



Institute of Technology of Cambodia

Department of Applied Mathematics and Statistics

AIIS
Department of Applied Mathematics and Statistics

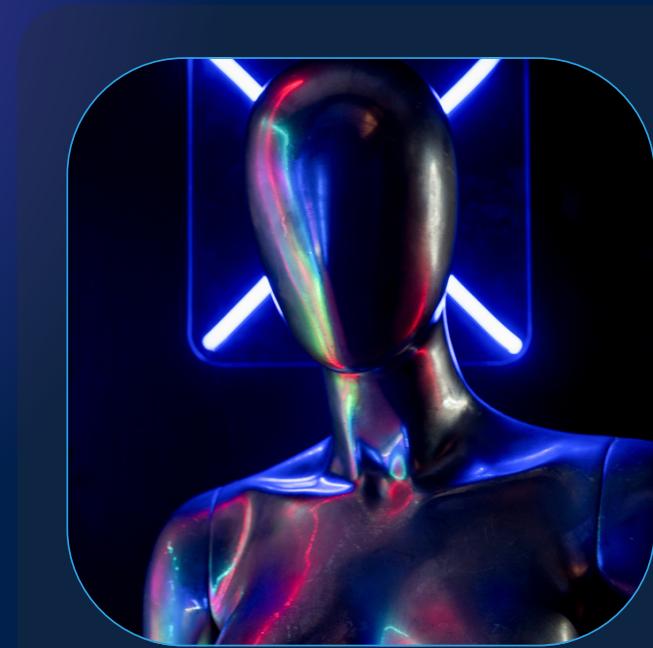
Khmer Riel Forecasting

Instructor: Chan Sophal

Team



Oun Vikreth
CEO
I3-AMS-B
ID: e2020



Mao Kimlang
Data Analysis
I3-AMS-B
ID: e2020



Pean Chhinger
Developer
I3-AMS-B
ID: e2020



Nang Sreynich
Teammate
I3-AMS-B
ID: e20200447

Content



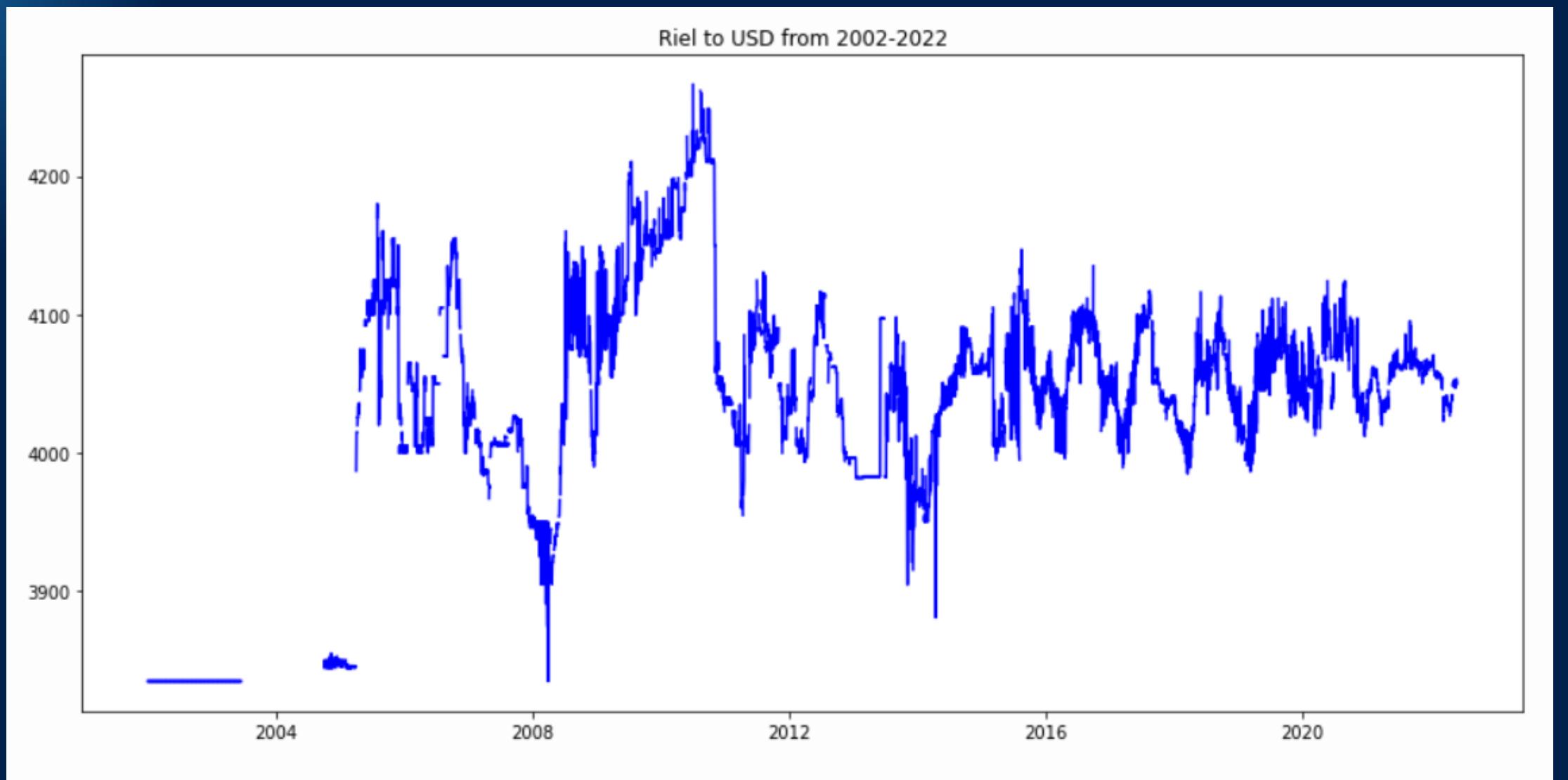
Our Mission



To make the future price prediction based on the 3 chosen models to fit the dataset that we scrap from the Yahoo Finance website. The Result part of this paper will tell you about the comparison between the 3 chosen models which performed very well for the given dataset that we had cleaned.

