

Morgan Keraudren

Freelance Embedded Software Engineer



Specialized in safety-critical systems, I build high-performance firmware for automotive, aeronautical, and IoT. From low-level drivers to RTOS integration, I deliver production-ready code that meets the highest industry standards.

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SKILLS

Programming: C, C++, Assembly, Python, C#.
Microcontrollers: ARM Cortex-M/Cortex-R.
RTOS: FreeRTOS, ZephyrOS, SafeRTOS.
Tools: Git, Ceedling, Doxygen, Docker, Linux.
Protocols: UART, SPI, CAN, I2C, Ethernet.

EDUCATIONAL

2018 - 2023 | Engineering Master
[ENIB], Plouzané, France
Generalist engineering master focused on electronics and informatics matters.
Keywords: C, Assembly, C++, C#, Python, OOP, VHDL, FreeRTOS, CATIA, Mechanical, MatLab, Micro-Electronics, Signal Treatment.

2022 | Academic Exchange
[UQAC], Chicoutimi, Canada
Academic exchange in informatic master.
Keywords: C, C++, C#, Multithreading, OpenMP, Oriented Object, Cryptography, Software Architecture, Project Processes.

2018 | Highschool BAC S-SI
[Chaptal], St-Brieuc, France
Highschool diploma of engineering science.
Keywords: C, PCB Design, Micro-Electronics, Proteus, Mechanical Principles, CATIA.

LANGUAGES

French: Native.
English: C1 (TOEIC certified).
Spanish: B2 (Advanced).

October 2023 - Now

Permanent then Freelance Embedded Software Engineer [Automotive Safety S.L.] Full Remote

Traction inverter which combines the power electronics for the traction and the battery charging of electrical buses or trucks.

- Developed and integrated **AUTOSAR-compliant** software components in C, ensuring **MISRA compliance**.
- Implemented **Unit Tests** using **Ceedling and Unity** to achieve **full coverage**.
- Designed and developed a **Safety Library** to verify **peripheral configurations and behaviors**.
- Authored technical documentation, including **software design, test specifications, and Doxygen comments**.
- Worked with **Assembly (ARM CPU mode switching, context handling)**.
- Integrated and validated software components through **integration tests**.
- **Links** between system requirements, software architecture, software design, unit tests and integration test.
- Developed python tools for **CI/CD** in Azure DevOps environment.
- Used and configure **Copilot** and other **AI** in the development workflow.

Keywords: C, Assembly, Python, Unit Test, SWCs Integration, Integration Test, SPI, DMA, Ceedling, Bullseye, MISRA, AUTOSAR, ISO26262, TI TMS570, ARM R4, Safety, Automotive, Git, Polarion, Doxygen, Sphynx, Docker, Pipeline, Azure DevOps.

February 2023 - July 2023

Intern Embedded Software Engineer [Thales] Toulouse, France

Communication of Radar and other sensors on Teensy 4.1 board in C language in order to detect the position of flying objects.

- Developed data acquisition with **Radar (Ethernet) and sensors (UART, CAN)**.
- Designed **RTOS architecture (ZephyrOS)** with **task priorities, synchronization, interrupts, and timers**.
- Optimized **UART data reception using DMA**, reducing **CPU load**.

Keywords: C, Ethernet, UART, CAN, ZephyrOS, Teensy, ARM M7, DMA, Git, Doxygen.

February 2022- June 2022

Intern Embedded Software Engineer [Elsys Design] Antibes, France

Communication of a GPS and an IMU data on STM32 board in C language in order to calculate the affinate position of a moving vehicle.

- Developed **GPS and IMU drivers** communicating via **UART and SPI**.
- Designed **RTOS architecture (FreeRTOS)** with **task synchronization, interrupts, and memory management**.
- Optimized **memory allocation** by modifying the **linker command file** for **TCM RAM** usage.

Keywords: C, SPI, UART, FreeRTOS, STM32, ARM M7, Git, Doxygen.