

# Role Fit — Shure Senior Embedded Software Engineer (mapping)

**Context:** This page maps the Shure job requirements to specific project evidence in this portfolio. Each bullet below points to one or more projects and a one-line explanation of how the project demonstrates the skill.

- **Design, develop and test embedded software and associated components for audio products (C/C++):**
    - Real-Time Audio Separation — Teensy firmware, I2S/UART C/C++ code, Raspberry Pi processing and multithreaded Python demos demonstrating low-latency embedded audio capture and processing.
    - Stratum Synthesizer — assembly-level audio engine and drivers showing deep knowledge of audio signal path and constraints.
  - **Hardware drivers, embedded software applications, audio and control networking (C/C++):**
    - Stratum Synthesizer — speaker and SD drivers, low-level peripheral control.
    - Zumo Shield Robot — STM32 PWM, timers, UART and GPIO; illustrates driver usage and hardware control.
  - **Real-time, multitasking, RTOS concepts and debugging (Embedded Linux/FreeRTOS/etc):**
    - Real-Time Audio Separation — real-time constraints, multicore/multithreaded processing and synchronization.
    - Zumo Shield Robot — real-time control loop design and hardware timing considerations (timers, interrupts, PWM).
  - **Networking & protocols (UART, I2S, possibility to work with Ethernet/TCP/UDP/Wi-Fi):**
    - Real-Time Audio Separation — I2S audio capture and UART streaming; demonstrates protocol-level understanding and embedded networking concepts.
  - **Software architecture, design, and testing (reviews, unit/integration tests):**
    - All projects include design notes and reports; the portfolio includes a test-oriented project (Toyota Auto-Validation) and unit tests in other repos (e.g., the archived Glasgow repo had tests). I prioritize clear documentation and testability.
  - **Hardware debugging and release processes:**
    - Zumo Shield Robot and Stratum Synthesizer show hardware bring-up, telemetry, and iterative debugging workflows; Toyota demo shows validation and reporting practices.
  - **Version control and documentation:**
    - Full repositories and README/USAGE/OVERVIEW docs are included with each project; this portfolio itself is version-controlled and deploy-ready.
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