

SMART POWER

Can Data Science Change the Way We Invest in Infrastructure?

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Data-X Spring 2018: Low Tech Demo

OVERVIEW

Investors in Energy Infrastructure are using outdated tools to bet on future electricity markets.

By current market standards, commodity prices are tracked in excel spreadsheets and run through basic regression models, which generate six-month forecasts at best. Our group wants to extend this horizon to predict market behavior over five years. Through the application of modern prediction methods, we seek to develop a flexible tool that can yield insight into financial and policy-based decisions.

INDUSTRY
MENTORS:



Antonio Vitti
Merchant Atlas CFO
Haas Alumni



Steven Gustafson
MAANA Data Scientist
Head of GE Discovery Lab



USER PERSPECTIVE

How this platform appeals to energy investors



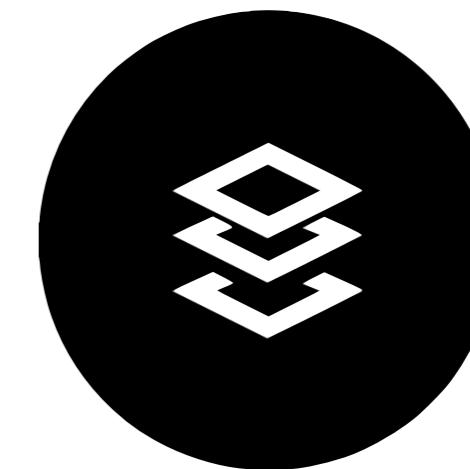
Proven **Reliability**

The time series model from last year is already operational, and can currently predict retail energy prices within 5-10¢ of the market value. We will continue to validate our model's results over the course of this semester



Adjustable **Content**

In addition to the baseline prediction, users will have access to a large database of market features which can be adjusted to reflect a future economic condition. By considering a range of future outcomes, investors will be more prepared to accommodate unexpected events that can be hard to forecast.



Cohesive **Architecture**

This platform will be designed so that users can easily apply their financial acumen on the front end without needing to understand the ML happening behind the scenes. This link will make our analysis methods accessible to anyone.

TECHNICAL COMPONENTS

1) Extend the model's forecast capacity to 5 years

- Coordinate with other project teams
- Verify the existing model
- *Key Topics: time series, regression*

2) Provide flexibility through market perturbations

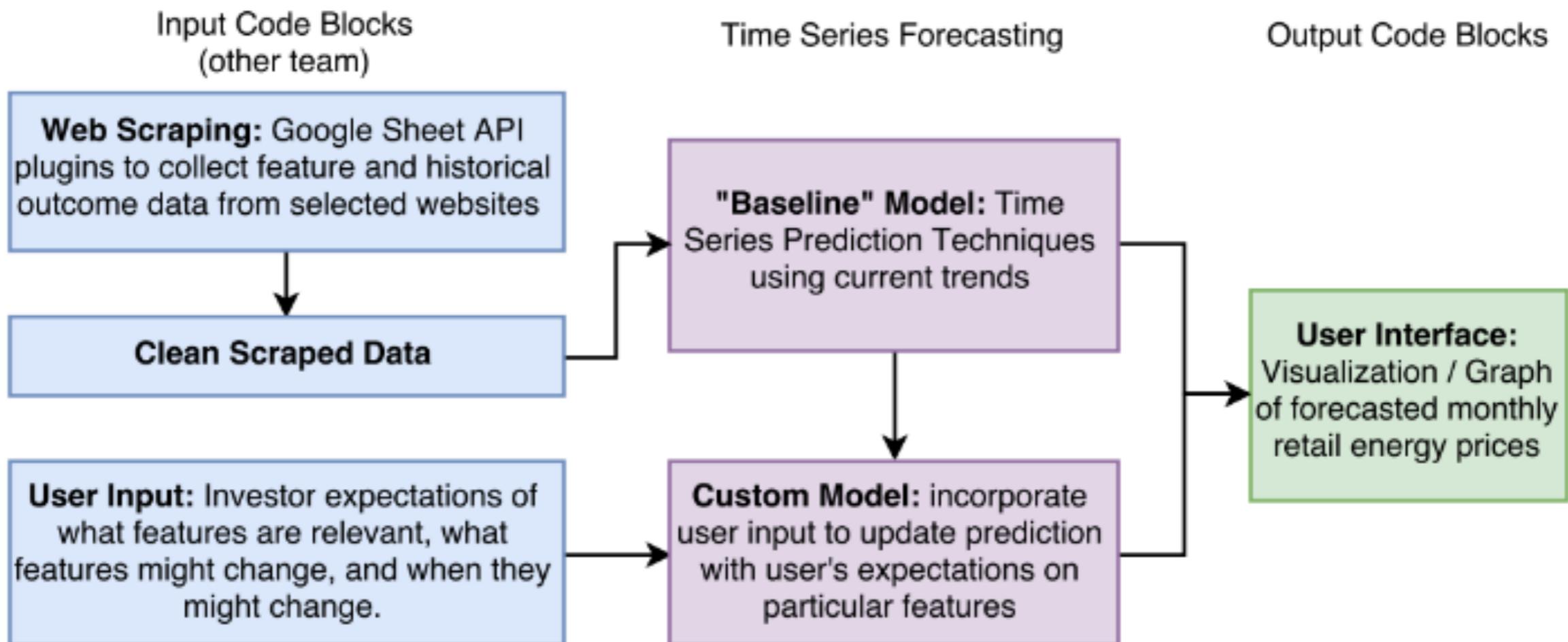
- Build a feature database
- Allow for an adjustable baseline model
- *Key Topics: query processing, user input*

3) Research alternative model options

- Dynamic time series
- Random forest models
- Cross Validation



SAMPLE ARCHITECTURE



FIRST STEPS

Project Director: Shikhar Verma

Technical Leads: Ahmed Issaoui, Negi Fazeli

Data Analysis: Patrick Lerchi, Marie Parent, Shaojin Wei

Complete relevant reading assignments in ILSR, academic papers, etc.

Improve baseline prediction capacity from six months to five years

Build feature database that enables a user to adjust the model

Review & understand the current features, baseline model

Work with feature selection team, develop weight adjustment method

PRESENT RESULTS



THANKS FOR LISTENING!

Your feedback is greatly appreciated

Ahmed Issaoui
Negi Fazeli
Marie Parent
Shaojin Wei
Patrick Lerchi

