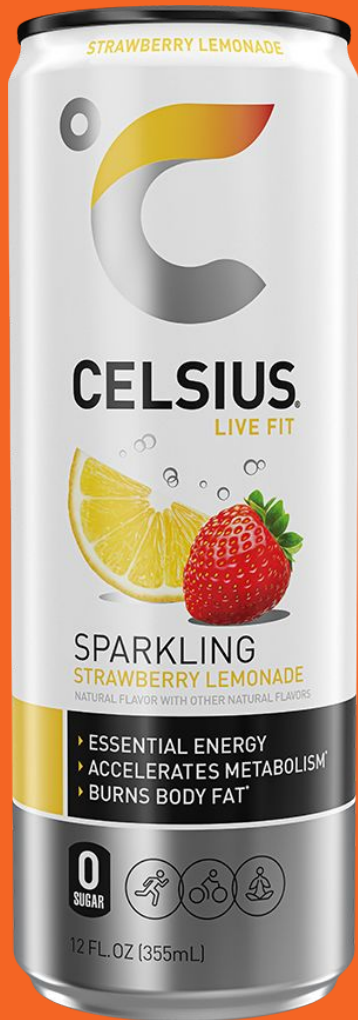

Celsius Holdings Technical Analysis

Chris Burk
Shruti Deshpande
Tadeo Espinoza
Emma Holtgrieve





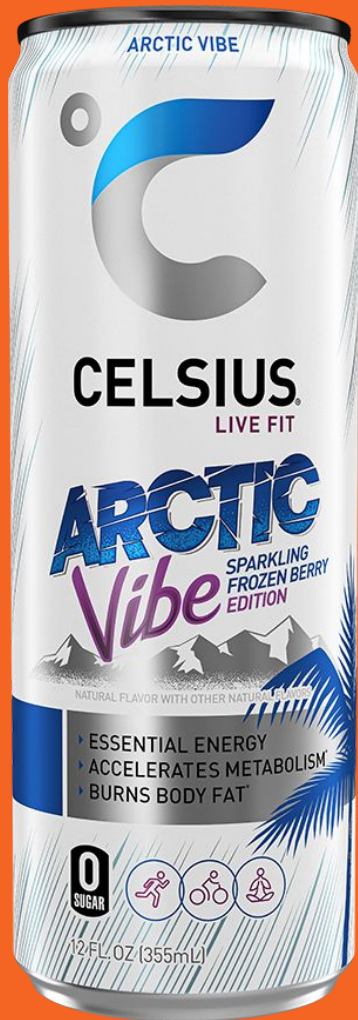
Introduction

- Founded in 2004 as a company focused on providing a healthy alternative to energy drinks
 - Launched their first drink, Celsius, in 2005. Celsius does not have artificial flavoring or preservatives
 - Celsius has been proven to boost metabolism and help burn body fat through clinical testing
 - Company went public in 2012 (**NASDAQ: CELH**) in an attempt to raise capital to expand their distribution network.
 - In 2022, PepsiCo provided a significant investment to Celsius Holdings in an attempt to expand PepsiCo investments in 'functional beverages' with lower sugar content compared to traditional soft drinks.
 - This investment allowed a further distribution expansion while PepsiCo attempted to increase its market share in the energy drink industry, following the acquisition of Rockstar Energy in 2020.
 - While rivals in the energy drink sector have experienced a modest stock growth rate of 15-20% over the past two years, Celsius stock has surged by over 200%.
-



