Rafik Ibrahim

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EDUCATION

University of Pittsburgh Swanson School of Engineering | Pittsburgh PA
Bachelor of Science in Electrical Engineering (Concentration: Electric Power) **Apr 2025**
Magna Cum Laude | Dean's List and Term's Honor student **GPA: 3.59**

SKILLS

Tools and Software: AutoCAD Electrical, Revit, Altium Designer, DIALux, ANSYS Maxwell, SolidWorks, PowerWorld, Pspice, MATLAB/Simulink, Multisim, GitHub, Microsoft Office (Word, Excel, PowerPoint)
Programming Languages: C, C++, Python, MATLAB, Arduino IDE, ARM Assembly, FPGA
Electrical and Hardware Skills: Power System Modeling, Load Flow and Fault Analysis, Control Systems, Circuit Design and Analysis, PCB Design and Layout, Schematic Capture, Embedded Systems, Soldering, Building Breadboards
Professional Skills: Analytical Thinking, Technical Problem Solving, Team Collaboration, Project Coordination, Technical Communication, Attention to Detail, Continuous Learning

PROJECTS

Retro Multiplayer Game Console - Senior Design Project | University of Pittsburgh **Jan 2025 – Apr 2025**

- Led design and execution of a dual-screen gaming console featuring real-time wireless multiplayer support for 2 players
- Created 3 PCBs for controllers and main console, interfacing processing, display, and communication modules
- Refined game logic and architecture using advanced memory handling and frame-synced video synchronization, achieving stable 60 Hz refresh, <10 ms input latency, and smooth, responsive gameplay

High Voltage Power System Diagnostics Simulator | University of Pittsburgh **Sep 2024 – Dec 2024**

- Developed a Python and PowerWorld-based simulation platform for a 7-bus high-voltage transmission network, implementing intelligent load-flow, fault, and sequence-network analyses
- Engineered dynamic power-system modeling functions and implemented a Newton–Raphson power-flow solver with <0.0001 pu precision, simulating balanced and unbalanced faults to evaluate grid stability, system losses, and protection performance, validated through a Python–PowerWorld SimAuto interface for result accuracy

RFID-Based Smart Car Gate Opener | University of Pittsburgh **Jan 2024 – Apr 2024**

- Designed an RFID-based gate system with real-time authentication and automated operation, reducing manual entry time by ≈80 % and improving security and access efficiency
- Built a durable custom PCB and enclosure integrating RFID reader, relay driver, and power regulation circuitry, ensuring reliable 24/7 performance in long-term use

EXPERIENCE

Low Voltage Electrical Design Intern | University of Helwan, Egypt **Jun 2025 – Sep 2025**

- Designed and optimized a low-voltage power distribution system for a six-story residential building (70+ rooms) under faculty supervision, creating detailed lighting, power, and socket layouts using AutoCAD Electrical and DIALux
- Developed single-line diagrams and electrical panel board schematics ensuring proper load balancing, protection coordination, and safety compliance
- Prepared a comprehensive Bill of Quantities (BOQ) and cost analysis to support accurate material estimation and project budgeting within ±5% variance of actual cost

Electrical Engineering Lab Assistant | Assiut University, Egypt **Jun 2022 – Aug 2022**

- Structured and led interactive 10+ lab sessions, providing technical support and guiding 30+ students through complex circuit analysis and troubleshooting
- Guided student data collection and analysis, elevating quality of lab reports and projects

Electrical Engineering Volunteering | Assiut Robotics, Egypt **Jun 2021 – Aug 2021**

- Constructed and tested automated circuit solutions for a robotic vehicle, enhancing sensor integration, motor control, and overall system efficiency by ~15%
- Collaborated with a multidisciplinary team of engineers and developers to troubleshoot and debug issues in robotic systems

PROFESSIONAL AFFILIATIONS

Member, **IEEE-HKN** Beta Delta Chapter | Member, **Phi Eta Sigma National Honor Society** **Sep 2021 – Present**