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Summary

Skilled Hardware and Software Engineer specializing in full stack product development. Success in taking electronic projects from conception to mass production in a variety of fields including consumer electronics, IoT, and education. Experienced in producing designs capable of manufacture at high scale and low-cost. Agile in researching the necessary technologies to complete a project, pragmatically integrating new platforms and programming methodologies. Strong leadership skills and excellent time management in hectic startup environments.

Skills

- 8+ Years experience designing mixed-signal PCBA in Cadsoft Eagle, 6+ in KiCad, familiarity with Altium
  - Including 8+ years of EE supply-chain management and manufacturing process development
  - Low-volume prototype assembly reflow soldering and hot-air rework, PCB inspection and debugging
  - Some experience with RF (2.4GHz) and high speed digital logic
- 13+ Years experience developing embedded C/C++ on a wide variety of 8bit-32bit MCU architectures
  - Cores: nRF51/52/91, esp32/xtensa, atsamd, stm32, kl2x, efm8(8051), stm8, attiny/atmega, rl78, PSoC4
  - 3+ Years experience with RTOS (freeRTOS, zephyr) and developing for an embedded linux kernel
  - Deep familiarity of BLE and USB stacks, Strong familiarity with Wifi and Zigbee communications
- 15+ years programming in Python, Intermediate knowledge of C/C++, Java, Javascript, Typescript, bash
  - Data Analysis using numpy/scipy/pandas to quantify sensor performance and create basic models
  - Experience with linux servers, virtualization, and cloud tools such as Amazon AWS, Docker, Chef

Selected Projects

- **Kinetic Reflex System:** sustaining engineering, EE+FW+Manufacturing of next-generation industrial wearable
- **littleBits Droid Inventor Kit**: kit R&D + design of w32-controlHub module, a BLE control + audio playback bit
- **littleBits Pro Library:** cost-down, test documentation, product improvements to all 65 electrical designs in the kit
- **Pulsewear DreamOn**: EE+FW design, DFM, and manufacturing support
- **Grow Duo:** Firmware development - initial project, BLE protocol, custom storage subsystem

Work Experience

- **Freelance Electrical and Firmware Engineer**   **May 2013-present**
  - Design of small mixed-signal PCBA for various consumer products and manufacturing assistance therein
  - FW development on various platforms (ATMEGA, ATSAMD, nRF51, nRF52, PSoC4, RPi)
  - Focus on high-efficiency BLE designs (nRFx) including OTA updates, testing, and build tooling (python)
  - Development of production documentation, preliminary supply-chain development, coordination with CM
- **Kinetic, NYC - Principal Hardware Engineer**   **May 2024-Aug 2025**
- **Kinetic, NYC - Tech Lead, Electrical Engineering**   **Aug 2021-May 2024**
- **Kinetic, NYC - Senior Electrical Engineer**   **June 2020-Aug 2021**
  - Lead product development of next-generation wearable: executed EE/FW/Product design + external ID/ME
  - EE/FW and ME design of prototype cellular+wifi charger, fabricated + shipped 50-unit beta pilot
  - Implementation of DFMEA and PLM processes to ensure enterprise-grade quality standards are met
  - Developed comprehensive battery maintenance program + deep dives into other critical quality issues
  - Expanded refurbishment program: 5x increase in throughput using in-house, domestic and overseas teams
  - Rewrote test guidelines and provided supply-chain support for rapid ramp-up at new overseas CM
  - Redesigned device telemetry and OTA update flows + created process for CS teams to triage issues
  - Created connectivity management program for fleet of >50k IoT devices and >1k cellular routers
  - Fleetwide data analysis in Jupyter, tooling and lambda functions in Python, Dashboards in Retool/Tableau
- **littleBits(Sphero), NYC - Director of Electrical Engineering**   **July 2019-Apr 2019**

- **littleBits, NYC - Senior Electrical Engineer**   **July 2015-June 2019**
  - Created product development and next-gen R&D timelines + budgets with the executive team.
  - Managed small team of engineers with a focus on expanding ownership and individual responsibility
  - Designed and executed plan to merge designs and process with new parent company.
  - EE+FW design for several flagship products, from R&D with product team through manufacturing support
  - Implemented cost-down and process improvements across huge product portfolio (>80 PCBA)
  - Worked closely with CM in Asia to develop tests, source components, resolve process issues
  - Created internal communication and test libraries (python) and build automation (jenkins)
  - FW development of next-gen digital platform on low-cost MCU (masterless, arbitrarily connected, OTA FW)
  - Assisted SW teams with FW update, comms (webUSB/BT/Android/iOS), Coding (Blockly/MakeCode)
- **Sum, NYC - Research and Development Engineer**   **June 2013-May 2015**
  - Designed and fabricated prototypes to test new sensor concepts and evaluate existing sensor performance
  - Coordinated with external hardware teams to specify design and to debug delivered prototypes
  - Designed clinical research trials, trained technicians, modified firmware, wrote tooling and documentation
  - Developed motion artifact rejection and peak-detection algorithms in both Python and firmware C code
  - Implemented third-party activity recognition library, flash storage, bluetooth low energy in firmware
- **BugLabs, NYC – Lead Engineer**   **July 2012-May 2013**
- **BugLabs, NYC – Applications Engineer**   **Feb 2011-June 2012**
  - Managed and prioritized engineering resources towards new M2M platform development
  - Developed platform libraries in Embedded C, Python, Java, Javascript
  - Created frontend/backend framework for generating real-time hardware web dashboards
  - Designed and prototyped new hardware for the OpenXC platform in conjunction with Ford
  - Principle engineer on NSF grant for a new high school physics datalogger device
  - Designed an internet-enabled teddy bear for hospital patient comfort, produced 8 prototypes
  - Developed facebook application frontend/backend code and hardware for a social vending machine
  - Created custom hardware, lesson plans, and sample code projects for an internship program
  - Helped to restructure low-level linux driver code and wrote python libraries for the bug

Education

- ❖ Rensselaer Polytechnic Institute (RPI), Troy, NY   **Graduated-Aug, 2010**
  - B.S in Electrical Engineering, Minor in Architectural Acoustics

Activities

- **RPI Players - 2008-2009 Season President**   **April 2008-April 2009**
  - Leader of 60+ member organization: resolving conflicts, coordinating personnel, planning events, and managing inter-club relations

Interests

Theater sound and lighting design, hardware hacking, open-source hardware, audio engineering, craft beer and coffee