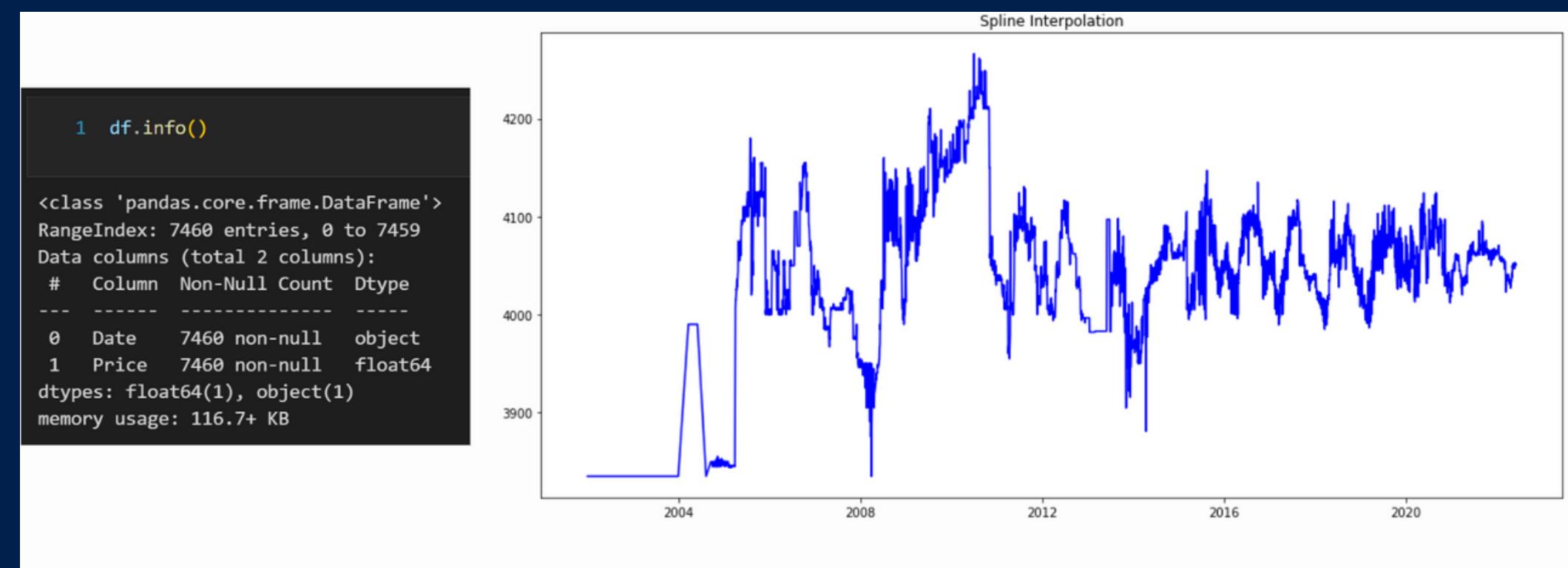


Data-Processing

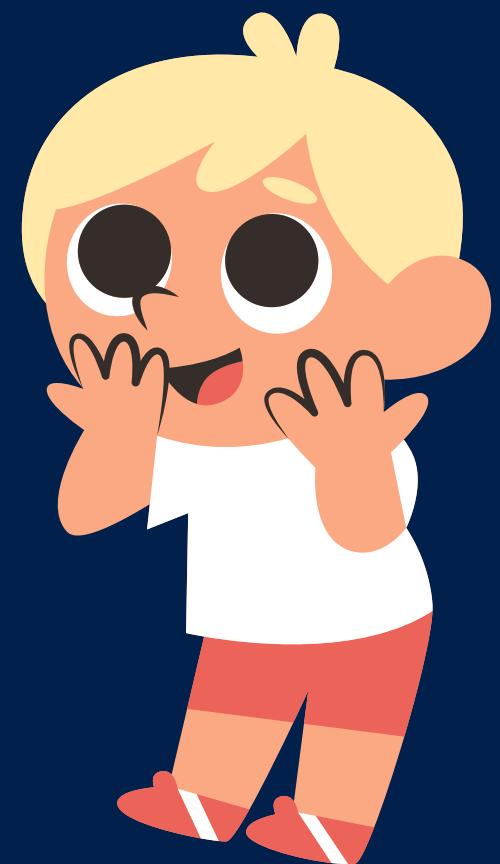


B4 Clean



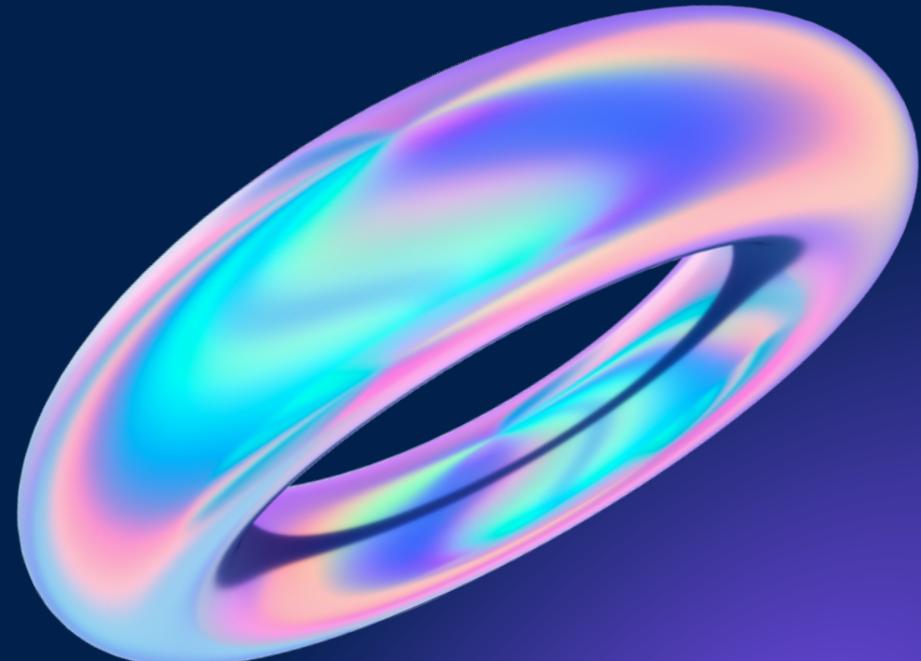


After Cleaning



Time Serie Analysis

- ARIMA Model
- ETS Model
- LSTM Model



ARIMA Model

ARIMA stands for Autoregressive Integrated Moving Average, which its model ARIMA(p, d, q)

