

Mohamed Elshamy

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Professional Summary

Ph.D. Candidate in Electrical and Computer Engineering at New Mexico State University with 8+ years of industry experience in hardware design, embedded systems, and power electronics. Experienced in delivering production-ready PCB designs for industrial, IoT, automotive, and medical applications, with strong expertise in multi-layer PCB layout, high-speed digital design, power integrity, and EMI-aware layout using Altium Designer. Proficient in embedded software development on Nvidia Jetson boards, PIC, and ESP platforms, with research experience in power and thermal modeling supporting system-level reliability and optimization.

Education

New Mexico State University (NMSU)

PhD in Electrical and Computer Engineering (ECE)

Las Cruces, NM, USA

Jan 2024 – Aug 2026 (Expected)

Major: Electrical and Computer Engineering, CGPA: 4.00/4.00

New Mexico State University (NMSU)

Master of Science (MSc.) in Electrical and Computer Engineering (ECE)

Las Cruces, NM, USA

Jan 2023 – Spring 2026 (Expected)

Major: Electrical and Computer Engineering, CGPA: 4.00/4.00

Menoufia University

Master of Science (MSc.) in Power Electronics and Control Engineering

Shebeen, Menoufia, Egypt

Jan 2020 – Dec 2022

Major: Power Electronics and Control Engineering, CGPA: 4.00/4.00

Menoufia University

Preparatory Year for M.Sc. Degree in Power Electronics and Control Engineering

Shebeen, Menoufia, Egypt

Jan 2019 – Jan 2020

Major: Power Electronics and Control Engineering, CGPA: 3.8/4.00

Menoufia University

Bachelor of in Power Electronics and Control Engineering

Shebeen, Menoufia, Egypt

Jan 2011 – June 2016

Major: Power Electronics and Control Engineering, CGPA: 3.81/4.00

EXPERIENCES

Research Assistant

New Mexico State University (NMSU)

Las Cruces, NM, USA

Jan 2024 – Present

SoC Power and thermal Modeling, Power and Thermal Management, and Hardware Performance optimization.

Senior Hardware Design

Tatweer Middle East & Africa - Government Sector

Abu Dhabi, UAE

Jan 2022 – Dec 2023

Designing complete PCB solutions, including solar panel MPPT controllers and telematics devices for police cars (OBD diagnostics, tracking, driver behavior monitoring, and power management for speed and seat belt radars).

Hardware Design Engineer

Egyptian Armed Forces Research Center

Cairo, Egypt

Jan 2017 – Dec 2019

Served as Manager of the Multi-Layer PCB Laboratory, overseeing fabrication and quality assurance of complex PCBs (up to 8 layers) supporting multiple research and engineering sectors.

Freelance Hardware Design Engineer

Cairo, Egypt

Jan 2014 – Dec 2016

Designed and delivered custom embedded hardware and multi-layer PCBs for industrial and IoT products, including low-power IoT systems, data loggers, smart home controllers, GSM/GPRS devices, power electronics, and control boards. Handled schematic capture, PCB layout, component selection, fabrication coordination, bring-up, and validation.

Skills Summary

Programming Languages: C/C++, Embedded C, Python, MATLAB, Verilog HDL,

EDA Tools & IDEs: Altium Designer, Kicad, Eagle, LTSpice, Proteus, Multisim, MATLAB, Vivado, Micro C

Microcontrollers & FPGA Boards: All Arduino Boards, All ESP32 controllers, PIC and AVR MCUs, Xilinx Zynq Z7

Communication Protocols/Interfaces: UART, I2C, SPI, RS-232, RS-485, WI-FI, GSM/GPRS, GPS, USB2.0(FS/HS), Ethernet(10/100 via PHY, RMII/MII, OBD-II), CAN, DDR3L, eMMC, QSPI

Code Management: Git, Docker, GNU/Linux

Test and Measurements: Signal Generators, Oscilloscopes, Spectrum Analyzer, and more

Selected Projects

Low-Power Automotive Telematics Device | *Altium Designer, GSM/GPRS, GPS, Embedded MCU*

- Designed and validated compact, automotive-grade telematics and tracking devices with low-power architecture.
- Integrated GSM/GPRS, GPS, and sensor interfaces for vehicle tracking, diagnostics, and driver behavior monitoring.
- Delivered production-ready multi-layer PCB designs including power management, protection circuitry, and system bring-up.

Selected Publications

- Md. O. Faruque and W. Che, "Enlarging Reliable Pairs via Inter-Distance Offset for a PUF Entropy-Boosting Algorithm," 2023 24th International Symposium on Quality Electronic Design (ISQED), San Francisco, CA, USA, 2023. [\[Paper Link\]](#)
- Md. R. Maruf, Md. O. Faruque, et al., "Effects of Noise on RASTA-PLP and MFCC based Bangla ASR Using CNN," 2020 IEEE Region 10 Symposium (TENSYMP), 2020. [\[Paper Link\]](#)
- S. R. H. Remu, Md. O. Faruque, et al., "Naive Bayes based Trust Management Model for Wireless Body Area Networks" 2020 International Conference on Computing Advancements (ICCA), January 2020. [\[Paper Link\]](#)
- Md. O. Faruque, T. Hasan, and S. Al Imam, "Performance comparison between Graphene Nano-Ribbon FET and conventional CMOS based on Arithmetic Logic Unit (ALU)," 2019 1st International Conference on Advances in Science, Engineering and Robotics Technology (ICASERT). [\[Paper Link\]](#)

Relevant Coursework

Hardware & Software Co-design, Computer Architecture, Analog VLSI Design, Hardware Security and Trust, Random Signal Analysis, Data Mining, Power Electronics, Digital Logic Design, Microprocessor and Interfacing, VLSI I, Digital Signal Processing, ASIC Design, Artificial Intelligence I, ARM SOC Design.

Academic Honors

- **Runner Up, NMSU Data Mining Contest:** Achieved 97% accuracy in customer query intent classification challenge.
- **Dean's List of Honor:** Awarded for the excellent undergraduate result of CGPA 3.75 or above.
- **Government Scholarship:** Received govt. scholarship in junior scholarship examination.

Certifications

- Deep Learning Specialization (Coursera)
- TensorFlow Developer Specialization (Coursera)
- High-Level Synthesis for FPGA (Udemy)