Youssif Hossam Abdel-Fattah

Embedded Hardware Engineer

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EDUCATION

10/2020 – 06/2025 Cairo, Egypt	**Bachelor of Engineering** *Shoubra Faculty of Engineering, Benha University* Electrical Engineering, Communication and Computer Department **GPA: 3.72 / 4.00 — Ranked 1st in class**

Graduation Project — Intelligent Street Lighting using V2I (A+) ⬈
- Designed 3 custom **SMD PCBs** (schematics, layout, soldering, and testing)
- Developed a complete **Flutter desktop application** for system control and monitoring
- Contributed to **embedded systems software development**: sensor interfacing and communication

PROFESSIONAL EXPERIENCE

10/2024 – 01/2025 Cairo, Egypt	**R&D Engineer Intern** *Tomatiki* As an R&D Engineer Intern at **Tomatiki**, I design PCBs, handle hardware soldering and assembly, and develop embedded software for smart agricultural devices. Working in the Agriculture Department, I contribute to creating innovative solutions that enhance farming efficiency and productivity.

TECHNICAL SKILLS

Hardware & PCB Design
Altium Designer, PCB Layout, SMD Soldering

Embedded Systems Development
C, C++, RTOS, Microcontroller Programming (AVR, TM4C, ESP32)

Simulation
LTspice and Proteus Simulation

Signal Integrity
Concepts of (EMI, EMC, SI)

Communication Protocols
I2C, SPI, UART, CAN, LIN

Lab Instruments
Soldering Station, Multimeter and Oscilloscope.

COURSES

10/2024 – present	**Hardware Engineering Bootcamp** *Eng. Mahmoud Arafa* Focus on PCB design, circuit design, signal integrity, and core electronics concepts. Designing PCB layouts and circuit simulations.
08/2024	**Professional PCB Designer with Altium Designer** *Dr. Ahmed Aboul Fotouh* Completed a comprehensive course on PCB design using Altium Designer, covering schematic design, component integration, PCB layout, and 3D visualization.

05/2024	**Real-Time Operating Systems (RTOS) Course**
Cairo, Egypt	*EDGES Academy*
	Studied RTOS fundamentals including multitasking, kernel scheduling, synchronization, memory management, semaphores, mutexes, queues, and runtime analysis.

03/2024	**Embedded Automotive and AUTOSAR Course**
Cairo, Egypt	*EDGES Academy*
	Learned AUTOSAR architecture with DIO and Port drivers on TM4C microcontrollers.Covered automotive communication protocols including LIN and CAN.

01/2024	**ARM Architecture based on TM4C Micro-controllers Course**
Cairo, Egypt	*EDGES Academy*
	Studied ARM Cortex-M architecture, NVIC system, exceptions, and TM4C peripherals like GPIO, SysTick, MPU, and PLL.

10/2023	**Full Embedded Systems Course**
Cairo, Egypt	*EDGES Academy*
	Learned C programming, data structures, and software engineering principles. Applied Embedded C with AVR microcontrollers and studied RTOS basics.

PROJECTS

| 12/2024 | **ESP32-S3-DevKitC-1** |
| | Designed a **4-layer PCB** with power regulation, USB programming, and GPIO access for ESP32-S3. |

| 11/2024 | **TM4C123GXL Board PCB Design** |
| | Designed a **4-layer PCB** for educational use and embedded systems development. Focused on power management, programming access, and peripheral integration. |

| 10/2024 | **RP2040 PCB Board Design** |
| | Designed a **4-layer PCB** using hierarchical schematic design to improve modularity, readability, and organization. Focused on efficient layout and signal integrity. |

| 09/2024 | **Universal Programmable Remote Control** |
| | Enabled IR code learning and transmission for controlling devices like TVs and air conditioners. Designed embedded software and a custom **double-layer PCB**. |

| 07/2024 | **Auto-Ranging Multimeter** ⊡ |
| | Designed a custom PCB with power management and signal conditioning for accurate electrical measurements. Developed embedded software and simulation to measure voltage, current, capacitance, inductance, and resistance. |

| 06/2024 | **Digital Prayer Time Display System** ⊡ |
| | Built a display system on ATmega32 for prayer times, date, time, city code, and temperature.Implemented drivers for I2C, ADC, nRF24L01, 7-segment, and EEPROM. |

| 05/2024 | **FreeRTOS-Based Seat Heater Control System** ⊡ |
| | Developed a seat heater control system on TM4C using sensors, display, and heating elements. Used GPIO, UART, GPTM, ADC with focus on diagnostics and task management. |

| 12/2023 | **Wireless-Controlled RWD Robotic Car with Steering System** ⊡ |
| | Built complete system with 3D-printed chassis and custom PCBs. Implemented drivers for GPIO, Timer, SPI, ADC, nRF24L01, L293D, and Servo using ATmega32. |

LANGUAGES

| **Arabic** | **English** |
| Native | Professionally proficient |