

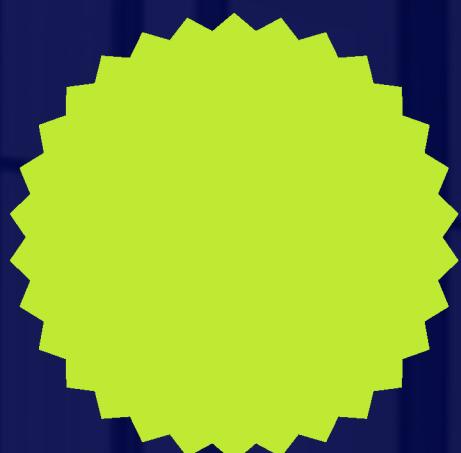
Presented by: Benasser, Kevin, Paya, Julia

SIGNAL SIGMA

Building a Future of Financial Independence

Date: 22nd May 2025

DISCLAIMER



This project is intended solely for research, educational and prototyping purposes. It does not constitute financial advice and should not be used for real-world trading or investment decisions without independent verification and consultation with a qualified financial advisor.

Although the developers have become very rich (purely coincidentally, of course), you should make your own decisions responsibly and at your own risk.

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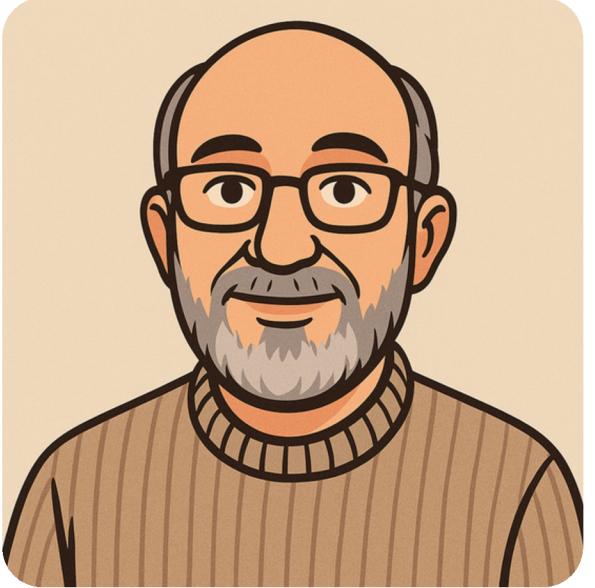
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BEHIND THE PROJECT

creative and smart



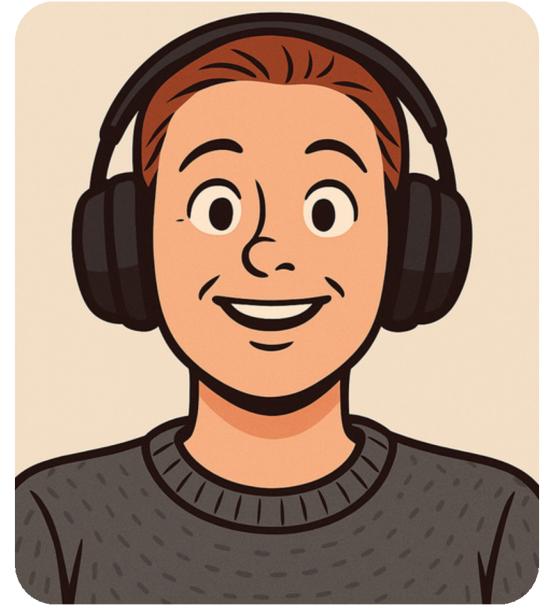
Benasser Haidame
**Data Scientist
and Stock
Specialist**



