Alaa Ahmed Abbas

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Profile:

Entry-level Embedded Systems Engineer with hands-on experience in Embedded Systems, Automotive Simulation, and AI-powered applications. Skilled in C, Python, STM32, ESP32/ESP8266, RTOS, and AUTOSAR-based development, with practical experience in CARLA Simulator, Vector SIL Kit, and Siemens VSI for digital-twin and in-vehicle network validation. Passionate about intelligent mobility systems, embedded AI.

.Education:

- **Beni-Suef University**
  Faculty of Engineering – Electronics and Communication Engineering (2021 - 2026)
  Grade: 85.25%
- **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.

Trainings:

- **Project Management** - Orascom Construction PLC (Jul 2024 – Aug 2024)

Courses:

- **Generative Artificial Intelligence Diploma -** DEPI (Jul 2025 - Dec 2025)
  Key Topics: Mathematics for Data Science**,** Python Programming**,** Data Preprocessing & Visualization**,** Machine Learning**,** Deep Learning**,** Natural Language Processing**,** Computer Vision**,** Generative AI
- **HCIA AI** – Huawei ICT Academy-Egypt (Sep 2025 – Oct 2025)
  Key Topics: Machine Learning and Python.
- **Embedded Systems Diploma** (Feb 2025 – Aug 2025)
  Key Topics: Advanced C programming, data structures, algorithms, AVR Microcontroller Interfacing, and Real Time Operating Systems.
- **Communication Systems Training Diploma** - Telecom Egypt (Aug 2024 – Sep 2024)
  Key Topics: Optical Fiber, FTTH, GPON Technology, SDH, DWDM Technology, and VSAT.

Projects:

- **Smart Car**
  Developed a system using STM32, ESP8266, ESP32, mobile app, MQTT, Node-RED, FOTA, RTOS, and camera-based AI for traffic sign detection and autonomous control.
- **Temperature-Controlled Fan System**
  Developed a system using an 8051 microcontroller to automatically control fan speed based on ambient temperature, coded in C.
- **Line Follower Robot**
  Designed and built a robot that follows a black line path using IR sensors and Arduino UNO. Controlled DC motors through a motor driver to adjust movement based on sensor input.
- **ATM**
  Implemented using C Programming.
- **Bluetooth Controlled Car**
  Built a mobile-controlled car using Arduino UNO, DC motors, and the HC-05 Bluetooth module. Enabled remote direction control through a mobile app.
- **Blind stick**
  Created a smart stick for the visually impaired using an ultrasonic sensor to detect obstacles. Integrated with Arduino to provide alert feedback through sound or vibration.
- **Touchless Water Tap**
  Implemented an automatic water tap system using an IR sensor and a water pump

Technical Skills:

- **Programming:** C, Python, Arduino
- Machine Learning**,** Deep Learning**,** Natural Language Processing**,** Computer Vision
- Siemens VSI, Vector SIL Kit, Carla Simulator
- Oracle Primavera P6, Oracle Aconex

Languages:

- **Arabic:** Native
- **English:** Very Good