Aatam Gajjar

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Education

University of California, Davis — Davis, USA
PhD, Chemical Engineering, GPA- 4.0/4.0 — 2021-2026 (expected)
Research focus: Deep-learning applications in process optimization

The Maharaja Sayajirao University of Baroda — Vadodara, India
Bachelor's degree (BS), Chemical Engineering, GPA- 3.91/4.0 — 2016-2020

Skills

Programming: Python (Pandas, Sci-kit learn, NumPy, Tensorflow, PyTorch, CasADi), SQL (MySQL), Git, MATLAB
Engineering: Process optimization, machine learning, artificial neural networks, data analysis and visualization, `time series forecasting, linear regression, probability, mathematical modeling, simulations, process control
Tools: Jupyter Notebooks, GitHub, Spyder, IBM Cloud, Aspen

Relevant Experience

University of California, Davis — Davis, USA
Graduate researcher, El-Farra research group — Jan 2022-present

- Investigating a novel methodology of forecasting sensor faults by training and optimizing a LSTM model from available simulation datasets.
- Built a multi-class, multi-output feed-forward neural network model for detection of simultaneous sensor attacks/faults and developed a mitigation strategy against cyberattacks in sensors with 94% accuracy.
- Compared the applications of supervised machine learning and deep learning models in process engineering with extensive literature survey and training numerous models from simulations data.

Graduate teaching assistant, Department of chemical and material sciences engineering — Oct 2021-present

- Prepared supplementary material for analyzing and visualizing data using numerical methods and supported the instructor in grading assignments, supporting term projects and conducting labs.
- Led sessions on utilizing NumPy, Pandas and Matplotlib to visualize data collected from laboratory experiments to improve students' understanding of data analysis, programming and linear regression.

L&T Technology Services Ltd. *(India's top-5 ER&D companies)* — Vadodara, India
Process engineering intern, process design and optimization — Jan 2021-July 2021

- Collaborated with the core engineering team on the ongoing optimization projects of multiple clients. Developed models from the available operating data for debottlenecking issues in day-to-day operation to reduce OPEX of the plant.

Projects

SpaceX- Falcon 9 landing prediction, *IBM on Coursera* (GitHub Link) — Sept 2022

- Built a decision tree based classification model for predicting the successful landing of falcon 9 using publicly available datasets with a cross validation accuracy of 94%. Also, optimized the hyperparameters for various machine learning models and compared the prediction accuracy to find the best model.
- Used all the data science fundamentals such as web scraping, data wrangling, EDA, preprocessing, model development and evaluation to successfully complete an applied machine learning project.

Energy output prediction using ANN regression, self-project (GitHub Link) — Sept 2022

- Created an ANN based regression model that predicts the net hourly electrical energy output of a combined cycle power plant using hourly average ambient variables with an MAE of <5%. The dataset used is from UCI's public ML repository.

Energy conservation using WiFi data, *UC Davis* — March 2022-June 2022

- Collaborated with the Data Science team at the Energy Conservation Office of UC Davis on their on-going project of using the building occupancy data for scheduling of HVAC operations of multiple buildings. Used a python script to scrap the sensor datas from utilities.
- Developed a SARIMAX based time-series forecasting model for predicting occupancy of buildings as well as a forecasting energy demand model. Proposed a new predictive scheduling model for HVAC operations based on occupancy and demand forecasts.

Extracting and visualizing stock data, *IBM on Coursera* — March 2022

- Extracted stock data of various companies from the web as well using various python libraries. Analyzed and visualized the data on IBM Watson Studio