Kevin Dietrich
**Data Scientist
(in spe) with a
Predilection
for Statistics**

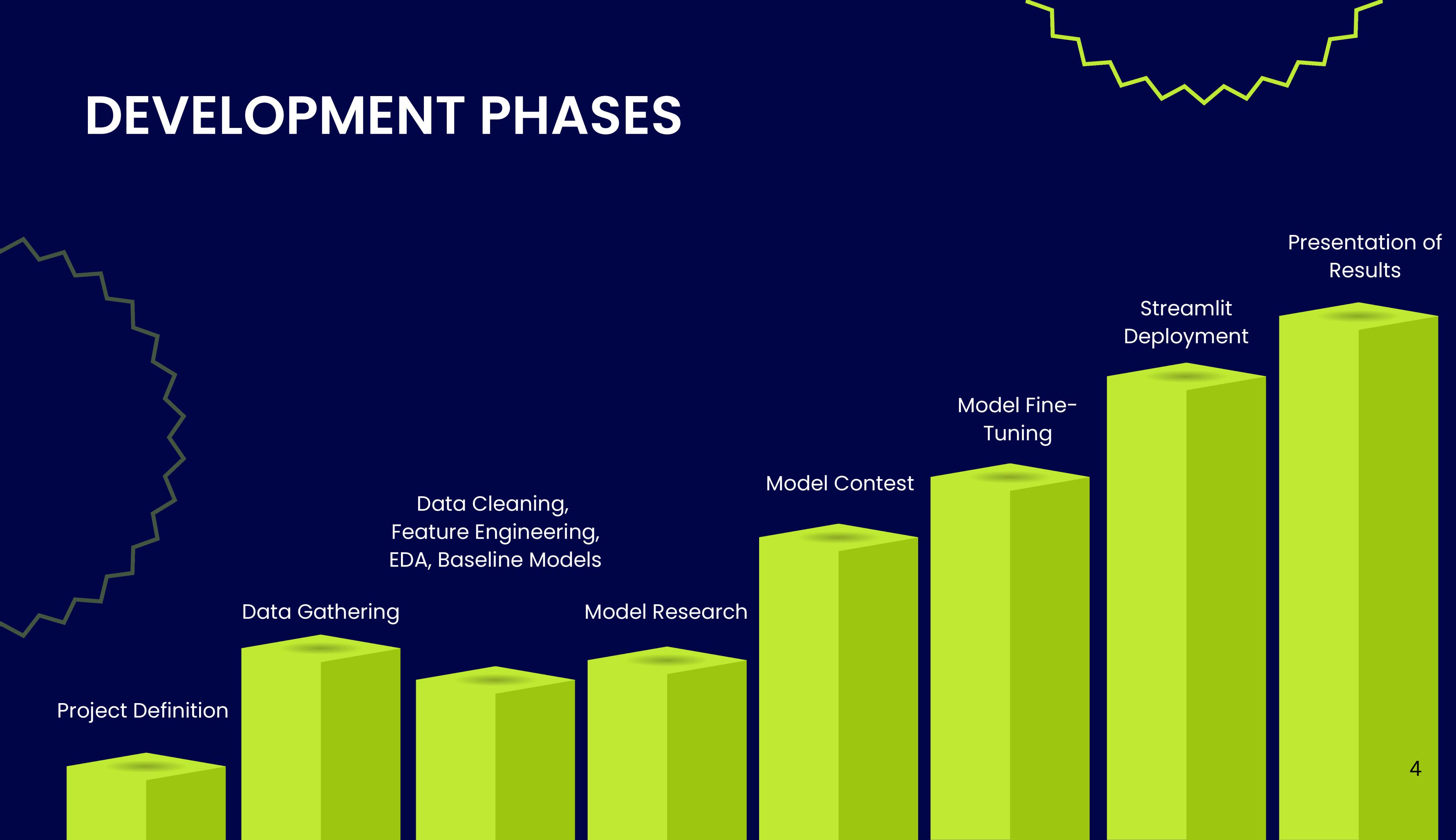


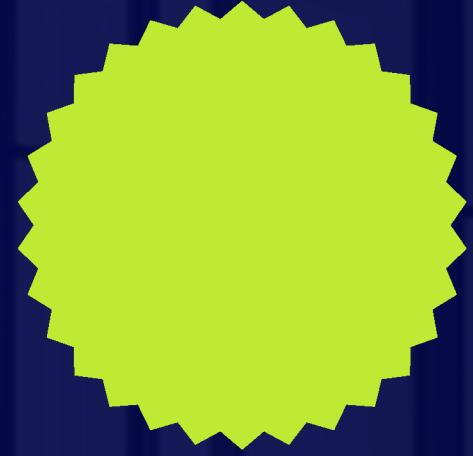
Paya Moghtanem
**Data Scientist
and Data
Analyst, AI
Enthusiast**



Julia Löschel
**Data Scientist
and Project
Manager**

DEVELOPMENT PHASES





KEVIN



STOCK MARKET PREDICTION

Why Predict Stock Prices?

\$\$\$\$, Risk Management, Portfolio Optimisation, ...

Long or Short Position?

Interest depends on whether you are holding stocks/calls or puts.

More than a single point estimation is demanded.

What Influences Stock Prices?

- **Intrinsic:** Management Decisions, Innovative Strength, ...
- **Extrinsic:** Macroeconomic Conditions, (Geo-)Political Events, ...

Predicting all market eventualities is beyond any model's scope.

THE FACTS IN THE CASE OF STOCK MARKET MODELLING

- **Fama's* Efficient Market Hypothesis (1970):**

All publicly available information is instantly incorporated into stock prices.

- **Black-Scholes*-Merton* Model (1973):**

Stock prices behave like (geometric) random walks in continuous time.

- 👉 **Folk Saying in Statistics:**

All models are wrong but some are useful.

Ideal (yet challenging) use case for ML, especially ANN models.

