



DSP & Embedded Firmware Engineer (Wearables / IoT) Location: Malvern, PA (On-Site)

Rajant Health Incorporated (RHI) is building a healthcare assurance ecosystem to enable proactive and personalized health. We provide personalized health insights that improve diagnostics, therapeutics, communication, and the overall patient experience. Our monitoring solutions, data integration, and advanced analytics transform raw data into actionable insights for clinical, biomedical, and research applications. Our portfolio includes Cowbell®, Q-Stat®, and Trovomics®—innovative technologies supporting large animal monitoring, remote health management, biomarker identification, and next-generation health discovery.

Based in Malvern, Pennsylvania, RHI develops intelligent healthcare technologies that make complex health data understandable and actionable for researchers, healthcare providers, and individuals. Backed by our parent company, Rajant Corporation, with more than 25 years of innovation in intelligent edge networking and mission-critical connectivity, RHI is advancing the future of connected healthcare through AI, edge computing, and real-time health intelligence. For more information, visit RajantHealth.com or follow Rajant Health on LinkedIn and YouTube.

POSITION OVERVIEW: Rajant Health is seeking a **DSP & Embedded Firmware Engineer** to develop real-time signal processing algorithms and embedded firmware for next-generation wearable and IoT products. This hands-on role bridges low-power sensor data collection and efficient on-device processing, from algorithm prototyping in Python or MATLAB through implementation in C/C++ on resource-constrained MCUs and SoCs.

KEY RESPONSIBILITIES:

- Design, simulate, implement low-power DSP and sensor-fusion algorithms for PPG, ECG, IMU/motion, environmental sensing, audio/voice trigger, or noise suppression.
- Translate Python/MATLAB algorithm models into compact, real-time C/C++ firmware for ARM Cortex-M, Nordic nRF, STM32, Ambiq, or similar platforms.
- Optimize execution, memory, and battery performance using fixed-point math, CMSIS-DSP, duty cycling, DMA, and efficient RAM/Flash utilization.
- Configure, integrate, and debug sensor buses and peripherals including SPI, I2C, I2S, ADCs/AFEs, DMA, and related interfaces.
- Integrate processed sensor data with low-power wireless links such as Bluetooth LE, Zigbee, or Wi-Fi in collaboration with system teams.
- Use JTAG, oscilloscopes, logic analyzers, logs, and systematic testing to debug signal pipelines on prototype hardware and wearable flex-PCBs.
- Document algorithms, firmware architecture, validation results, performance tradeoffs, and technical findings.

REQUIRED QUALIFICATIONS:

- B.S. or M.S. in Electrical Engineering, Computer Engineering, or a related field.
- Approximately 3+ years of hands-on embedded C/C++ firmware development for low-power IoT devices, wearables, or similar embedded products.
- Strong DSP fundamentals including FIR/IIR filters, FFTs, sampling, noise filtering, and fixed-point arithmetic tradeoffs.
- Proficiency with Python (NumPy/SciPy) or MATLAB for sensor-data modeling, algorithm development, and verification.
- Experience with ARM Cortex-M architecture, RTOS environments such as FreeRTOS or Zephyr, and bare-metal programming.
- Practical experience with SPI, I2C, I2S, ADC, DMA, JTAG, oscilloscopes, logic analyzers, and hardware/firmware debugging.
- Strong analytical, troubleshooting, documentation, and cross-functional communication skills.

PREFERRED QUALIFICATIONS:

- Hands-on Bluetooth Low Energy (BLE) data streaming and profiles.
- Experience with PPG, ECG, IMUs, or other wearable/biopotential sensors.
- Experience with ultra-low-power MCUs such as Nordic nRF52/nRF53, STM32WB/L, or Ambiq Micro.
- Exposure to embedded machine learning at the edge, including TinyML or CMSIS-NN.

CANDIDATE PROFILE: The ideal candidate combines strong embedded firmware skills with practical DSP knowledge and enjoys turning signal-processing concepts into efficient, reliable code on constrained hardware. You are hands-on in the lab, comfortable working across hardware and software, and motivated by low-power wearable and IoT product development.

WHY JOIN RAJANT HEALTH:

- Build innovative connected healthcare and wearable technologies with real-world impact.
- Work with engineers and technical teams across firmware, hardware, AI, cloud, and systems disciplines.
- Solve challenging low-power sensing and edge-processing problems in a collaborative environment.

READY TO BUILD WHAT'S NEXT?

If you're ready to help build intelligent wearable and IoT technologies that improve health insight and connected care, we'd love to hear from you. Apply Today.

Employment Type: Full-Time with Benefits. **Location:** Malvern, PA. On-Site. **Apply:** Please send cover letter and resume to jointheteam@rajant.com.

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