Our Question

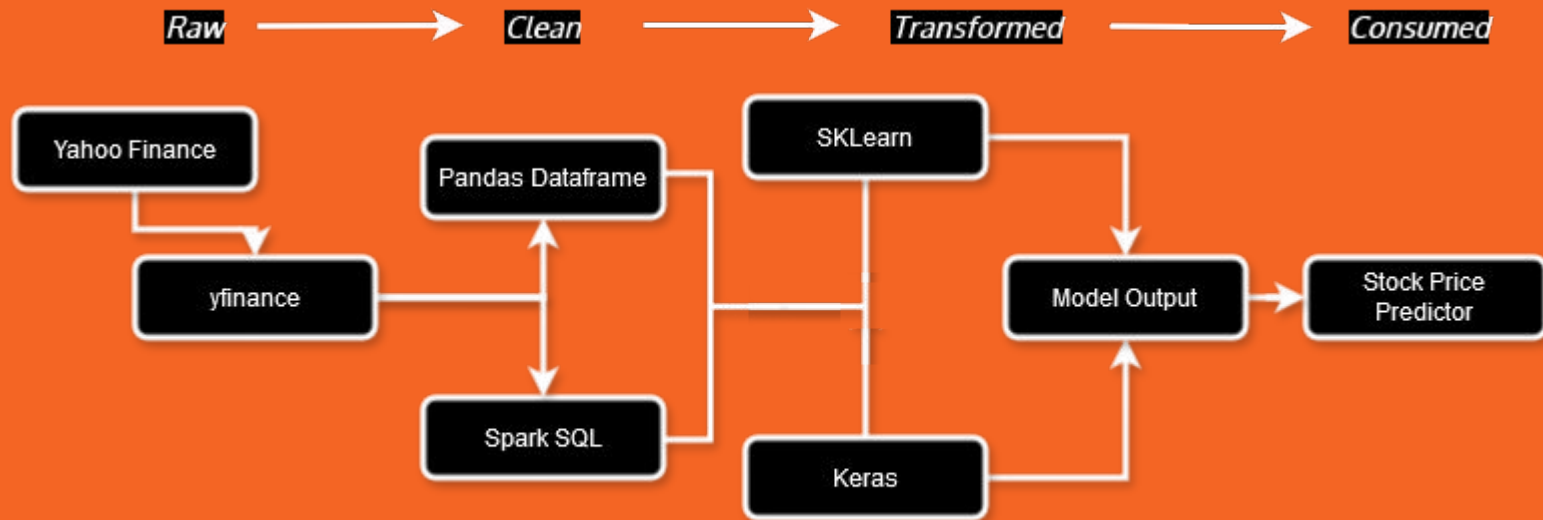
Can we build a model that, using the historical data that includes the meteoric 9000% increase in stock price between the beginning of 2020 to the end of 2023, accurately predict the 200%+ increase in Celsius Holdings stock in 2024?

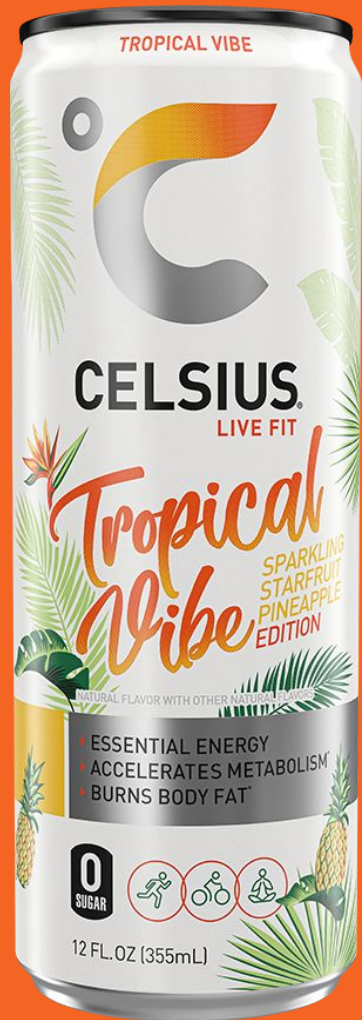


Methods/Modules Used

- yfinance
 - Python module used to pull stock history
 - Spark SQL, PySpark
 - Used to call and clean up stock history
 - Pandas
 - Used for plotting data for modeling
 - scikit-learn
 - Used for linear regression modeling
 - Keras
 - Used for LSTM modeling
 - Matplotlib
 - Used to create visualizations of modeling
 - Streamlit
 - Used to create visualization dashboard
-

What does this look like?





Capturing and Cleaning Data

- Data is exported using yfinance module
- Data can be cleaned either with Spark SQL or Pandas Dataframes for model input



Classification and Regression Modeling

- Scikit-learn used in modeling linear regression of stock
- Scikit-learn also used to model K-Nearest neighbors
- These models were not used because of strong volatility



Recurrent Neural Network Modeling

- Keras is used to create a long short-term memory recurring network that learns from historical data and moving stock price averages over a period of time



Analysis of Models

- Locally hosted Streamlit instance is used to visualize model and create predictions on stock price



Conclusion

- LSTM model was able to accurately predict stock price increase in the first three months of 2024
 - LSTM model was chosen for having less volatility overall and for stronger accuracy
 - More input variables could be used to strengthen the model in the long term
-

Thank you!

(and good luck!)