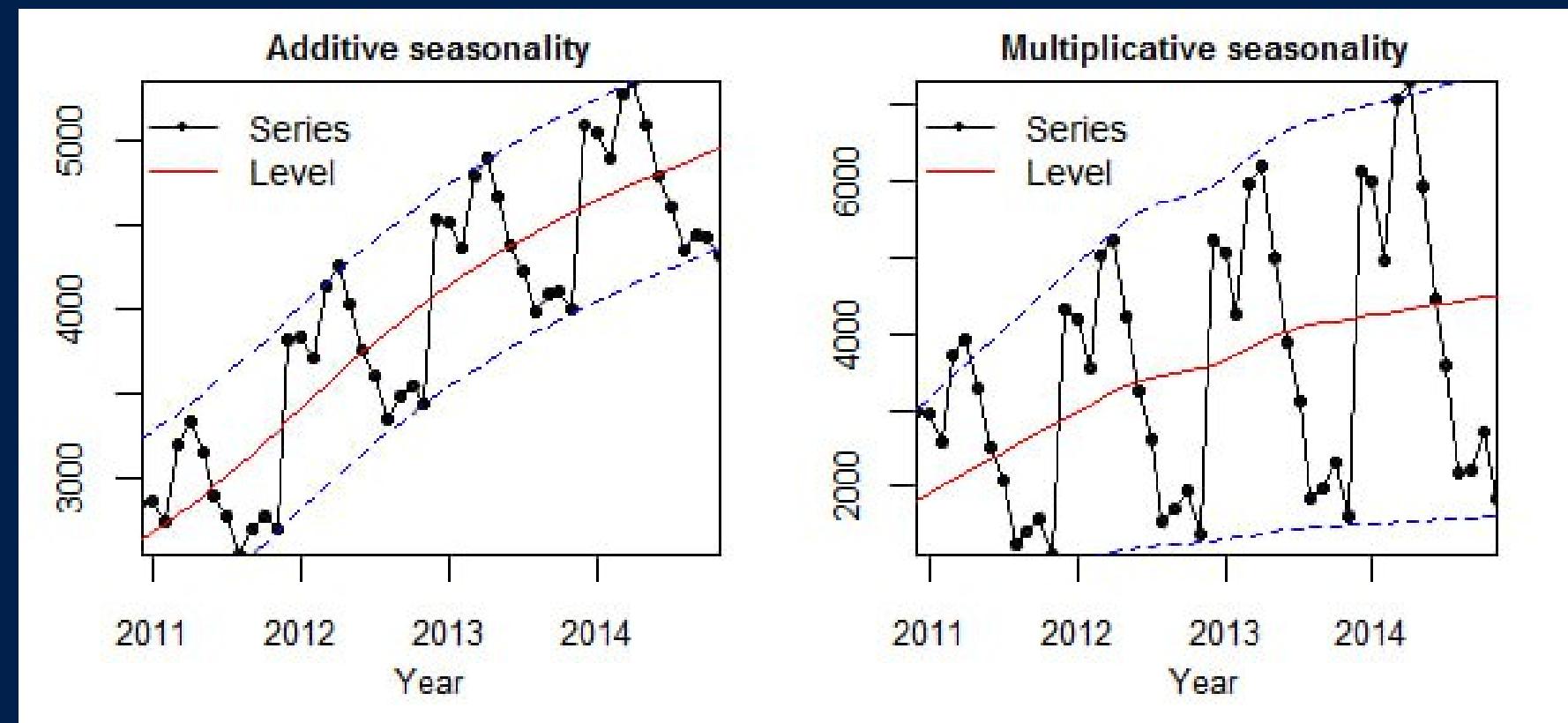
Choices of Justifies of ARIMA parameters using AIC & BIC, which both of them are statistical measures used for model selection and comparison.

