Lorenzo Caprari

Embedded Software Engineer · Modern C++ for vehicles

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SUMMARY

Embedded software engineer with five years building C++ software for vehicles: over-the-air update management at Jaguar Land Rover, the vehicle control application of an autonomous driving stack at VisLab (Ambarella), and onboard software for automated guided vehicles at E80 Group. Works mainly in modern C++ on Linux and QNX, focused on build systems, static analysis, testing and CI.

SKILLS

Languages: C++ (17 to 26), C, Python, Bash
Platforms: Linux, QNX, RTOS, Windows; cross-compilation for x86 and ARM
Robotics and vehicles: ROS 2, TwinCAT 3 PLC, CAN, Foxglove
Build and quality: CMake, Conan 2, Ninja, vcpkg, Docker, CI/CD, MISRA static analysis, TDD, BDD

EXPERIENCE

E80 Group · *Software Engineer* · Reggio Emilia, Italy — May 2026 – Present

- Develop onboard C++ software for automated guided vehicles, focused on real-time behaviour and reliability.
- Integrate ROS 2 nodes with TwinCAT 3 PLC control, linking vehicle logic to the hardware.

VisLab (Ambarella Inc.) · *Software Engineer* · Parma, Italy — May 2024 – May 2026

- Delivered the vehicle control application that engages, monitors and safely disengages autonomous driving across a mixed vehicle fleet, designed for safety certification.
- Enabled real-time route updates during autonomous operation, removing the need to pre-select a static route before engagement.
- Modernised the stack's build system to cross-compile for Linux and QNX on x86 and ARM.
- Unified CAN signal processing, removing duplicated code and cutting compile times.
- Shipped a real-time bridge to Foxglove, speeding up QA of telemetry and 3D data.
- Moved prototypes to production with BDD, MISRA C/C++ static analysis and CI/CD.

Jaguar Land Rover · *Software Engineer* · Shannon, Ireland — Feb 2022 – May 2024

- Developed the software update manager for wired and OTA updates on next-generation ECUs.
- Designed functional test suites and contributed to the team's CI/CD infrastructure.

ALTEN · *Firmware Engineer* · Milan, Italy — Sep 2021 – Feb 2022

- Developed embedded firmware for radar-based occupant detection and AVAS (acoustic vehicle alerting) systems.

E80 Group · *Software Developer Intern* · Viano, Italy — Apr 2021 – Sep 2021

- Released a CAD application for modelling and reviewing AGV safety configurations.

PROJECTS AND WRITING

nesso · github.com/lorenzocaprari/nesso · C++26, Linux, Apache-2.0
Command-line tool that searches logs by meaning, not exact words. Offline, single Linux binary.

Technical writing · lorenzocaprari.github.io/writing
Articles on modern C++, performance and engineering practice.

EDUCATION

MSc, Electronics Engineering · Univ. of Modena and Reggio Emilia · 110/110 — 2019 – 2021
BSc, Electronics and Telecom. Engineering · Univ. of Bologna · 110/110 cum laude — 2016 – 2019