

MANSOOR HAYAT, P.Eng.

Electrical Engineer | Power Systems | Protection & Control | Intelligent Monitoring | T&D

+1-204-390-5379 | Mansoor.Hayat@umanitoba.ca | linkedin.com/in/engr-mansoor-hayat | Winnipeg, MB | Open to Relocation

Current Immigration Status: Closed Work Permit (Employer-Specific) | Valid: Sep 27, 2027 | Employer: University of Manitoba

PROFESSIONAL SUMMARY

Licensed P.Eng. (Engineers Geoscientists Manitoba) with a BSc and MSc in Electrical Engineering and a PhD in power systems analysis and intelligent data acquisition. Proven experience in electrical system design, protection studies, SCADA/PLC integration, power system simulation (ETAP, MATLAB/Simulink, PSS/E), and automated monitoring system deployment. Strong foundation in load flow analysis, short-circuit studies, protection coordination, and IEC/IEEE/CSA standards compliance. Seeking roles in utilities, oil & gas, or EPC/consulting where electrical engineering rigour and data-driven system intelligence create operational value.

TECHNICAL SKILLS

Power System Analysis: ETAP (load flow, short circuit, arc flash, protection coordination), MATLAB/Simulink (power system modelling, transient simulation), PSS/E (load flow, fault analysis), DSATools

Electrical Design & Standards: AutoCAD Electrical (SLDs, schematics, cable schedules, earthing layouts), IEC 60255, IEC 61850, IEEE C37 series, IEEE 80, CSA C22.1, ANSI device numbering, NECB 2020

Electrical Safety & Codes: NFPA 70E (Major Changes - deep understanding of 2024 edition including arc flash risk assessment, PPE category methods, and energized electrical work permits), NECB 2020 Designer Online Training (NRC Canada/CSA Group), The Canadian Electrical Code (CSA C22.1) - design rules, inspection standards, and compliance frameworks

Protection & Control: Protection coordination studies (overcurrent 50/51, earth fault 50N/51N, differential 87, distance 21), switchgear, relay secondary injection testing, SCADA/DCS operation, PLC programming (ladder logic), harmonic analysis, power quality, instrumentation interfacing (Modbus, DNP3, IEC 61850 GOOSE), earthing and grounding system design (IEEE 80)

Engineering Computing: Python (data pipelines, automation, NumPy, Pandas, Matplotlib), MATLAB scripting, Docker, Git/GitHub, Linux, Power BI, Prometheus/Grafana, SQL

PROFESSIONAL EXPERIENCE

Electrical Systems Engineer & Intelligent Monitoring Researcher

University of Manitoba, Section of Neurosurgery | Winnipeg, MB **Sep 2024 - Present**

- Designed and deployed an embedded real-time monitoring system integrating Raspberry Pi platforms, industrial cameras, and sensor arrays for continuous 24/7 automated data acquisition - architecture directly scalable to substation equipment monitoring and SCADA alarm management.
- Performed electrical load assessment for a multi-GPU research computing facility: evaluated grounding configurations, surge protection coordination, and UPS integration to ensure supply reliability and equipment protection.
- Engineered end-to-end data acquisition pipelines applying Python, Bash, and Docker - equivalent to SCADA historian and data pipeline workflows in utility and industrial environments.
- Developed computer vision inspection algorithms (YOLOv8, OCR) for automated digitisation of analog and digital instrument display readings - directly applicable to autonomous substation equipment inspection and condition monitoring.
- Produced engineering documentation including wiring diagrams, equipment specifications, installation procedures, and compliance records for the monitoring infrastructure.
- Secured NSERC Discovery Grant (I2IPJ 598125-24, top 15% acceptance rate) for autonomous electrical instrumentation data extraction; led milestone reviews and authored technical project reports.

Lab Engineer & Lecturer, Electrical and Computer Engineering

University of Sargodha | Pakistan Jan 2015 - Apr 2021

- Electrical Laboratory Engineering: Designed, commissioned, and maintained teaching laboratories for power systems, protection, DSP, and embedded systems - covering relay test sets, PLCs, power quality analyzers, oscilloscopes, and high-voltage test equipment. Maintained 99% laboratory uptime; enforced PTW, LOTO, and electrical safety protocols.
- Protection & Power Systems Lab: Supervised experiments in overcurrent relay coordination, motor and transformer protection, three-phase power measurement, and fault simulation - methodologies aligned with field commissioning and testing practice.
- PLC and Embedded Systems Projects: Led 20+ capstone and research teams designing PLC-based control systems, embedded sensor networks, and automated fault detection systems in C/C++, MATLAB, and ladder logic.
- Power Dispatch Optimisation (MSc Thesis): Developed MATLAB-based economic power dispatch models applying genetic algorithm and particle swarm optimisation across multi-machine power system test cases.

ENGINEERING PROJECTS

- Autonomous Instrument Monitoring System (UofM, 2024-2025) - Raspberry Pi + GPU computer vision pipeline for real-time automated digitisation of instrument readings - 3x data throughput over manual baseline; scalable to substation monitoring and SCADA data quality validation. NSERC-funded (I2IPJ 598125-24).
- Research Facility Power Infrastructure Design (UofM, 2024-2025) - Led electrical load assessment, UPS integration, grounding verification, and surge protection coordination for a centralised multi-GPU computing facility; designed power budgeting, thermal management plan, and Prometheus/Grafana monitoring dashboards.
- ETAP Protection Coordination Study (Academic, 2024) - Modelled 11 kV/0.415 kV industrial distribution feeders in ETAP; performed load flow and short-circuit analysis; revised overcurrent and earth fault relay settings across voltage levels; produced IEC 60255-compliant time/current coordination curves.
- Transmission Line Modelling and Performance (Coursera/L&T EduTech, 2024) - Analysed transmission line parameters, ABCD constants, voltage regulation, and surge impedance loading using MATLAB; applied Ferranti effect and corona loss calculations to representative line configurations.
- Economic Power Dispatch Optimisation (MSc Thesis, 2018) - MATLAB-based economic dispatch models using genetic algorithm and particle swarm optimisation across multi-machine power system test cases; benchmarked against classical lambda-iteration and gradient methods.

EDUCATION

- Doctor of Philosophy, Electrical Engineering (Distinction) | Chulalongkorn University, Bangkok | 2021-2024
- Master of Business Administration, Accounting & Finance | NCBA&E, Lahore, Pakistan | 2018-2022
- Master of Science, Electrical Engineering | ISP Multan, Pakistan | 2016-2018
- Bachelor of Science, Electrical Engineering | UET Taxila, Pakistan | 2011-2015

CERTIFICATIONS & PROFESSIONAL STANDING

- NFPA 70E: 2024 Major Changes (1 PDH) - Comprehensive training on 2024 edition updates
- NECB 2020 Designer Online Training - NRC Canada/CSA Group
- CSA C22.1 Canadian Electrical Code - Design rules, inspection standards, compliance
- Electric Power Systems - University at Buffalo (Coursera) | Electrical Power Distribution - L&T EduTech
- AutoCAD Drafting Exam Prep - Autodesk | 21st Century Energy Transition (2.0 CEH) - EGBC
- IoT Specialisation (6 courses) - UC Irvine
- P.Eng. - Engineers Geoscientists Manitoba (APEGM) | Registered Engineer, Pakistan Engineering Council
- NSERC Discovery Grant (I2IPJ 598125-24) | Research Manitoba Postdoctoral Fellowship | Best Paper Award IEEE TENCON 2023

REFERENCE

- Dr. Nouman Ahmad | Automation Engineer | NAISS Sweden | nouman.ahmad@naiss.se | Additional references available upon request.