JAMES BOWEN

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SENIOR EMBEDDED SYSTEMS ENGINEER & CONSULTANT

Software / Hardware / Firmware professional with extensive product development & tech leadership experience.

CAREER HIGHLIGHTS

- Led multiple cross-functional, multi-regional technical teams: Integrated embedded software, hardware, mechanical, & prototyping functions**, leading teams from 3 to 17 engineers** from concept to manufacturing.
- Agile Project Management: Reduced project costs by 30% and **accelerated delivery by 6 months**; **completed 25 design projects** within schedule and budget for Fortune 500 and Startup clients.

Selected Team and Individual Awards:
Medical Device Excellence / North American Power Quality Emerging Technology of the Year /
NDC Superior Performance Award / Angier B. Duke Scholar (AB Duke)

Hard Skills Utilized: (Full list: realtimeinnovation.com) C/C++/C#, Swift, Python, System issue resolution w/ oscilloscopes/logic analyzers, RSA, GPRS, Verilog, RT Linux RTOS, SPI/I2C/UART/GPIO, JavaScript, AWS.
Soft Skills Utilized: Project Management, Client Relationship Management, Contract Negotiation, Software Group Management, Engineering Leadership and Mentorship, Technical Communication.

PROFESSIONAL EXPERIENCE

REALTIME INNOVATION — Jul 2007–Present

Principal Engineer, Tech Lead, Engineering Manager, Business Owner

Managed projects for solo venture; delivered 5 concurrent software/hardware designs on time. Notable Contracts:

MASCO (Fortune 500 global home improvement manufacturer) — Taylor, MI

Managed and led multi-disciplinary product development team for complex multi-PCB consumer product. Selected & integrated RTOS. **Delivered 3 months faster** than competing team; met strict budget constraints.

- Led software, RTOS configuration, BSP performance tuning, hardware architecture, FPGA, embedded CPU programming, PCB design, Mechanical, & manufacturing, from concept to prototypes and validation.
- **Overcame $200k budget shortfall** by improving project plan and collaborating closely with User Experience, PM & mechanical teams. Successfully demoed on schedule, gaining executive buy-in.

CORVISTA / A4L (Cardiovascular MedTech AI Startup w/$25M Venture Funding) — Research Triangle Park, NC

Led medical device / system embedded software design including two custom PCBs, off-the-shelf graphical & 802.11 Wi-Fi comms hardware, & cloud-based backend in collaboration w/ machine learning algorithms team.

- Architected and implemented firmware, iOS and cloud software, and digital hardware for device, led software engineering for all 4 subsystems, from requirements through manufacturing. Delivered software components & documentation on time with **30% reduced schedule** & budget.
- Our success enabled client's **$90M funding round** and subsequent **FDA 510(k) device clearance**.

CYBERONICS / LIVANOVA (Neuromodulation implantable manufacturer; $280M sales) — Houston, TX

Led pre-silicon design of custom low-power ASIC/SoC firmware, guided client process (requirements, architecture, design, simulation & emulation, chip bring-up, & verification) in collaboration with silicon architects.

- Developed USB upgrade and Flash NVRAM memory management on QP Real-Time Operating System.
- Project wins included **successful 1st silicon validation** & **CE Mark** for RTOS-based home devices.
- ASIC targeted for new product line, YoY **revenue growth of $27.7M (10.9%)**, CYBX successful merger.

UNITED TECHNOLOGIES (Dow 30 Aerospace Manufacturer) — Rockford, IL

- Designed Linux device driver & kernel mods (featuring real-time control of high-speed data transfer via polling & interrupt handling) in collaboration with software and operating systems teams, & debugged hardware; achieved cost reduction & **12 months faster time-to-market** over previous consultancy.
- Airbus A400M subsequently became an important European airlifter; 178 ($25B) ordered.