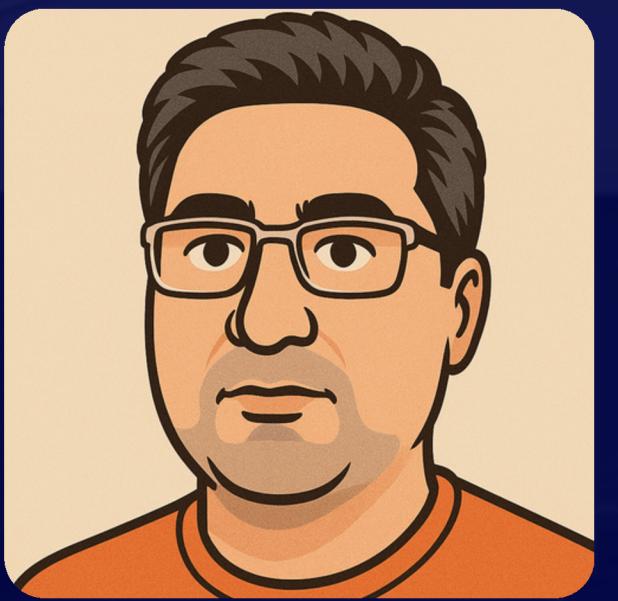
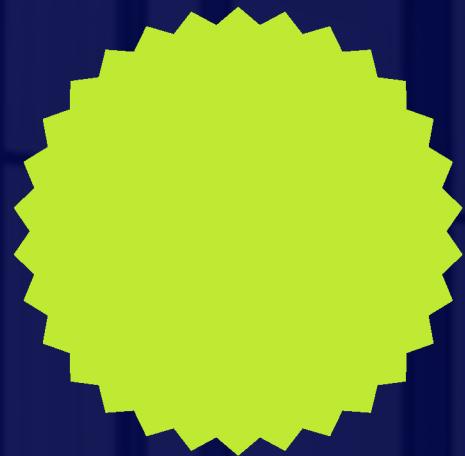
THE DATA SET

Data Sources:

- Yahoo Finance
 - Stocks (Apple, Tesla, ...)
 - Market Indicators: Indices (Dow Jones), Commodities (Gold), ETFs
 - Cryptocurrencies (Bitcoin)
- FRED (Federal Reserve Economic Data)
 - Interest Rates (Federal Funds Rate)

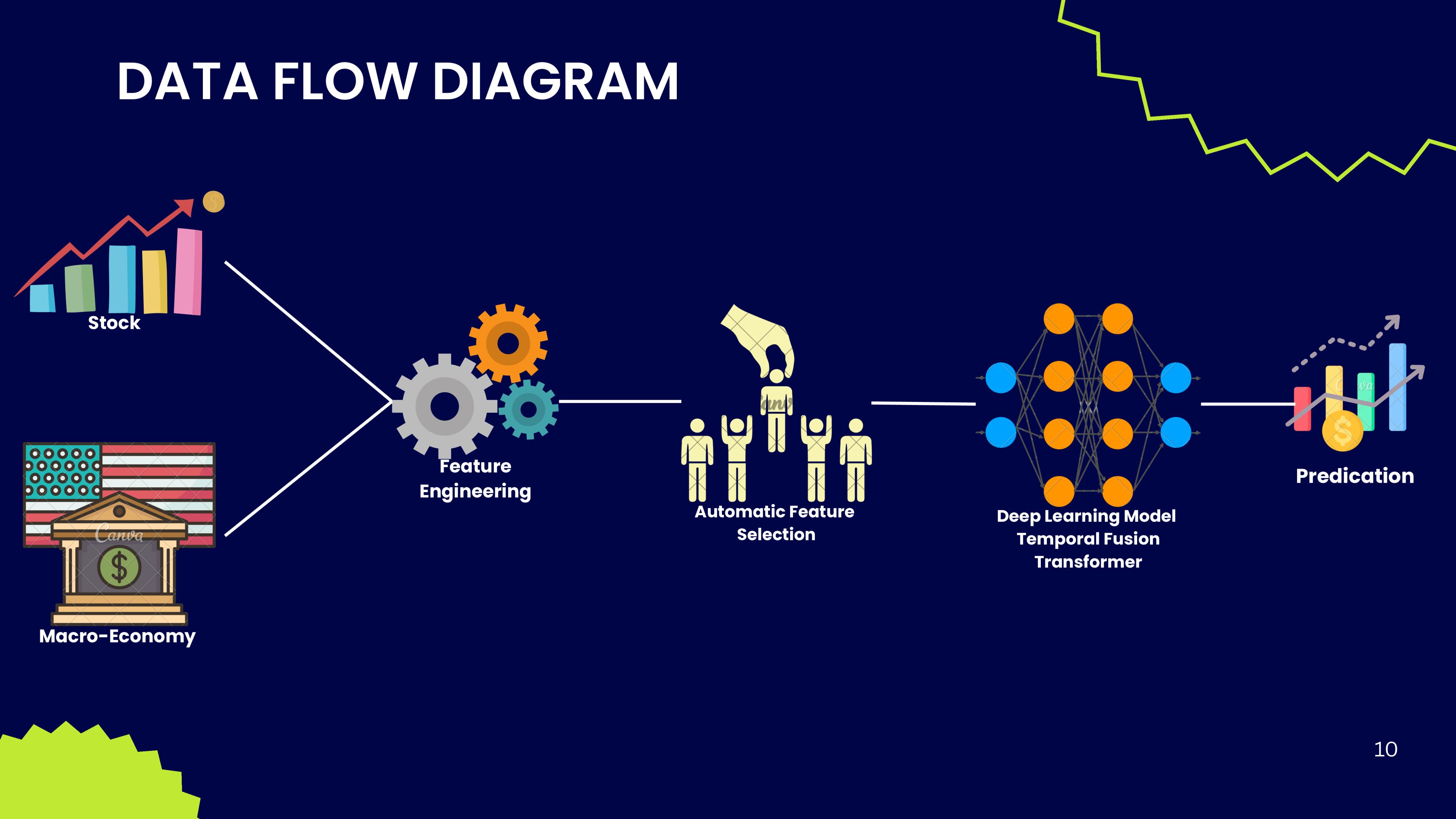
Key Properties:

