

# THEO GUEGAN

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## SKILLS

**Programming:** C/C++, Python, Rust, MATLAB, Bash, Lua, Go  
**Embedded Systems:** Embedded Linux, Multithreading, HAL, UART/I2C/SPI, CAN, HITL Debugging  
**Robotics:** RTOS, ROS/ROS2, Behavior Trees, Computer Vision, Gazebo, MuJoCo, Gymnasium  
**Tools:** Git, Linux, CMake, Makefile, Docker, Test Automation  
**AI/ML:** PyTorch, Deep Learning, RL, Imitation Learning, Supervised Learning

## EDUCATION

<b>Université de Technologie de Compiègne (UTC)</b>	<b>Compiègne, France</b>
Master's of Science, Computer Science	Sep 2021 – Jun 2026
<ul style="list-style-type: none"><li>Specialization: Embedded Computing, Autonomous Systems</li><li>GPA: 4.0/4.0</li><li>Coursework: Robotics Control, Embedded Systems, Autonomy, Kinematics</li></ul>	
<b>University of Waterloo</b>	<b>Waterloo, Canada</b>
Exchange Student - Computer Engineering,	Sep 2025 – Dec 2025
<ul style="list-style-type: none"><li>Coursework: Deep Learning, Image Processing, Computer Networks</li></ul>	

## EXPERIENCE

<b>Embedded Drone Software Engineer Intern</b>	<b>Sep 2024 – Feb 2025</b>
Thales Land & Air Systems	<i>Vélizy-Villacoublay, France</i>
<ul style="list-style-type: none"><li>Architected a real-time embedded Lua scripting engine in modern C++ (TDD) for on-drone customization, reducing mission prototyping time by 4×.</li><li>Streamlined build processes using Makefiles and an Alchemy build system for cross-compilation and deployment to embedded Linux targets.</li><li>Integrated a local LLM using Rust and Docker for natural-language drone commands, achieving 85% accuracy and demonstrating advanced system integration.</li><li>Contributed to hardware/software debugging and validated system behavior in real-world scenarios, including a high-profile live demo.</li></ul>	
<b>Autonomous Vehicle Control Lead</b>	<b>Feb 2024 – Jun 2025</b>
UTonome – UTAC Challenge	<i>Compiègne, France</i>
<ul style="list-style-type: none"><li>Designed and implemented target-based navigation, adaptive cruise control, and obstacle avoidance algorithms in MATLAB, achieving 99% safety in simulation.</li><li>Led system integration, porting control software to a Renault Zoe using Python and ROS for on-hardware validation and testing.</li><li>Directed the development of an autonomous navigation stack that secured 1st School Award (2024) and Open Category (2025).</li></ul>	

## PROJECTS

**Neural Surrogate for Model Predictive Control**

- Developed a neural surrogate for MPC comparing SVMs, MLPs, and RNNs to approximate optimal control policies.
- Benchmarked against RL baselines using RMSE, tracking error, constraint violations, and real-time feasibility.

**Real-Time Kernel (RTOS)**

- Built a preemptive RTOS on STM32H747I-DISCO with mutexes, semaphores, and priority inversion handling.
- Implemented both in Rust (stm32-hal) and C for bare-metal control, showcasing deep embedded systems expertise.

**LeRobot: Teleoperated Robotic Arm**

- Built dual-arm robotic system achieving 80% success at 50 Hz using  $\pi 0$  general VLA.
- Explored reinforcement and imitation learning (PyTorch, HuggingFace) for teleoperation.