- AIC stands for Akaike Information Criterion, the lower value of AIC is better
- BIC stands for Bayesian Information Criterion, the lower value of BIC is better

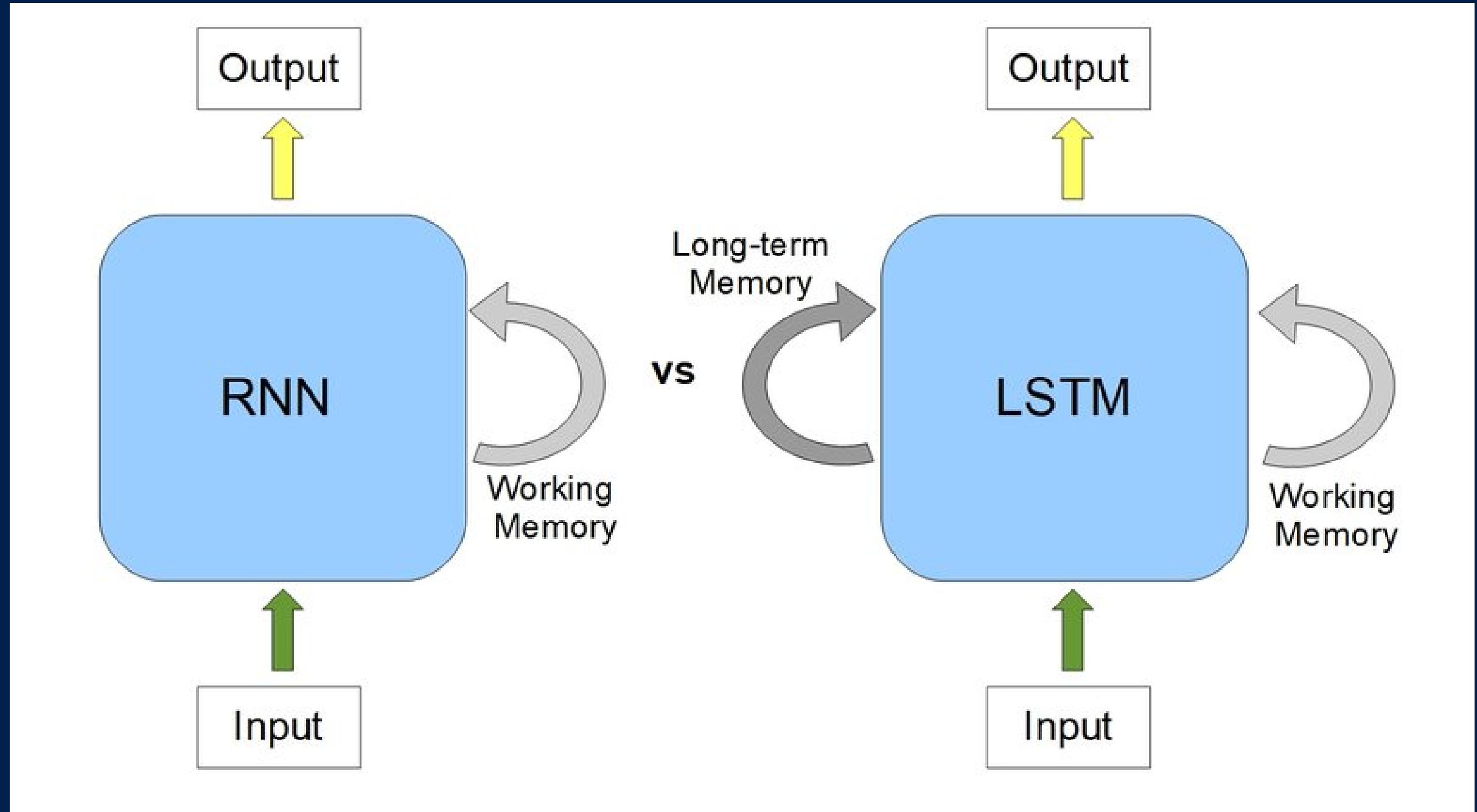
ETS Model

Triple Exponential Smoothing (TES or ETS) is a forecasting method that uses exponential smoothing to forecast time series data with seasonality. The three equations in ETS are (level, Trend, Seasonality) . The two type of seasonality is