- Focus on US market
- One Sample per Trading Day (Sudden Drawdowns 🤦)
- Publicly Available
- Data Very Clean 😊

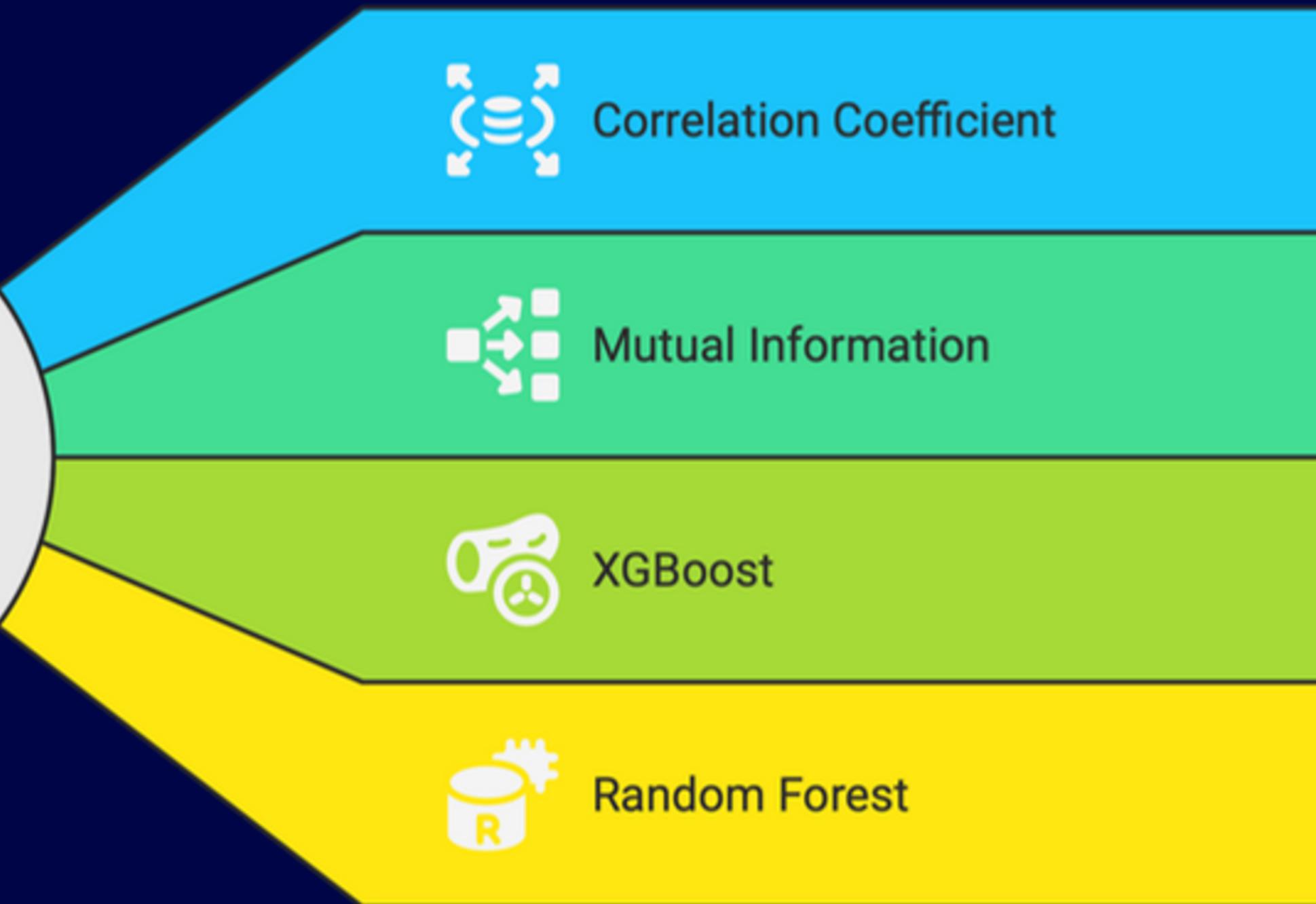
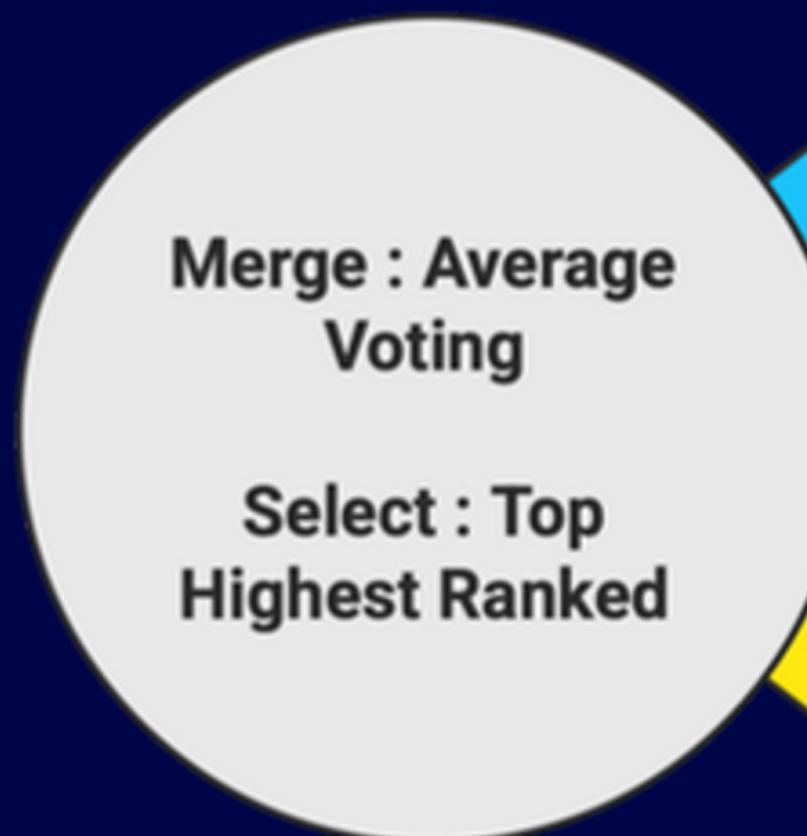


