Tuna Girişken

Embedded Software Engineer

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Summary

Embedded Software Engineer with 4+ years architecting safety-critical systems for defense and automotive industries. Expert in bare-metal and RTOS development across Arm, PowerPC, and x86 platforms using modern C/C++. Proven track record delivering production avionics systems at Baykar Technologies. Specialized in Yocto Linux customization, bootloader development, cryptographic implementations, and real-time automotive solutions with CAN/J1939 protocols.

Technical Skills

Embedded Expertise: Bare-metal, RTOS (FreeRTOS, Zephyr), Yocto Linux, U-Boot, Bootloader Development, Device Drivers
Programming Languages: C, C++98/11/14/17/20, Assembly (Arm/PowerPC), Bash/Batch, Qml
Standards & Compliance: DO-178C, ISO 26262, MIL-STD-1553
Platforms & Architectures: Arm Cortex (R5, M4, M33, A53, A55), PowerPC (P4080DS), x86 (Xeon D-1700)
Communication Protocols: CAN/J1939, MQTT, TCP/UDP, UART, SPI, I2C, USB, RS232, MIL-STD-1553
Tools & Build Systems: GCC, Clang, LLVM, CMake, Meson, Git, QEMU, OpenSSL, Qt, Jira, Sphinx
Spoken Languages: Turkish (Native), English (Professional - B2)

Experience

•Embedded Linux Development Engineer *Dec 2024 - Current*

Karluna Engineering

- Architected modular C++20 framework implementing SAE J1939 protocol for real-time automotive telemetry, supporting 250+ PGNs with sub-millisecond latency.
- Built custom Yocto-based Linux distribution for NXP i.MX93 platform, optimizing kernel configuration and U-Boot boot sequence, reducing boot time by 35%.

•Embedded Linux Development Engineer *Dec 2022 - Nov 2024*

Baykar Technologies

- Architected and implemented safety-critical RTOS framework for multi-core Arm Cortex platforms, ensuring DO-178C compliance for avionics systems.
- Developed AES-256 and RSA cryptographic modules with hardware security module (HSM) integration for secure boot implementation.
- Designed bare-metal applications for Cortex-R5 and Cortex-M4 cores, managing inter-core communication and resource partitioning.
- Built Qt/QML-based graphical interface for mission-critical avionics hardware, deployed in production UAV systems.

•Embedded Software Engineer Intern *Feb 2022 - May 2022*

Tübitak SAGE

- Developed bootloader integration for tactical cruise missile systems, implementing secure boot chain and firmware update mechanisms.
- Contributed to safety-critical embedded Linux projects meeting MIL-STD-1553 requirements.

•Software Instructor *Mar 2022 - May 2022*

Gazi Culture Art Trade and Tourism Inc.

- Conducted C/C++ software training for 12 weeks at Deneyap workshops supported by Gaziantep Metropolitan Municipality and T3 Foundation.

Projects

•NXP P4080DS Custom Linux Distribution and NVMe Driver Development

Yocto-based BSP with NVMe PCIe driver achieving 2.8 GB/s throughput

- Built production-ready Yocto BSP for PowerPC P4080DS platform with custom meta-layers, U-Boot, and SPL optimizations.
- Developed NVMe PCIe driver with DMA support, reducing data transfer latency by 40% for high-speed logging applications.

•TI Sitara AM65x SBL Development

OSPI Flash-based bootloader with secure boot chain

- Developed OSPI Flash-based Secondary Boot Loader (SBL) with memory-mapped XIP, achieving <2 second boot time.
- Implemented UART, GPIO, and Watchdog peripheral drivers ensuring secure boot chain for safety-critical applications.

Education

•Master of Science in Computer Engineering *2025 - Present*

Ege University

•Bachelor of Engineering in Electrical and Electronics Engineering *2017 - 2022*

Hasan Kalyoncu University (100% English Scholarship)

- Graduation Project: RF controlled motor driver software