- Additive seasonality : has exponential seasonality
- Multiplicative seasonality: has linear seasonality



LSTM Model



Result

Based on the RSME, MSE, R-squared value we can assume that the best model for forecasting the Khmer(riel) prediction is LSTM model. For ARIMA model also better than ETS model.

ETS model

Predicted Value	
2022-06-07	4110.112999
2022-06-08	4109.687805
2022-06-09	4110.352751
2022-06-10	4110.030020
2022-06-11	4109.456395
2022-06-12	4109.238843
2022-06-13	4109.276502
2022-06-14	4111.527079
2022-06-15	4110.031802
2022-06-16	4109.669123

ARIMA model

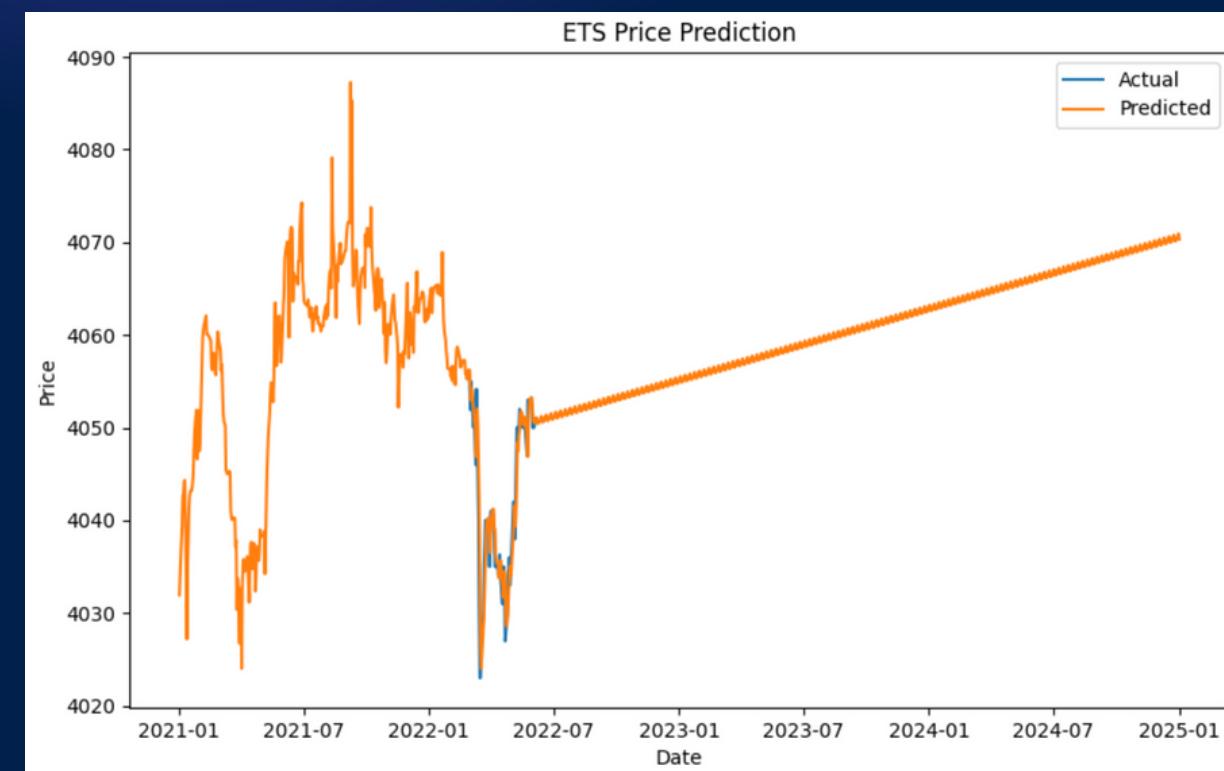
Predicted Value	
2022-06-06	4050.577506
2022-06-07	4050.910896
2022-06-08	4050.937570
2022-06-09	4050.980524
2022-06-10	4051.005857
2022-06-11	4051.034169
2022-06-12	4051.063668
2022-06-13	4051.092503
2022-06-14	4051.121385
2022-06-15	4051.150329
2022-06-16	4051.179251