PAYA

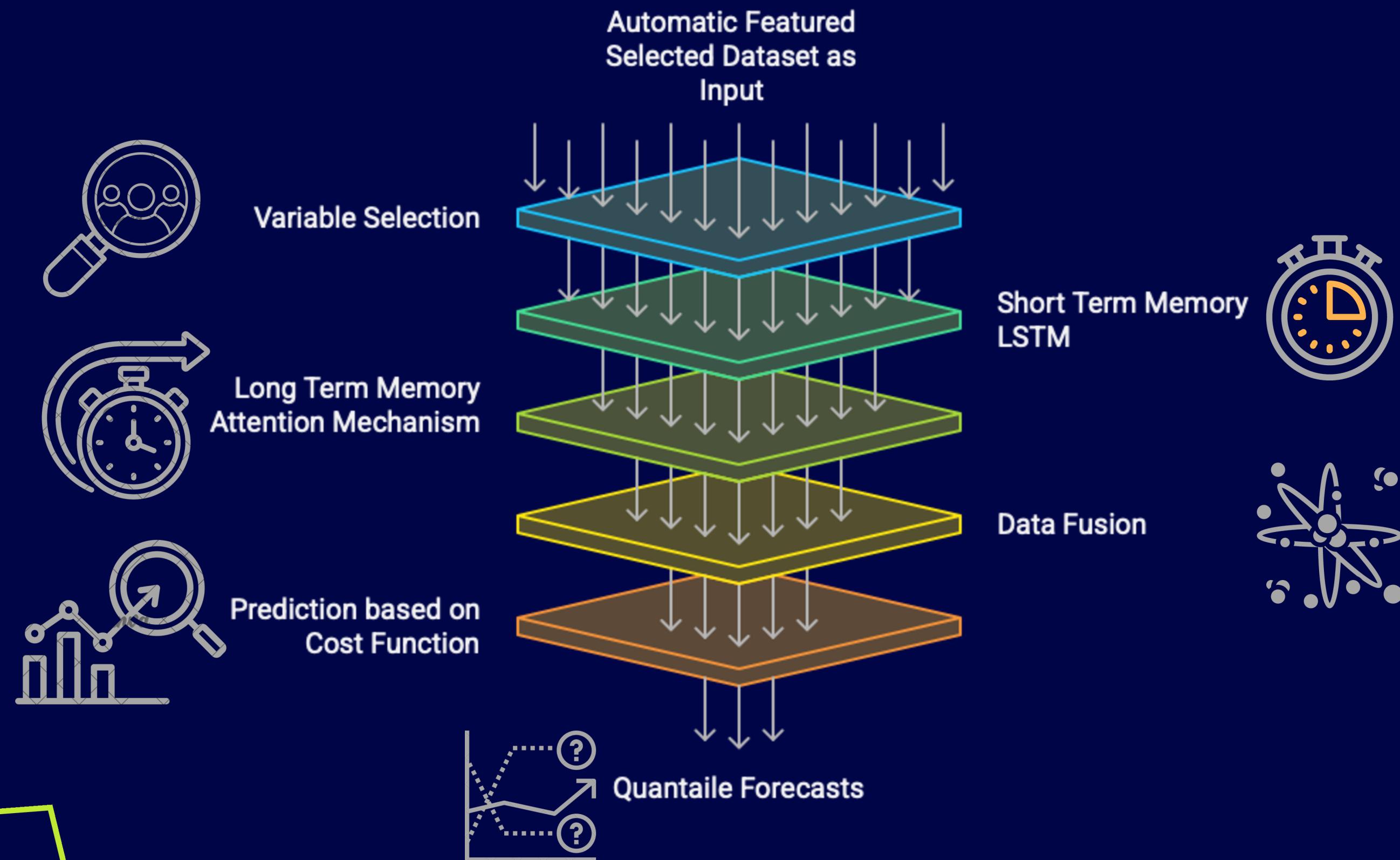
DATA FLOW DIAGRAM



FEATURE SELECTION TECHNIQUES



