BIPIN MAHARJAN

Electrical Engineer | Power Electronics and Control

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PROFILE

Electrical engineer completing an MSc in Power Electronics and Drive Engineering, with hands-on experience in hydropower governor rebuild and commissioning, PLC/SCADA control programming, utility-scale solar PV studies and substation and transmission line work, supported by a strong control design and simulation background in MATLAB/Simulink and Python.

EDUCATION

MSc in Power Electronics and Drive Engineering 2025 - present

Institute of Engineering, Pulchowk Campus, Kathmandu

- Running
- First semester completed - 89.75%
- Project (in progress): Grid-forming inverters for electric vehicle charging stations to enhance distribution grid resilience.

BE in Electrical Engineering 2018 - 2023

National College of Engineering, Talchhikhel, Lalitpur (Institute of Engineering, Pulchowk)

- Overall distinction - 81.69%
- Dean's List, second and fourth semesters
- Second Year Topper, overall faculty
- Member and Secretary, Electrical Club

EXPERIENCE

Electro-Mechanical Consultant (Freelance) - National Hydro Power Co. Ltd. 2024 - present

- Rebuilt and commissioned the damaged 4WT1000-4.0XT governor system of the 2.5 MW Indrawati III unit, with associated electro-mechanical consulting; the unit was returned to service and remains in operation.
- Reviewed and redesigned the unit frequency and gate control program (Siemens S7-1200, TIA Portal V17).
- Damage Assessment Report.

Electrical Engineering Intern - NEA Engineering Company Ltd. 2023

- Desk study and simulation of a 40 MW solar PV project for Vidhyut Utpadan Company Ltd., estimated annual generation around 85 GWh.
- Assisted in substation design and in the survey of a new transmission line for expansion of the Kathmandu Valley transmission network.

Trainer, Training Program - Nepal Hydropower Academy 2023

- Delivered a two-day training course on basic PLC, SCADA and HMI systems.

Student Intern - Middle Marsyangdi Hydropower 2022

- Worked with the plant team on the operation, maintenance and components of the hydropower station.

PROJECTS

- A Fuzzy Logic Based Automatic Voltage Regulator (AVR) for an Alternator - BE final year project.
- Power distribution and illumination design for a commercial building.
- Design and cost estimation of a standalone solar PV system.

SKILLS

Power Systems and Electronics: Grid-forming and grid-following inverters, LCL filters, DC-DC converters, solar PV system design, microgrid stability, renewable energy integration
Industrial Automation: Siemens TIA Portal (S7-1200, LAD and SCL), PLC, SCADA and HMI systems, hydro turbine governor systems
Modelling and Simulation: MATLAB/Simulink, PVSyst, Autodesk AutoCAD
Control: Model predictive control (MPC), system identification, droop and secondary control, PID tuning, state-space modelling
Programming: Python (NumPy, SciPy, Pandas), MATLAB
Machine Learning: Physics-informed neural networks (PINN), reinforcement learning, regression and neural network modelling

CERTIFICATIONS

DTU (Coursera): Wind Energy; Photovoltaic Systems
IBM (Coursera): Python for Data Science, AI and Development; Supervised Machine Learning: Regression
DeepLearning.AI (Coursera): Neural Networks and Deep Learning