Cale Williams

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Education

M.S. Analytics | May 2024 | Georgia Institute of Technology

- **Relevant coursework topics:** Machine learning methods; Linear & logistic regression; Random forests; k-means clustering; k-nearest neighbor, support vector machine, & Naïve Bayes classification; Principal component analysis; Stepwise regression, LASSO, & elastic net feature selection methods; Linear/integer/convex optimization methods

B.S. Aerospace Engineering | May 2016 | University of Texas at Austin

Experience

Data Analysis Intern | National Renewable Energy Laboratory | 10/2022 – 08/2023 | Golden, CO

- Built pipeline to ingest and process complex data sets and deployed into online RShiny interactive dashboards for stakeholders to view outputs of models simulating regional transportation behaviors

Stress Engineer | Sierra Nevada Corporation | 07/2018 – 12/2020 | Louisville, CO

Stress Engineer | The Spaceship Company | 07/2016 - 07/2018 | Mojave, CA

Projects

MLB Pitcher Roster Optimization: Cleaned datasets and built ML and optimization models to quantify baseball pitcher arsenals and construct optimal roster subject to skill and financial constraints

NBA Tracking Data Classification: Processed large dataset and built unsupervised classification model to improve temporal labels

ERCOT Power Load Demand Prediction: Built linear regression model to predict electricity grid demand

biRds: National Park & Bird Sighting Dashboard: Queried, cleaned, and joined multiple complex datasets for ML model ingestion; Implemented data quality checks to ensure smooth model tuning & development; Built visualizations summarizing data features and model results within dashboard

Route Generation: Using tree search and network science methods, built a minimization model to generate routes traversing all graph edges

NBA Field Goal Dashboard: Scraped & cleaned datasets and integrated into dashboard with plots and visuals

NBA Win Prediction: Modeled the relationship between a player's box score statistics and the game result using Bayesian logistic regression

Fuel Consumption Optimization: Built program to minimize fuel usage in a road trip by varying vehicle speeds utilizing NREL RouteE-Powertrain package

Tools & Software

- **R:** tidyverse, Shiny, Plotly, R Markdown
- **Python:** pandas, NumPy, Matplotlib, scikit-learn, SciPy, SQLite, PyMC, CVXPY, NetworkX