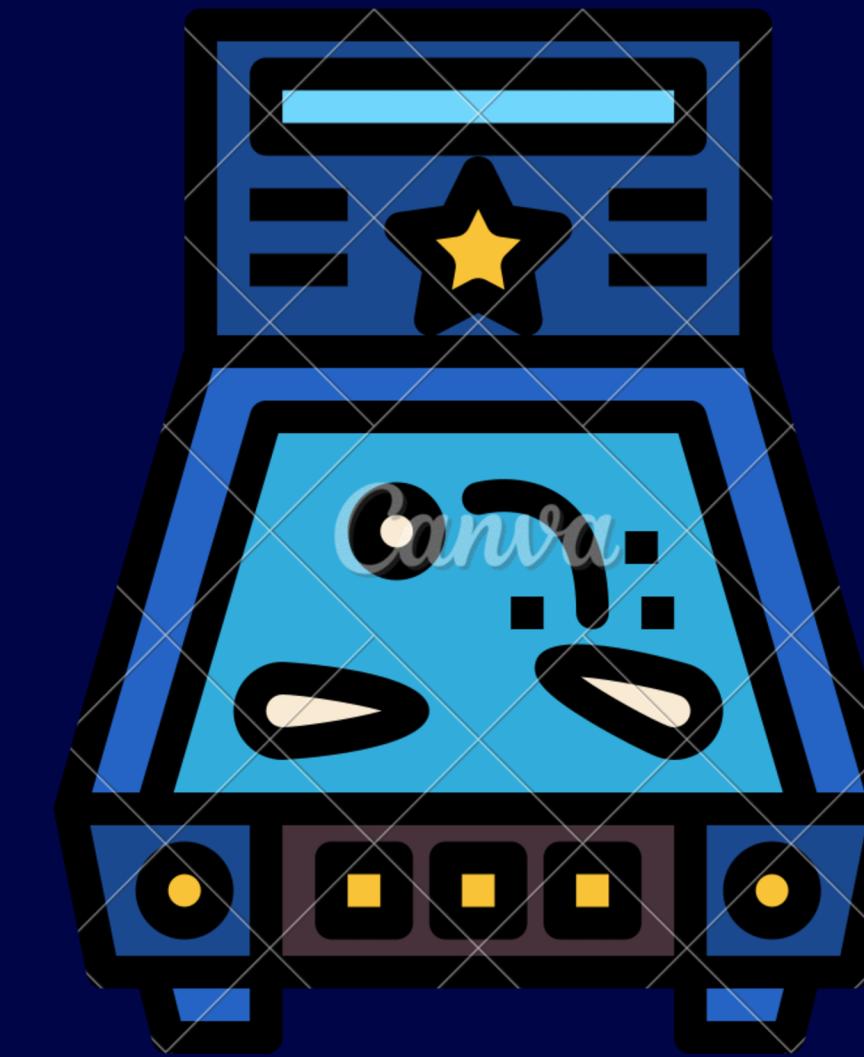
TFT MODEL EXPLAINED (TECH-VERSION)

