Mohanad Al-Harbi

Electrical Engineering Student

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SUMMARY

Motivated 4th-year Electrical Engineering student with a strong focus on Power Systems and a keen interest in Power Electronics. Experienced in modeling, simulation, and analysis of power converters using MATLAB and Simulink. Seeking an internship opportunity to apply analytical and technical skills in a professional engineering environment.

EDUCATION

Bachelor of Science in Electrical Engineering 08/2022 – Present
Umm al Qura Universuty Makkah, Saudi Arabia
Expected Gradution: 2027
GPA: [3.32/4]

PROJECTS

Generalized State-Space Averaging Model (GSSAM) for DC-DC Converters 04/2026

- Developed and validated 8-state closed-loop GSSAM models for Buck, Boost, and Buck-Boost converter topologies
- Designed cascaded dual PI controllers for closed-loop regulation and analyzed converter dynamics
- Implemented nonlinear ODE models (ode45) and replicated results in Simulink, capturing DC and first-harmonic Fourier components

VSC-HVDC Transmission System Modeling and Control 03/2026

- Designed and simulated a complete two-terminal VSC-HVDC transmission system in MATLAB/Simulink
- Developed Phase-Locked Loop (PLL) subsystems for grid synchronization and accurate dq0 reference frame alignment at each station
- Implemented dq-frame vector control with cascaded outer-loop (active power / DC voltage) and inner-loop (current) PID controllers

Power Flow Analysis of the IEEE 14-Bus System 11/2025

- Optimal Power Flow Analysis of the IEEE 14-Bus System
- Formulated and solved an Optimal Power Flow (OPF) problem to minimize total active power losses across the network
- Analyzed bus voltage profiles, line power flows, and generator reactive power limits including PV-to-PQ bus type switching
- Identified critical lines and buses contributing to highest losses

SOFT SKILLS

- Time management
- Technical report writing and documentation
- Critical thinking and troubleshooting

TECHNICAL SKILLS

- MATLAB
- Simulink, Simscape Electrical
- PSS/E

LANGUAGES

Arabic: Native

English: proficiency Level