 – Present*

- Leading firmware development for OR integration products, ensuring reliability across thousands of hospitals
- Engineered solutions for PIC microcontrollers and embedded Linux systems, improving performance by 35%
- Automated test systems and CI build processes using Jenkins, reducing release overhead by 40%
- Apply AI-driven code generation methodologies, increasing product and research tool development efficiency by 10-20x
- Strategically manage component obsolescence amid global supply chain disruptions

VACTRONIX SCIENTIFIC, Fremont, CA
Technical Development Manager / Principal Electrical and Software Engineer | *5/2021 – 9/2022*

- Directed team of 5 engineers developing AI-enabled medical manufacturing equipment for vascular stents
- Redesigned HMI interfaces and redesigned capital equipment for real-time operation, reducing failures by 80% and improving manufacturing efficiency by more than 40%
- Architected remote monitoring platforms reducing downtime by 50% in critical manufacturing processes

INTEVAC, Santa Clara, CA
Hardware and Firmware Development Engineer – Advanced Imaging Systems | *7/2020 – 6/2021*

- Developed adaptive image processing algorithms enhancing contrast in low-light imaging systems for improved reliability with fewer artifacts and faster post-processing
- Created automated validation frameworks by digitizing analog subsystems to ensure reliability in mission-critical environments and increase camera yield by 60%
- Reduced failure rates for CCD units by 80% by retrofitting analog only designs with microcontrollers and digital pots for tuning after manufacturing.

FESTO, Livermore, CA
Research Engineer / Applications Engineer – Medical Devices | *6/2015 – 2/2020*

- Designed dozens of early-stage prototypes and automation solutions for medical device manufacturing (DFM)
- Developed complex high-speed interpolated 5D+ gantry systems for research, diagnostics, and biomaterial manufacturing
- Implemented AI vision systems for high-speed tracking in medical product manufacturing systems
- Drove business cases with novel technical implementation of piezo electric control systems for very low-power pneumatic control systems for hospital beds, flow cytometry, and automated biomaterials handling

TECHNICAL LEADERSHIP SKILLS

- **Software, Firmware & Embedded Systems:** Real-time systems, microcontroller programming (PIC, STM32, ESP32), C/C++, Python, MATLAB, React/Next.js
- **AI-First Development:** Closed-loop LLM-based codebase conversion, large-scale implementation planning, refactoring and ground-up creation of large software platforms with minimal hands-on coding
- **CI/CD & Automation:** Jenkins pipeline automation, test system automation, build process optimization

- **Technical Planning:** Roadmap development, cross-domain architecture, technical debt management, cost-benefit analysis

TECHNICAL INNOVATION IMPACT

- Led healthcare software transformation using AI-first methodology, reducing development time by 60-80%
- Directed firmware initiatives for operating room integration systems used in 2000+ hospitals, improving reliability, correcting defects, and adding robust monitoring features
- Implemented AI-first development approaches and a training system that increases productivity by 10-20x across a variety of related domains (software development, firmware, research, validation)
- Established CI/CD pipelines using Jenkins for legacy product that reduced release cycle overhead by 40% and improved defect detection by more than 70%

EDUCATION

- B.S. Electrical Engineering; Physics Minor; Rose-Hulman Institute of Technology
- University of Cincinnati; Completed all coursework towards Ph.D. in Electrical Engineering.

STANDARDS & COMPLIANCE

- ISO 9001/13485, AS9100, NIST SP 800-53/800-171, IEC 60601/61010/61131-3, HIPAA/HITECH

PATENTS

- Multiple patents in food dehydration technology and microorganismal growth optimization for high-value biomaterial substrates
- Developed modified-air dehydration methods enhancing nutrient bioavailability for highly advanced optimized nutritive paramedical products