ADDITIONAL PROJECT MILESTONES (MedTech Robotics, Biotech Computer Vision, Neural Implant) RTP, NC

- Led 17 contributor team & renegotiated project plan & 3rd party contracts; **reduced project costs by 20%**.
- Audited & improved FDA engineering docs: System/Software Requirements, User Needs, Business Goals, Architecture, Verification Plan, FMEA, Issue Tracking & Traceability. Led to **1st operating income ($4.1M).**
- **Decreased SPI latency by 75%**; verified performance w/protocol analyzers; debugged Linux PCIe driver.
- Designed bare metal audio (DSP) firmware & Bluetooth-based hardware for high-volume consumer use.

NOCTURNAL PRODUCT DEVELOPMENT Apr 2012–Mar 2017

Principal Engineer, R&D

Led embedded systems software engineering & firmware group growth **from $50k to >$1M budget** across all product development efforts. Created software development processes & trained engineers. Notable projects:

COOLSHIRT SYSTEMS (Leader in Personal Cooling Systems for Surgeons, EMS) Atlanta, GA

Led cross-functional (PCB hardware, software, mechanical, rapid prototyping) team for power-optimized Bluetooth (BLE) devices. Delivered on schedule, from concept to manufacturing. Focused on miniaturized device active power and performance analysis, meeting key power management & latency targets.

LUXCATH (Cardiac ablation surgical MedTech startup with $5M Series A funding) Boston, MA

Designed computer vision algorithms, real-time imaging system overlay graphics, video capture / processing software & FPGA hardware. Led software / PLD design & clock-level debugging, collaborating w/HW team.

- We earned **3 patents** for my effort. Design passed FIM trials and led to ~$3M subsequent funding.

NEUROTRONIK (Acute Heart Failure Syndrome treatment startup; $36M total funding) Chapel Hill, NC

Architected / implemented embedded software, DSP algorithms, & hardware w/**schedule accelerated by 25%**.

- Designed inter-processor communication protocols and embedded software for all microcontrollers.
- Integrated HW and software w/ instrumentation for patient simulation, debugging client hardware.
- Our success yielded **successful First-In-Man clinical trials** and subsequent **$23.5M funding** round.

VAULT ENCLOSURES (Leading POS Enclosure Manufacturer for Apple, Dell) High Point, NC

Developed USB-C data / power hub embedded software; led on-site manufacturing integration.

PLEXUS CORPORATION Jun 1998–Jul 2007

Embedded Software Engineer, Hardware Design Engineer, Technical Team Lead

Significant engineering & leadership contributions to 14 engineering projects over 9-year period**,** increasing surveyed customer satisfaction & taking accountability for shipping medical, industrial, & consumer embedded systems. Mentored & trained engineers (e.g., TCP/IP Ethernet classes) in local & int'l offices. Key projects:

PENANG DESIGNCENTER (Plexus regional office; I trained and **mentored 15 engineers**) Penang, Malaysia

My leadership and management collaboration led to project successes and **ISO 13485 approval**.

PANDUIT (International cabling & infrastructure manufacturer; $1B annual revenue) Atlanta, GA

Transformed stalled handheld product design, resulting in **on-time market release.**

- Resolved major embedded software issues; debugging client software yielded key 1st-week breakthrough.
- **Led 7 engineer team**, completing device boot loaders and firmware development ahead of schedule.

BAE SYSTEMS (Fortune Global 500 supplier of advanced electronics for air/land/naval forces) Nashua, NH

Led 5-person multi-site software, hardware, and mechanical team; designed comms & computer graphics oriented real-time visualization system on aggressive schedule, **exceeding surveyed client expectations.**

ETHICON ENDO-SURGERY (Surgical Assist Device Subsidiary of Johnson & Johnson) Cincinnati, OH

Implemented FPGA and PCB digital hardware design, detailed timing issue resolution (delay, clock buffering), and prototype bring-up / testing; design **received FDA 510(k) clearance**.

- Design successfully completed **300,000 biopsies in 1st year**; surgery 10,000,000 in 2020.

EDUCATION

B.S. Electrical Engineering, B.S. Computer Science, *magna cum laude, Tau Beta Pi* **–** Duke University (1998)

Angier B. Duke Scholar & Advisory Committee Member – Duke University (1994-1998)