Mohamed Ahmed Ebrahem Mohamed

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Summary

- A Freelancer Fresh Graduate Hardware Engineer passionate about electronics design.
- Skilled in schematic capture and multilayer PCB layout, with practical experience in power supply design and high-speed signal integrity principles.
- Recognized as a Top-rated Freelancer on Upwork Platform.

Education

2019 - 2024 BSc in Electronics and Communication Engineering at **Alexandria University, Egypt.**
Electives Data Structure - Operating systems - Biomedical Engineering - VLSI.

Graduation Project: Warehouse Robot "LeoGV"

A custom-built autonomous warehouse robot designed from scratch—including hardware (PCBs, battery pack, chassis), firmware, and software (ROS2, GUI)—capable of manual and autonomous object transport.

- **Manual/Autonomous Control:** ROS2-based control system with optimized station interface.
- **Wireless Navigation:** Raspberry Pi processes sensor data for autonomous movement.
- **Lifting mechanism:** Four-stepper motor lifting platform transports heavy shelves and pallets.

Work Experience

Hardware Engineer

Aquaphoton Academy August 2022 - Present

- 1st place in Mate ROV Regional Competition 23' – Explorer and the 5th in The International.
- Part of Regional/International Competition 23' technical presentation.
- Developed a carrier board that hosts an STM32 on an M.2 daughter board that supports most of communication protocols (USB, UART, I2C, SPI, CAN, Ethernet).
- Designed ROV power distribution board and ROV signal carrier board.
- Developed different versions of BLDC ESC.
- Designed ESC testing boards to streamline programming and validation processes.
- Designed a 7-Ports USB Hub with Raspberry Pi Holder for USB devices (ESP32, Cameras).
- Guided development of a 10/100 Ethernet switch board.

Freelancing

Super Capacitors Backup Supply
Designed a backup power controller using the LTC3350 Super-capacitor Backup controller to manage a super-capacitor bank, providing uninterrupted power during main supply failure monitored through PIC controller.

16-Channel Smart Home Control Module
Developed a 16-channel smart home control module based on the ESP32-S3 Module.

Electric Seat Motors Driving Board
Improved the PCB design with compact layout, enhancing space efficiency and thermal performance.

Smart Home Wall Switch
3-channel smart wall switch for lighting control via touch interface or wireless connectivity.

Notable Projects

CAN-to-USB Converter

Developed CAN-to-USB converter based on CANable Open-source firmware, STM32 MCU that supports CAN-FD, Full Isolation for protection.

Motor Drivers

Designed multiple DC motor drivers with varying specifications.

8-Port Managed PoE+ Ethernet Switch

Developed an 8-port managed Ethernet switch board with integrated (PoE/PSE) functionality.

Skills

Hardware	Altium Designer, Eagle CAD, KiCad, PSpice for TI, Multisim, Proteus, Debugging, BOM, Oscilloscope, Crimping, Soldering (Smallest Package QFN-20).
Programming	Python, OpenCV, PyQt, MATLAB.
Firmware	ARM, C-Programming, ROS2, Assembly
Others	GitHub, Linux, LaTeX.