# Nabil Youssef Basta Boules

Embedded Systems Engineer

## Information


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Military Service: Final Exemption


## Employment History

Oct 2024 – Present — **Electronics and Embedded Systems Engineer**, **Origin Labs** Designing and developing PCBs for training applications, handling circuit design, firmware development, and hardware prototyping. Responsible for the full hardware development cycle, ensuring performance and reliability.

2024 — **System Engineer Intern**, **Ezz Medical** Worked on hardware design using Altium Designer, assisting in schematic design, PCB layout, and circuit analysis. Contributed to optimizing hardware performance for medical applications.

## Education

2019 – 2024 — **B.Sc., Ain Shams University**, Electronics and Communications Engineering

## Skills

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|---|---|
| Embedded Systems | Ethernet, CAN, I2C, SPI, UART, ARM, AVR, PIC, 8051, 8086. |
| Hardware Design | Altium Designer, EasyEDA, PCB Design, Multilayer PCB, EMC, EMI. |
| Programming | C, C++, Assembly. |
| Tools | Proteus, LTspice, Cube IDE, Arduino IDE, CMake, VS Code. |
| Languages | reading, writing and speaking competencies for English. |

## Projects

Jan 2025 – Present — **8086 Trainer Kit, Origin Labs** *Designed and developed an 8086 microprocessor trainer for educational and development purposes. Included an 8086 CPU with 64KB SRAM and 64KB ROM, integrated peripherals such as 8255A I/O Port, 8251A RS-232, 8259 Interrupt Controller, and 8253 Timer. Featured a 16×2 LCD, hexadecimal keypad, function keys (8279), A/D & D/A Converters (ADC0808, DAC0808), a 12 MHz clock with 8284 Clock Generator, and software support with an 8086 Assembler.*

## Projects (continued)

Dec 2024 – Feb 2025

**Embedded Trainer Kit, Origin Labs** Designed a modular embedded systems trainer for education and development. The base unit included GPIO, UART, I2C, SPI, ADC/DAC, Ethernet LAN8742, USB/UART FTDI, PWM, and an LCD interface. Developed interchangeable microcontroller cards supporting STM32F746ZG (ARM), ATMEGA2560 (AVR), and PIC16F/PIC32MZ1024EFK144 (PIC). Enabled connectivity with sensor modules and external communication interfaces.

Oct 2024 – Dec 2024

**AIoT Smart Home, Origin Labs** Developed a smart home simulation kit integrating AI and IoT technologies. The system featured Raspberry Pi 5 as the main processor alongside STM32F103. Integrated sensors such as PIR (motion), LDR (light), dust, gas sensors, relays, motor drivers, and an LCD. Enabled connectivity through Wi-Fi, Bluetooth, Ethernet, UART, I2C, SPI, and GPIO. Supported programming in Python, C/C++, and STM32CubeIDE with IoT platform integration.

July 2024 – Aug 2024

**Flyback Topology Power Supply, Ezz Medical** Designed a 20W isolated flyback power supply using the LM5155 controller for medical applications. Developed a 24V, 0.8A power supply with high efficiency and low ripple. Implemented a flyback converter ensuring galvanic isolation and minimal power losses. Optimized PCB layout, transformer design, and ensured EMI/EMC compliance for medical standards.

Sept 2023 – June 2024

**Electrical System for Spectrophotometer, Graduation Project** Developed the electrical system for a spectrophotometer, integrating hardware and software components. Designed current sensing and control for a visible light lamp. Created a custom ESP32-based PCB integrated with the main control board. Developed a real-time data acquisition and visualization web platform.