KAPIL DUWADI

EXPERIENCE

Alliance for Sustainable Energy, LLC
2019 - Present

- **Researcher II - Electrical Engineering**

  - *Distributed Energy Resources (DER's) impact study in Tamilnadu Feeders*
    Client: Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO)

    Developed an open source software record named EMeRGE (https://github.com/NREL/EMeRGE) for feeder model development, risk assessment study and metrics visualization. Authored a study report soon to be publicly available.

  - *North American Energy Resilience Model (NAERM)*
    Client: U.S Department of Energy

    Contributed to software development to build scalable real time situation awareness tool for NAERM project (https://www.energy.gov/oe/mission/oe-priorities) and helping to understand impact of new energy resources in North American grid.

  - *Fast tracking PV interconnection application assessment*
    Client: Sacramento Municipal Utility District (SMUD)

    Involved as a lead software developer and power system expert to develop and deploy software solution (known as PRECISE, https://www.nrel.gov/grid/precise-tool.html) to SMUD business process to assess incoming PV interconnection application in real time.

  - *Understanding the evolution of net load variation*
    Client: BSES Yamuna Power Limited (BYPL)

    Lead developer for an open source software record named EVOLVE (https://github.com/NREL/evolve) which is an interactive dashboard to visualize impact of photovoltaics (PV), energy storage and electric vehicle in net load profile. Co-authored a study report soon to be publicly available.

  - *Designing Time of Use (TOU) tariff*
    Client: BSES Rajdhani Power Limited (BRPL)

    One of the developer of software record named EFFORT, which is an optimization tool to design time of use tariff. Co-authored a study report soon to be publicly available.

- **Skills and experience**

  Programming Language: Python, Javascript, HTML, CSS, R

  Software frameworks and tools: Docker, Git, Vue, React, D3, aiohttp, pyomo, Jira, Bamboo

  Database: SQL, MongoDB, REDIS

  Power system tools: OpenDSS, PSSE, PowerWorld, CYME

  Experience: Large scale feeder model development, integrating business data into analysis frameworks, design and develop interactive dashboard for analytic, scenario analysis for future power grid

South Dakota State University (SDSU)
2017 - 2019

- **Graduate Research Assistant**

  - Involved as researcher for techno-economic and sustainability study of PV inverters controllers in a power distribution network

- **Graduate Teaching Assistant**

  - Conducted labs for electric circuits and electronics, graded lab reports and homework

- **REU (Research experience for undergraduates) mentor**
  - Supervised 5 students, worked in parallel implementation of AC optimal power flow using high performance computing in collaboration with MATH department - 10 week program funded by National Science Foundation

- **Skills and experience**

  Programming Language: MATLAB

  Software frameworks and tools: Git, Matpower, CVX, OpenMP

  Power system tools: GridLAB-D, PowerWorld, Simulink

Kathmandu Engineering College (KEC)
2015 - 2017

- **Lecturer**
  - Taught electrical engineering subjects, supervised projects, conducted labs (48 student)

- **Assistant Lecturer**
  - Taught electrical engineering subjects, supervised projects, conducted labs (48 student)

- **Skills and experience**

  Programming Language: MATLAB

  Software frameworks and tools: Matpower

  Power system tools: Simulink

EDUCATION

South Dakota State University, Brookings, SD
Master in Electrical Engineering, 2019

- Thesis title: Sustainability study of Photovoltaics in Distribution Network

Tribhuvan University (TU), Kathmandu, Nepal
Bachelor in Electrical Engineering, 2015

- Project title: Improved Power Sharing for Inverter dominated Micro-grid based on Impedance Match Concept

PUBLICATIONS

[C1] **K. Duwadi** et al., "Design, modelling and simulation of improved power sharing scheme for parallel operation of VSI," in IEEE International Conference on Control and Automation (ICCA), 2016, pp. 359-364.

[C2] **K. Duwadi** et al., "Monte Carlo Analysis of High Penetration Residential Solar Voltage Impacts using High Performance Computing " 2018 IEEE International Conference on Electro/Information Technology (EIT), Brookings, SD, 2019, 5 pp.

[C3] **K. Duwadi** et al., "Sustainability Metrics for Inverter-based Voltage Regulation Methods in PV-rich Low Voltage Grids" 2018 IEEE International Conference on Electro/Information Technology (EIT), Brookings, SD, 2019, 5 pp.

[C4] A. Werner, **K. Duwadi** et al., "Parallel Implementation of AC Optimal Power Flow and Time Constrained Optimal Power Flow using High Performance Computing," in IEEE Annual Computing and Communication Workshop and Conference (CCWC), Jan. 2019, 6 pp. **(Best paper award)**

[C5] **K. Duwadi** et al., "Numerical Oscillation Prevention for PV Inverter Controllers in Quasi-Steady-State Simulators," 2019 IEEE Power Energy Society General Meeting (PESGM), Atlanta, GA, USA, 2019, pp. 1-5

[C6] F. B. dos Reis, **K. Duwadi** et al., "Impact of Residential Load Models for Overvoltage Prevention Studies in PV-Rich LV Grids," 2019 IEEE Milan PowerTech, Milan, Italy, 2019, pp. 1-6, doi: 10.1109/PTC.2019.8810636.