Mohamed Mahmoud Mokhtar

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Objective

Entry-level embedded and automotive software engineer with experience in AUTOSAR Classic, STM32-based firmware (drivers, bootloaders, FOTA), and digital-twin simulation of in-vehicle networks using tools such as CARLA, Vector SIL Kit, Siemens VSI, and CANoe. Seeking a role in automotive or embedded software to develop and validate reliable, real-time systems.

Education

Beni Suef University,Communications and Electronics Sept 2021 – Jul 2026

Academic Grade: 88%

Graduation Project – *Case Study and Validation of SILKIT-Integrated In-Vehicle Network Architectures Using Digital Twin Simulation*

Sponsored by Siemens

- Designed and validated an Automatic Emergency Braking (AEB) algorithm within a digital-twin environment for in-vehicle network architectures.
- Implemented the AEB logic as an AUTOSAR-compliant software component (SWC) on the application layer, using ARTOP and Altova for AUTOSAR modeling.
- Integrated the CARLA driving simulator with Vector SIL Kit to provide real-time sensor and vehicle data to the AUTOSAR AEB module.
- Built a real-time hardware demo: connected a PlayStation controller to control the CARLA vehicle and synchronized a physical moving car model with the virtual car's motion.
- Collaborated with another team to migrate from Vector SIL Kit to Siemens VSI by replacing and adapting SIL Kit APIs to the new integration.
- Performed testing and verification using CANoe and related Vector tools, documenting system behavior and integration results for Siemens EDA.

Experience

QC/Software Testing Intern, Giza Systems, Egypt Aug 2025 – Sep 2025

- Gained practical experience in STLC, manual vs automation testing concepts, and full-cycle End-to-End testing in real scenarios, and Developed solid understanding of Agile, V-Model, and Waterfall methodologies and their application in QA processes**.**

Embedded Software Engineer Intern, R&D Department, ElAraby Group, **Egypt** July 2025 – Aug 2025

- Developed sample embedded drivers for Renesas microcontrollers (RL78 series) to support rapid prototyping in the R&D department

Technical training, Ministry of Communications and Information Technology Egypt July 2024 – Aug 2024

- Completed a training program focused on foundational topics in computer networks, cybersecurity, and Voice over IP (VoIP) systems

Courses

Embedded Systems Diploma Oct 2023 – Aug 2024

- Developed drivers for PIC18F and ARM Cortex-M4 (RCC, SysTick, UART, SPI, I2C); implemented RTOS and bootloader, and Applied AUTOSAR architecture and CAN/LIN protocols; used SWD tools for debugging

Embedded Systems with Creative Beni Suef Nov 2024 – Des 2024

- Built MCAL/HAL drivers for ARM Cortex-M3 (Blue Pill): GPIO, NVIC, SPI, EXTI, TFT

Embedded Linux Diploma with Eng. Moatasem El Sayed July 2025 (Ongoing)

- Working with Python, C++, Rust, Linux kernel, Yocto, and Raspberry Pi
- Exploring AI integration with Linux-based embedded systems

Mobile App Development with DEPI Apr 2024 – Oct 2024

- Built Android native apps using Kotlin

AUTOSAR Classic Platform Course with Learn In Depth Apr 2024 – Oct 2024

- Completed comprehensive training on Classic AUTOSAR architecture, covering all layers (Application, RTE, BSW, MCAL), including SWC design, RTE configuration, AUTOSAR OS concepts, communication stack

Projects

Control the Car Using Artificial Intelligence github link

- Built a smart vehicle system using STM32F401RCT6, ESP32, and Arduino to enable AI-based traffic sign recognition and mobile app control via MQTT.

Firmware Over-The-Air (FOTA) Update System github link

- Designed a reliable FOTA system for STM32F401RCT6 using ESP8266, Firebase, and MQTT; handled remote updates via UART with acknowledgment and memory control.

Cortex-M4 STM32F401RCT6 & PIC18F4620 Communication System github link

- Utilized UART, SPI, and I2C for microcontroller communication, integrated sensors, motors, Bluetooth, LCD, and a keypad for control systems

Skills

Industry Knowledge	Tools & Technologies
Programming: C, C++, Python, Java	Vector Canoe, Sil-Kit, Siemens VSI
RTOS and AUTOSAR OSEK/VDX, Linux	ARTOP, Altova, Carla simulator
Bootloader Development, FOTA, ARM architecture	STM32CubeIDE, STM32CubeM, Keil uVision
Communication Protocols: CAN, LIN	MPLAB IDE, Atmel Studio e2, Android Studio

Extracurricular Activities

- Activity Member – Rally Beni Suef Season 2 (2025)
- Member of the Student Union – Faculty of Engineering, Beni Suef University (2024, 2025)

Developed communication, leadership, teamwork, and problem-solving skills, enhancing my ability to collaborate effectively in dynamic environments