

Leveraging Machine Learning in the Energy Markets

CLIENT
SUCCESS
STORY

Company Highlights

Region: **USA**
Sector: **Wholesale Energy**
Industry: **Energy**
Division: **Energy Storage**
Solution Technologies: **ML, Decision Trees, Naïve Bayes, k-nearest neighbors (knn)**
Solution Products: **Scikit, Power BI, Python**
Solution Service Type: **Project**

Microsoft
Partner



Gold Data Analytics
Gold Data Platform



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INTRODUCTION

With the right data in hand, machine learning can provide powerful insights. For this wholesale energy client, we were tasked with creating a heat map based on nodal data on the electrical grid for DA/RT price points for the future development of an asset.

In our case we had to source some information from outside sources and use an API connection for energy prices across America's states - this is what gave us a better understanding of how prices can change drastically depending on which ISO we look at.

CHALLENGE

Prior to our engagement, the client was creating reports directly on excel and had no automation processes. They were looking for something more robust and time efficient. We had to work through a number of questions with them, such as:

Where to find data?

How can we forecast out for volatile ISOs?

Based on the forecast how long will it take for it to be profitable?

It was also noted that we would need an ML algorithm to continuously update for arbitrage opportunities

SOLUTION

We developed a forecast model that was created in Python (Pandas and Scikit) to use historical data from an API. This forecast model was able to use the time series data to create an error metric for outliers and data drift for unseen circumstances (power outage, grid blowout, congestion). It was also accurately able to predict the energy pricing forecast at a confidence interval of 1.64 (90%) when extrapolating out to a 12-month time period.

During our analysis, we created an error metric for the average value to confirm that our forecast is valid. After the nodal model was complete we then applied our data points to a heat map to visualize where the most optimal location would be to develop an asset

RESULT

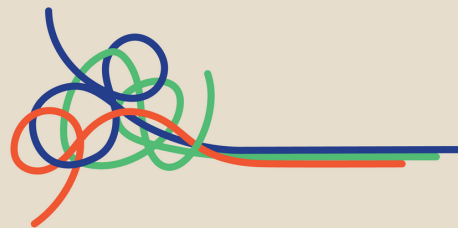
We were able to create a model that required less user input and did most of the work on its own by leveraging Machine Learning. The resulting algorithm had an accuracy rate at or above desired confidence intervals, so it's clear this model is going to be useful for future projects.

ABOUT POMEROL

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Our consultants have helped hundreds of organizations, of all sizes and in all industries worldwide, make money. How do we do this? Leveraging your data to increase revenue, automate processes, decrease costs and understand your insights. Pomerol delivers value that helps you grow and change with better data-driven decisions and solutions that empower you as an Elite Qlik Partner as well as a Gold Data Platform Microsoft Partner. Our professional consultants, that reside in three countries (United States, United Kingdom and Portugal), are experts that will partner with you for the technical as well as business-oriented solutions. Working with the same team in all capacities ensures you always know where we stand with our work and commitment to you.

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