Durga Aryal

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(Authorized to work in the U.S. without visa sponsorship)

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Summary

- Passionate electrical engineer with two years of experience in using data engineering in power systems.
- Proficient in using Matlab and Python data science packages including Pandas, Numpy, Scipy, Statsmodels, Scikit-learn, Seaborn, Matplotlib, Keras and Tensorflow for solving challenging real-world problems.
- Other skills/tools: R, SAS, SQL, Hadoop, Hive, Pig, PSS/E, Power World, DEW, OpenDSS.

Education

Virginia Tech — Blacksburg, VA.

Master of Science in Electrical Engineering; GPA: 3.67/4.00 — *Aug. 2017 – Dec. 2018*

Tribhuvan University — Nepal.

Bachelor in Electrical Engineering; GPA: 3.98/4.00 — *Nov. 2011 - Nov. 2015*

Experience

Electrical Distribution Design (EDD) — Blacksburg, VA

Research Assistant — *May 2017 - Feb 2019*

- Used PSS/E with Python for studying transient and steady-state stability studies of power systems subject to utility-scale integration of renewable sources (wind and solar) in the grid.
- Performed quasi-static time series analysis on electric transmission and distribution systems using Python and Distribution Engineering Workstation (DEW). Accessed MySQL database using SQL queries.

Electric Reliability Council of Texas (ERCOT) — Taylor, TX

Transmission Planning Engineering Intern — *May 2018 - Aug 2018*

- Implemented k-means clustering in Matlab and developed a sampling tool for facilitating probabilistic transmission planning. Used UPLAN production-cost simulation for generating the data.
- Used the developed sampling tool for performing reliability and economic analysis. Calculated the risk metric, namely expected unserved energy (EUE).

Skills

- **Computer skills:** Python, Matlab, R, SAS, SQL, Hadoop, Hive, Pig.
- **Data packages:** Pandas, Numpy, Statstools, Scipy, Scikit-learn, Seaborn, Matplotlib, Keras, Tensorflow.
- **Power System tools:** PSS/E, Power World, OpenDSS, DEW.

Projects

- **PV power forecast:** Implemented RNN-based LSTM network in Python to perform multi-variate time-series analysis for forecasting the output power of a PV source. Compared its performance with that of support vector regression.
- **Iris recognition:** Trained a deep learning neural network for implementing human iris-based biometric identification. Used Pandas for data analysis, Scikitlearn for data pre-processing and Tensorflow/Keras for training the model.
- **Diabetes prediction using machine learning:** Trained an ANN that classifies diabetic and non-diabetic patients. Used 14 behavorial features as input to the model. Achieved a classification accuracy of 95/%.
- **Demand forecasting in smart grid:** Implemented ARIMA time-series model to forecast the hourly electricity demand in a small town. Used Python packages Pandas, Scikitlearn, Statsmodel and Matplotlib for the analysis.
- **Forecasting the price of used cars:** Based on 25 features that include categorical as well as numerical variables, the price of used car was evaluated. Implemented statistical regression, feature reduction (using PCA) and SVM regression in Python and compared their performances.
- **Distribution system resiliency:** Used spanning tree for maximum load restoration after disturbances in distribution systems. Investigated algorithms for finding optimal topology for the network after a fault has been detected.

Publications

- S.W. Kang, E. Meier, N. Kandel and **D. Aryal**, "A New Approach of Probabilistic Transmission Planning for Composite Power Systems – ERCOT", manuscript under preparation.
- Bilal A. Bhatti, R. Broadwater, M. Dilek, and **D. Aryal** "An Index for Determination and Manipulation of Voltage Stability for Integrated Transmission and Distribution Infrastructures", submitted to *EPSR, 2019*.