Gaetan CANTELOBRE

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Bordeaux (33) · **Master's in Embedded Software Developement @ Université de Bordeaux**

EMBEDDED SYSTEMS ENGINEER

Embedded Systems Engineer specializing in C/C++, RTOS, and electronics design for Avionics and Defense. Experienced in military/defense compagnies (Thales,Delair). Dual nationality : **French / American.**

PROFESSIONAL EXPERIENCES :

EMBEDDED/ AUTOPILOT ENGINEER | DELAIR | TOULOUSE

APRIL 2026 - PRESENT | CDI

Autopilot Software devellopement

- RTOS (FreeRTOS) autopilot functionality development: Flight patterns, maritime landings, evasive maneuvers, etc.
- Compliance with ISO/IEC 25010 and ISO/IEC 27001 standards.
- Worked on both loitering munitions and long-range observation drones.
- Experienced in state estimation using EKF in normal and degraded modes.

Advanced Software Testing & Flight Analysis

- Robust testing experience across SIL, HIL, in-flight tests, and flight data recorder (black box) analysis.
- Integrated custom company-wide LLM and ML services for automated black box pre-analysis to support customer service workflows.

EMBEDDED/REAL-TIME DEVELOPER | THALES SIX GTS | 6 MONTHS

APRIL - SEPTEMBER 2025 | MASTER'S INTERNSHIP

Timing Driver Development & System Integration

- Architected and implemented a critical timing driver for military tactical radio test systems using C++ (11/17) and Python, ensuring microsecond-level precision for hardware-in-the-loop (HIL) testing.
- Optimized deterministic execution by integrating the driver into the real-time environment, successfully reducing test cycle latency and increasing overall system throughput.

Debugging & Environment Optimization

- Modernized legacy debugging procedures by reintegrating specialized diagnostic tools, resulting in a measurable reduction in troubleshooting time for complex embedded failures.
- Enhanced diagnostic reliability by implementing automated logging and error-tracking scripts in Python, improving the observability of the real-time system.

Technologies: C++11/17, Python, In house RTOS, Linux, Embedded Systems, HIL Testing.

SKILLS :

- Programming (C++,C, Python)
- Git
- Fluent English (C1+ LinguaSkill).
- Electronics & PCB design (KICAD)
- Linux, Docker
- RTOS (FreeRTOS)

PERSONAL PROJECTS :

DRONE DÉFENSE HACKATHON (CHALLENGE 4) | PARIS 2025

- Designed a drone delivery logistics infrastructure for the French Army.
- **Autonomous Navigation**: Implemented A* and RRT algorithms for real-time pathfinding and trajectory calculation.
- **Full-Stack Interface**: Developed multiple UIs and a live tracking interface for mission monitoring and control.

MACHINE LEARNING - ENHANCED DIGITAL LEVEL (COMPETITIVE SHOOTING)

- **Hardware**: Custom ESP32-C3 PCB featuring an LSM6DSL IMU and integrated BMS.
- **Edge AI**: Implemented a Machine Learning model to detect shot instability and "bad maneuvers" by classifying high-frequency motion patterns.
- **Firmware**: Developed in C++ using ESP-IDF, optimizing real-time inference and power consumption for battery-operated use.

CUSTOM UAV DESIGN & FLIGHT CONTROLLER DEVELOPMENT

- **Airframe & Aero**: Designed 3D-printed aircraft using OpenVSP for aerodynamic optimization and weight-and-balance management.
- **Flight Controller**: Engineered 3 custom STM32G4-based board, including custom flight controller software (FreeRTOS), for different aero vectors : Quadcopters, Flying wings, bicopters,etc.
- **Systems Control**: Integrated ELRS protocols for low-latency control and telemetry.

MORE PROJECTS ON MY PORTFOLIO