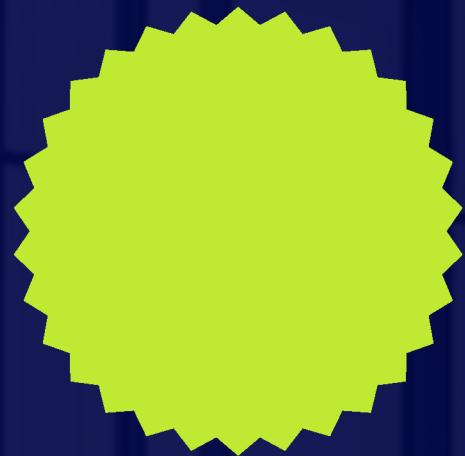


METRICS

Quantile Forecast Metrics

- Pinball Loss
- Quantile Width (e.g., p10–p90)





JULIA

STREAMLIT DEMO



NEXT STEPS

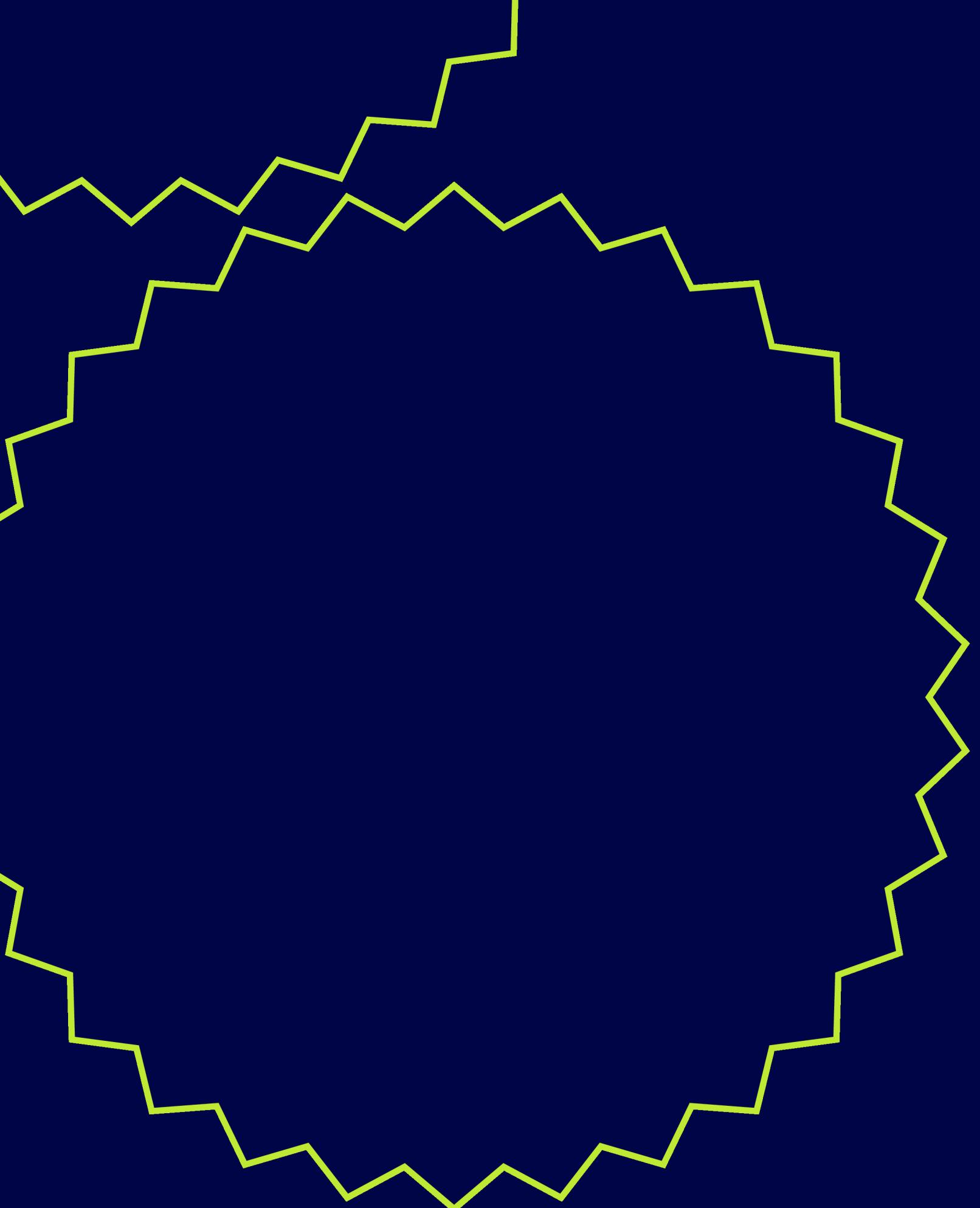


Expand to a broader variety of stocks

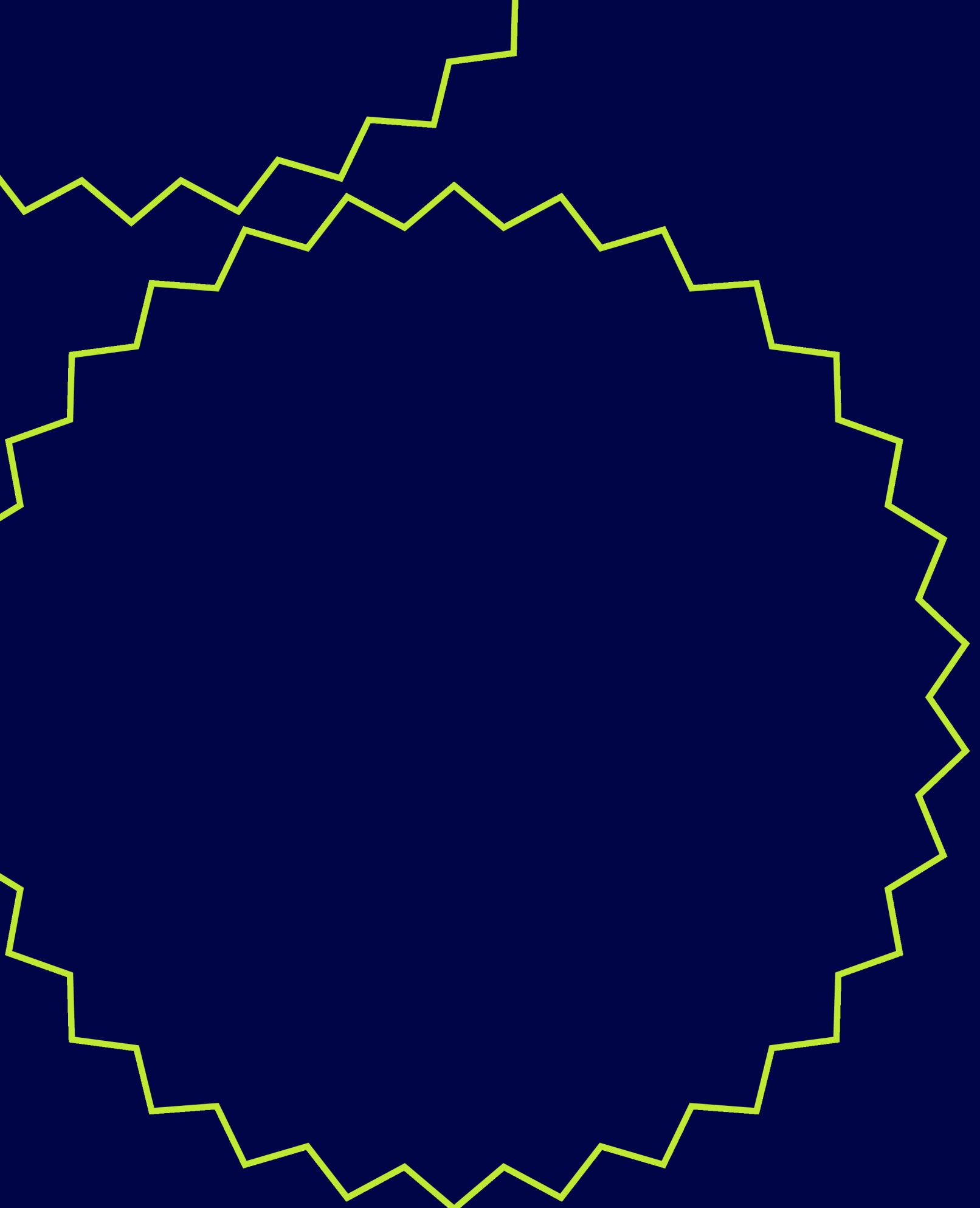
Delegate computation to a powerful server

Provide prediction functionality as package:
`import signal_sigma as sisi`

Schedule a daily cron job to retrain the
model



THANK YOU



QUESTIONS ?

CONNECT WITH US ON LINKEDIN



Benasser Haidame



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Julia Löschel

