Abdelrahman Elawady

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EDUCATION

University of Prince Muqrin UPM — Madinah, Saudi Arabia
- B.Sc. in Electrical Engineering – GPA: 3.99 — Sep 2023 – Expected 2027

EXPERIENCE

Summer training intern

Jabal Al-Alam company JAA (Delta Controls partner) – Madinah, Saudi Arabia — *Jun 2025 – Aug 2025*

- Assembled and configured 500+ GRMS classic control electrical panels with relays and controllers.
- developed I/O lists in Excel for GRMS and BMS applications, ensuring accurate mapping and efficient system configuration.
- Programmed building automation controllers using GCL+, and configured database software objects via BACnet, MS/TP/Ethernet/IP and Modbus network protocols.
- Assisted in testing, commissioning, and troubleshooting of BMS field devices and panels (MCCs, DDCs, AHUs, Chillers, pumps), and created AutoCAD layouts and real-time monitoring graphics.

Academic projects

*Ionic Plasma Thruster project – **1st place in EE All-levels competition*** — *May 2025*

- Engineered a fuel-less ionic propulsion system using high-voltage corona discharge and plasma wind, leading the team to win 1st place in the UPM's All-Classes Electrical Engineering Competition.
- Designed and implemented a ZVS flyback driver circuit and voltage multiplier, achieving efficient high-voltage AC generation and enabling a fully functional, 3D-printed prototype with zero moving parts.

Smart LED Display Systems for Campus Offices — *Nov 2024 – Feb 2025*

- Designed and installed Bluetooth-enabled LED display systems for the Dean's Office and Career Center using ESP32 microcontrollers, optimizing RAM and DMA allocation to ensure flicker-free rendering on a low-latency UART interface.
- Deployed custom web app and engineered cost-effective solutions that reduced implementation costs by approximately 75% compared to commercial alternatives with low maintenance for professional environments.

*Electric generator project – **2nd place in Physics competition*** — *May 2024*

- Collaborated with a colleague in a trial-and-error approach to design and construct a low-budget DIY axial flux electric generator using 250-loop coils and magnets mounted on a CD disk, resulting in 3V output.

Signal analysis MATLAB project — *May 2024*

- Worked with a team designing and developing signal processing software that takes user-input, simulates adding noise to a signal, filters it with statistical algorithms & displays results on a graph for data visualization.

Publications

- **Elawady, A.**, Mohamed, J. A., & Bin Abid, M. (2025). Advancements in microplastics detection techniques and their multidimensional impacts on aquatic ecosystems and human health. *Journal of Hazardous Materials: Plastics* (**Q1**).
- **Elawady, A.,** et al. (2025). Polymer-Based Innovations in Concrete: A Review on Enhancing Self-Healing Capabilities. *Innovative Infrastructure Solutions* (**Q2**).
- Bin Abid, M., **Elawady, A.**, & Shamim, R. (2025). Exploring AlUla, Saudi Arabia: a journey through history, heritage, resources, and tourism. *GeoJournal* (**Q2**).

Independent Programming projects

JavaScript to-do-list app — *Jun 2023*

- Created a JavaScript to-do-list web app that stores and retrieves data locally on the browser for task management.

Python Interactive covid-19 data visualization map — *Jun 2021*

- Developed an online interactive Covid-19 data map website using python folium library and HTML I-frames.

SKILLS, TECHNOLOGIES & INTERESTS

Engineering tools/ skills: AutoCAD, Multisim, KiCad, MS office.
Software/ languages: C++, Python, MATLAB, Simulink, HTML, CSS, JavaScript.
Hardware: ESP32, Arduino, PCB design, soldering.

LEADERSHIP, HONORS & AWARDS

- Electrical Engineering club leader, UPM – Feb 2025 – Sep 2025
- Prince Faisal bin Salman Award for academic excellence, UPM – 2025