Sandesh Chhetri

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CAREER OBJECTIVE

Engineers Australia certified professional engineer seeking to leverage expertise in power system modelling and electrical design/calculations to attain Registered Professional Engineer of Queensland (RPEQ) status and make data-informed decisions in power utility space.

SKILLS & KNOWLEDGE

- **Skills:** Digsilent Powerfactory, ETAP, Paladin DesignBase, PowerCAD, PSCAD, AutoCAD, Revit, Navisworks, Dialux, Microsoft Office Suite, Python
- **Standards:** AS/NZS 3000, AS/NZS 3008, AS/NZS 2067, NCC, IEC 60909, AS 1680, AS2067, IEEE 80, Department of Defense MIEE, Energy Queenland Planning Standards

WORK EXPERIENCE

Energy Queensland **Jul. 2024 – Present**
Strategic Planning Engineer Townsville, QLD

- Conduct advanced network modelling and power system analysis using Digsilent Powerfactory to identify credible contingencies within Energy Queenland sub-transmission and distribution network.
- Collaborate with grid planning teams to deliver area plans that recommend optimal network augmentations and refurbishments, addressing identified constraints and N-1 contingencies for scenarios projected to 2050 and the ultimate network state.
- Contribute to the development of planning standards and delivery of annual regulatory reports, ensuring full alignment with National Electricity Rules (NER) requirements.
- Develop and deploy Python-based automation tools to streamline SCADA data acquisition for the grid planning team, enhancing Battery Energy Storage System (BESS) modelling and connection studies.

Hatch **Jun. 2023 – Jul. 2024**
Electrical Engineer Brisbane, QLD

- Developed automated design workflows using Azure Machine Learning and PowerApps to streamline load list and cable schedule updates, reducing project time by significant hours. Reviewing and updating schematics for motor control centers in lithium hydroxide process trains.
- Conducted load flow and short-circuit faults studies in site wide 22kV distribution rings with MV/LV motor control centers for enhanced system reliability and equipment performance in ETAP software. Ultimately feeding fault outputs for protection co-ordination, earthing design and arc flash analysis.
- Performed internal review markups on single-line diagrams and cable block diagrams to guarantee adherence to design standards, ensuring project quality and compliance.
- Collaborated with modelling teams and lighting vendors to carry out lighting/photometric calculations to verify adequate lux levels and maintain MTOs for accurate procurement and cost control.

Aurecon **Mar. 2022 – Jun. 2023**
Electrical Engineer Townsville, QLD

- Analysed load profile data for various Australian Military bases using MS-Excel and Python to develop comprehensive reports. Collaborated with the project delivery team to inform infrastructure design decisions and capacity planning.

- Performed load flow study for the Kokoda Barracks 11kV distribution ring under different contingency scenarios identifying abnormalities such as equipment overloading, excessive voltage drops and poor power factor. Carried out short-circuit study in accordance with IEC60909/AS3851, providing detailed report explaining input data, study cases, observation on power system equipment fault ratings and recommendations.
- Performed a detailed rooftop solar pre-feasibility study at The Lavarack Barracks (Northern QLD), analysing potential energy generation, payback periods, and grid integration strategies. Provided actionable recommendations that were incorporated into the Electrical Master Plan.
- Created comprehensive engineering designs and drawings for diverse medium/low voltage electrical system projects. Scope included lighting design (AS1680), cable size calculations (AS3008), equipment installation, and maintenance planning.

Fitzroy River Water (Rockhampton Regional Council) **Mar. 2021 – Jun. 2021**
Electrical Engineering Intern Rockhampton, QLD

- Analysed submersible pumps SCADA data and developed an Ms-excel tool to detect blockages.
- Tested and modified the RTUs firmware for the new SCADA telemetry network.
- Assisted the operations engineer in developing an effective control algorithm for variable speed drives, contributing to a research study that is used to optimise pump stations.

EDUCATION

Master of Engineering (Electrical) **Jul. 2019 – Jul. 2021**
CQUniversity Rockhampton, QLD

Bachelor of Engineering (Electronics and Communications) **Oct. 2014 – Nov. 2018**
Pashchimanchal Campus, Institute of Engineering Pokhara, Nepal

PROJECTS

Optimisation of Filter Transfer Function Using Genetic Algorithm

- Developed a genetic algorithm in python for maximisation of polynomial transfer function coefficients of an analog filter.
- Achieved the target frequency response of the second-order low-pass filter with response better than the butter-worth filter response in the passband region.

Load Frequency Control

- Derived the transfer functions of the governor, turbine, and generator with the provided data using system identification tool in MATLAB.
- Designed and tuned a continuous PID controller and then developed a discrete PID controller accordingly with the bilinear transformation method.
- Simulated the whole project in Simulink.

VOLUNTEER WORK

Central Queensland Innovation and Research Precinct (CQIRP) **Jul. 2020 – Aug. 2020**

- Explored machine learning approaches for assessing mango crop quantity and quality. Primarily worked on data classification of mango fruits.

CERTIFICATIONS AND TRAINING

Outsmarting intermittency, École Polytechnique, Coursera **Nov. 2021**

- Learned upcoming grid challenges for renewable energy sources like wind and solar.