Atilla Basut

Computer Engineering Student (3rd Year) | Embedded Software

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Profile

Third-year computer engineering student developing peripheral drivers (GPIO, ADC + DMA, interrupt-driven UART) and timer applications (Timer/PWM) in C with STM32 HAL on the STM32F407 (Arm Cortex-M4) microcontroller. Coordinated the software unit of the ARFESA rocket team in the TEKNOFEST Rocket Competition. Seeking an internship in embedded software.

Education

B.Sc. in Computer Engineering – Erciyes University, Kayseri
2023 – 2028 (expected graduation) | *GPA: 3.00/4.00* | *3rd year* | *English preparatory year completed*

Experience

Software Unit Coordinator – ARFESA Rocket Team, Erciyes University
09/2025 – 06/2026 | *TEKNOFEST 2026 Rocket Competition – A2 Medium-Altitude Category (target altitude 8,000 ft)*

- Led the software architecture planning and task allocation for the team's STM32-based flight computer.
- Worked on the separation/recovery algorithm and Kalman-filter sensor fusion running on FreeRTOS.
- The team passed the Preliminary Design Review and Critical Design Review stages and reached the Launch Readiness Review stage.

Projects

STM32F407 HAL-Based Driver Modules and Timer Applications
2026 | *github.com/atillab1/stm32f407-custom-drivers* | *C, STM32 HAL, STM32CubeIDE*

- Wrote 4 modular C drivers on top of STM32 HAL: GPIO (non-blocking debounce), ADC + DMA, circular buffer, and interrupt-driven UART.
- Configured ADC1 in 5-channel scan mode with DMA in circular mode; computed supply voltage (VDDA) and die temperature using 64-sample averaging and VREFINT calibration; routed the averaged PA3 channel to the DAC.
- Wrote a USART3 driver using RXNE/TXE interrupts with 512-byte RX/TX circular buffers and a CR+LF line reader; added LED control through text commands over UART.
- Built 8 timer applications: frequency measurement with an external clock (ETR), master/slave triggering, pulse width measurement with input capture, output compare, and PWM.

Technical Skills

Programming Languages: C, C++ (object-oriented programming)

Embedded Systems: STM32F407 (Arm Cortex-M4) microcontroller, STM32 HAL; GPIO, ADC, DAC, DMA, Timer (PWM, input capture, output compare), SPI, I2C; interrupt handling and NVIC; FreeRTOS (ARFESA flight computer)

Communication Protocols: UART/USART (interrupt-driven driver); I2C, SPI (basic level)

Tools: STM32CubeIDE, STM32CubeMX, arm-none-eabi-gcc, debugging with ST-LINK, Git/GitHub

Technical Documentation: Reading datasheets and reference manuals (RM0090)

Data Structures and Algorithms: Circular buffer, searching and sorting algorithms, algorithm analysis

AI-Assisted Development: Had tools built with Claude Code and MCP for my STM32 work (UART log reading, register decoding via CMSIS-SVD, flash testing); I defined the need and scope, the AI wrote the code.

Languages

English (B1+)