Ahmed Khairy Elsawy

Mechatronics Engineer

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Summary

Mechatronics Engineer with experience in programming and maintaining Automotive Control units, diagnosing and troubleshooting, skilled in embedded systems and electronic circuit design, and proven ability to improve vehicle performance and ensure system reliability.

Technical Skills

- Microsoft Office
- PCB Design
- C / C++ Programming
- Vehicle Diagnostics
- Electric Vehicles
- AUTOSAR
- Communication Skills
- Use of Diagnostics Tools

- Computer Architecture
- Microcontroller Interfacing
- CAN Bus – LIN
- Vehicle Control Programming
- Remove Crash
- Communication Protocols
- Time Management
- Adaptability

- Embedded System Software
- Electronics Maintenance
- ECU Testing
- Mechanical Maintenance
- Diagnosing faults
- MATLAB
- leadership Skills
- Learn new technologies.

Education

- **Bachelor of Mechatronics Engineering Pyramids Higher Institute for Engineering and Technology.**

- **Accumulative Grade: Good (74%).**

- Graduation Project: Design & Manufacturing of a Vertical Wall Painting Robot.

- Description: Our robot can draw on the wall with high accuracy using the TSP Drawing method used in GPS. We rely on the inputs of the Raspberry Pi controller, which has the flexibility to change the image's dimensions.

- **Graduation project grade: Excellent.**

Work Experience

- **Autotronic Maintenance and Programming Training   Aug 2024 - JAN 2025**

  - Diagnosed electronic component issues and repaired over 20 vehicle ECUs using advanced measurement equipment, achieving a diagnostic accuracy rate that reduced troubleshooting time.
  - Monitoring the reading of in vehicle Communication Protocol such as: **CAN Bus**, **LIN**, and K-Line.
  - Read and modify EEPROM files for various vehicle devices and modules.
  - Executed thorough electrical and software inspections with specialized programming tools; interpreted complex wiring diagrams, leading to accurate diagnostics that reduced average turnaround time for repairs .
  - Reading and writing ECU files and software maps with tools such as K-TAG ECU, PCM Tuner.PCM flash and GODIAG ECU Connector, allowing 100% ECU troubleshooting.
  - Applied tools on 10+ types to meet specific needs of various vehicle models and electronic systems.
  - Performed tin soldering on 30+ electronic components, ensuring high-quality connections and improving circuit reliability.
  - Increased soldering accuracy to 98%, reducing circuit failures by and improving system reliability.

- Scanning accidents of different car models such as: airbag, gear control, and changing the kilometer reading of the legal meters with special tools and programmers with high accuracy by 100%.

• **Altium Design Training**   **Apr 2024 - Jun 2024**

- Completed an advanced course in Altium Designer, specializing in PCB design, schematic capture, and circuit simulation.
- Designed 5+ multi-layer PCBs, managed PCB libraries, ensuring 97% compliance with industry standards, and achieving 98% accuracy in designs, improving circuit performance and manufacturability.
- Achieved 98% accuracy in design validation, improving manufacturability and optimizing circuit performance.
- **Projects:** Arduino Nano, IR sensor, Power Supply, ECU Tester.

• **Embedded Systems Diploma**   **Aug 2019 - March 2020**

- Study of the structure of computer systems and logical integrated circuits and their simulation with test devices.
- Completed a diploma in Advanced C programming, data structures, and algorithms through SPARK Academy.
- Mastered core programming concepts and implemented efficient algorithms and data structures.
- Developed custom code for microcontroller programming, integrating sensors and peripheral devices (e.g., GPIO, ADC, I2C ,SPI, UART).
- Created embedded applications that optimize hardware and software integration.
- Improved microcontroller boot time by 40% through custom startup code and linker scripts.
- Gained expertise in the ARM Cortex M4 architecture and GNU Arm Embedded Toolchain.
- Designed and implemented drivers for RCC, SysTick, NVIC, and GPIO.
- **Projects:** Bank Database, Mini CNC, Smart Classroom.

Online Technical Training

- Electric Vehicle Battery Management System Course.   (Currently studying: Apr 2025)

- Electric Vehicles Comprehensive Course.   (Currently studying: Apr 2025)

- Automotive Electrical Engineering.   (Planned Completion: Dec 2024)

- Automotive Mechanical Engineering.   (Planned Completion: Oct 2024)

- Practical Electronics course.   (Planned Completion: May 2020)

Technical Site Training

- Tank maintenance squad of the Armored Corps during the conscription period in the Egyptian Army.
- Introduction to types of equipment maintenance. (July 2021 – Aug. 2021).
- Introduction to Robotics Design and Manufacturing. (Aug 2021 – Sub.2021).

Additional Information

- **Awards & Achievements:** Research paper entitled: Design & Manufacturing of a Vertical Wall Painting Robot (IUGRC -7) Military Technical College.
- **Languages:** Arabic, English.
- **Military Status**: Completion of military service.