Wassim Chouayakh

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Education

National Institute of Applied Science and Technology (INSAT) — Tunis, Tunisia
Engineering Degree – Industrial IT and Automation (Expected 2028) — *Sep 2025 – Present*

National Institute of Applied Science and Technology (INSAT) — Tunis, Tunisia
Preparatory Cycle – Mathematics, Physics and Industrial IT — *Sep 2023 – Jun 2025*

Technical Skills

Languages: C/C++ (bare-metal & HAL), Python, Assembly (ARM Cortex-M)
Microcontrollers: STM32 F1/F4 – HAL and register-level development, interrupts, DMA, real-time
Protocols: UART, I2C, SPI, CAN Bus – register-level driver implementation
Peripherals: GPIO, Timers, PWM (generation & input capture), ADC, EXTI
RTOS & OS: FreeRTOS (tasks, queues, semaphores), Linux/Unix, POSIX sockets, pthreads
Embedded Tools: STM32CubeIDE, STM32CubeMX, Keil uVision, ST-Link, Logic Analyzer, GDB
DevOps: Git, Docker, CMake, Make

Projects

Virtual ECU Diagnostic Stack on Linux vCAN | *C, SocketCAN, UDS, ISO 15765-2* — 2026
- Built a single-ECU diagnostic prototype supporting 5+ UDS services over Linux vCAN via SocketCAN and a C-based ISO-TP layer with under 10ms end-to-end response time
- Integrated Tester Present (0x3E) handling and negative response generation covering 10+ unsupported UDS service codes (NRC)
- Authored 12+ smoke tests covering the full ISO-TP request/response path and achieving 90%+ critical-path coverage

Real-Time Temperature Monitoring System via CAN Bus | *STM32 F4, C, CAN, I2C, FreeRTOS* — 2025
- Architected and deployed a multi-node STM32 system with I2C sensor acquisition and bare-metal CAN Bus transmission to a central display node
- Orchestrated 4 concurrent FreeRTOS tasks (producer/consumer) for CAN Tx/Rx and ADC sampling, maintaining deterministic cycle times under 5ms
- Validated bus arbitration and timing with a Logic Analyzer; cut per-frame latency to under 1ms at 500kbps

STM32 Peripheral & Protocol Driver Library | *STM32 F4, C, Bare-Metal, UART, I2C, PWM, DMA* — 2024
- Constructed 16+ bare-metal drivers (GPIO, Timers, PWM, ADC, UART, I2C) via direct register manipulation, bypassing any hardware abstraction layer
- Implemented PWM input capture and EXTI interrupt routines achieving sub-500ns latency across input frequencies up to 1MHz verified on a Logic Analyzer
- Wrote a full-duplex bare-metal UART driver enabling real-time bidirectional PC-to-STM32 serial communication and a register-level I2C driver for configuring and reading multiple external sensors

Work Experience

Software & Validation Engineering Intern — Jul – Aug 2025
KPIT Technologies (Automotive Embedded) – Sfax, Tunisia
- Streamlined the AUTOSAR test-case compliance workflow by authoring a Python automation script, reducing manual review time by ∼40% and cutting report processing from hours to minutes
- Delivered a cross-platform desktop tool (Flutter + Python backend) for internal validation workflows, adopted by 10+ embedded software developers

AI Engineering Intern — Jun – Jul 2025
Intellitech – Sfax, Tunisia
- Deployed a RAG-based chatbot that boosted query relevance by ∼30% and cut team information search time by ∼50% through LLM-driven semantic retrieval over 100+ internal documents

Languages

French: Native **Arabic**: Native **English**: Fluent (professional) **Spanish**: Beginner