Erik Sangeorzan

(231) 838-0726 | esangeorzan@gmail.com | linkedin.com/in/ejsang/

Summary

Embedded/software engineer with 4 years delivering C/C++ libraries, simulators, and automated test infrastructure for real-time, multitasking, quality-critical systems. Strength in software architecture/design, deterministic behavior, protocol implementation/conformance (Ethernet/IP, TCP/UDP, DoIP, CAN), CI/CD, and unit/integration testing. Clean Code/TDD/SOLID certified. Audio-domain experience via HARMAN acoustics and DSP projects.

Skills

Languages: Modern C++ (11/14/17), C, C#, Python, VB.NET, Assembly, Bash
Embedded/Systems: Real-time / RTOS concepts, multithreading, concurrency basics, interrupts, GPIO, SPI, I2C, finite state machines, HW/SW debug; state-machine modeling; use cases for real-time behavior
Networking/Tools: Ethernet, WiFi, IP, TCP/UDP, DoIP, CAN; Wireshark; Git, CMake, Jenkins, Jira, Visual Studio, SonarQube; Linux
Practices/Audio: SOLID, TDD/unit + integration testing, CI/CD, Agile/Scrum/SAFe; DSP, FIR/IIR, benchmarking, acoustics

Experience

Ford Motor Company | Dearborn, MI (Hybrid) *March 2022 - Present*
Software Engineer, Core Diagnostic Protocol Requirements & Tools (previously Ford College Graduate Rotations)

- Design, develop, test, and integrate C++ diagnostic tools, simulators, and libraries; own a DoIP edge-node simulation application and vehicle communications library used for validation/integration
- Implement and validate networking protocol features and conformance tests (DoIP over TCP/IP, CAN); debug interoperability via packet analysis
- Act as Scrum/SAFe contributor and scrum lead; estimate, organize, and document work; participate in architecture/design discussions and peer code/design reviews; mentor engineers on TDD/Clean Code
- Migrated key libraries to NuGet packaging, eliminating 8,000+ lines of redundant supplier code and making CI builds deterministic
- Rolled out SonarQube across three repositories; onboarded engineers; reduced code smells by 26.6% and reported bugs by 84%
- Built an end-to-end remote-control test harness for system validation; increased automated code coverage by 26.3%

HARMAN International (Automotive) | Novi, MI *May 2021 - August 2021*
Acoustic Engineering Intern

- Built a C# automation tool for amplifier electrical benchmarking; reduced manual testing ~90% (8 hours to <1 hour); adopted in production
- Validated electrical/acoustic performance; used critical listening and measurements to identify response anomalies, distortion, and phasing issues

Projects (portfolio: ejsang.github.io/erik-sangeorzan-portfolio)

Real-Time Audio Separation of Human Voices (Python, C) | 5-person team

- Designed & built real-time end-to-end DSP system to separate linearly mixed voices into isolated output channels
- Implemented a real-time ICA approach using windowing and splicing to support continuous processing

Zumo Shield: Autonomous Robot (C) | 2-person team

- Programmed a robot to autonomously navigate an obstacle course and reach a light source
- Implemented interrupt-driven GPIO/peripheral control; translated a finite state machine design into working behavior; extended to line-follow + audio output

Scoring Tennis Matches Based on Audio (MATLAB) | 5-person team

- Developed a MATLAB system that detects ball hits, net hits, and “out” calls from match audio using DSP methods (thresholding, correlation, FFT)

Education & Certifications

University of Michigan, College of Engineering
B.S.E. Computer Engineering, Minor in Music, December 2021; GPA 3.58
Certifications: Ford Clean Code Belts (highest internal certification) certifying expertise in advanced TDD, SOLID, & OOP
Leadership/Service: Ann Arbor Jaycees Community Vice President (awarded 2025 Chairperson of the Year + Director of the Year), Humane Society of Huron Valley volunteer dog walker