LSTM model

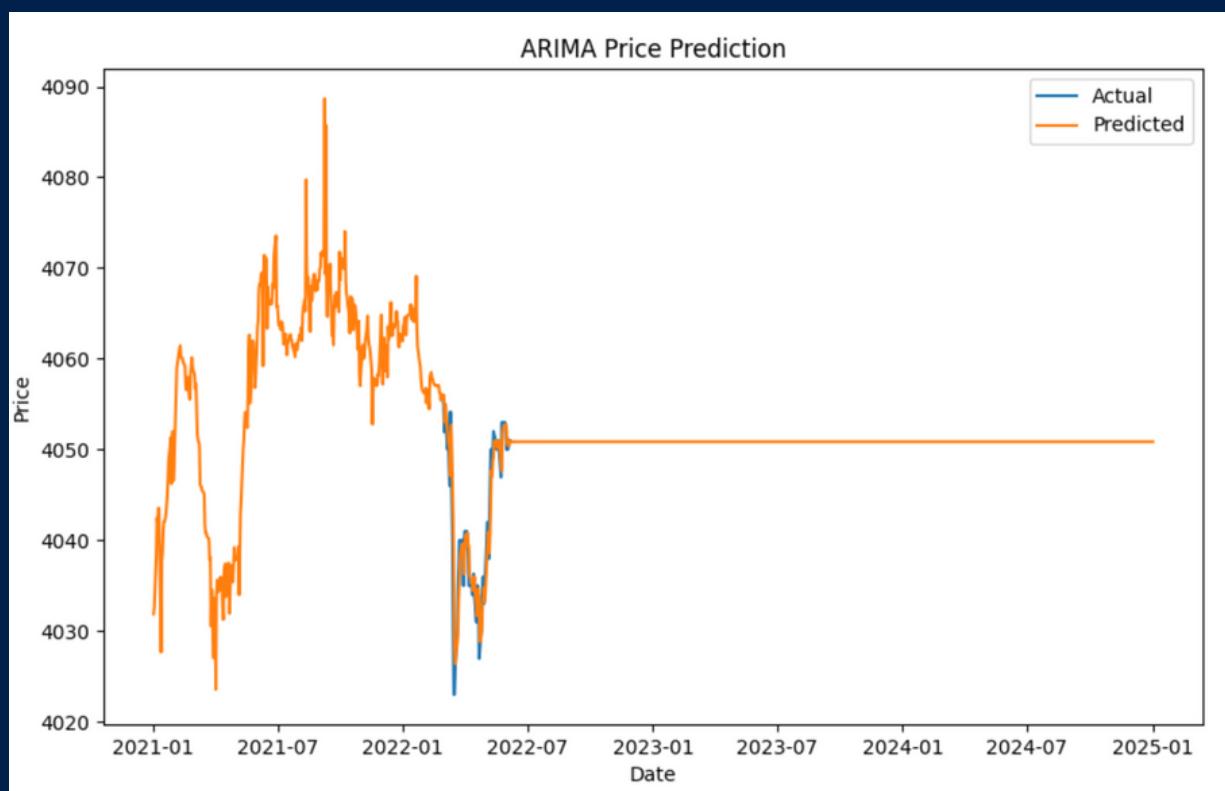
Predicted Value	
2022-06-06	4052.697
2022-06-07	4054.064
2022-06-08	4055.2515
2022-06-09	4056.296
2022-06-10	4057.248
2022-06-11	4058.1445
2022-06-12	4059.003
2022-06-13	4059.830
2022-06-14	4060.6272
2022-06-15	4060.6272

Result-Graph

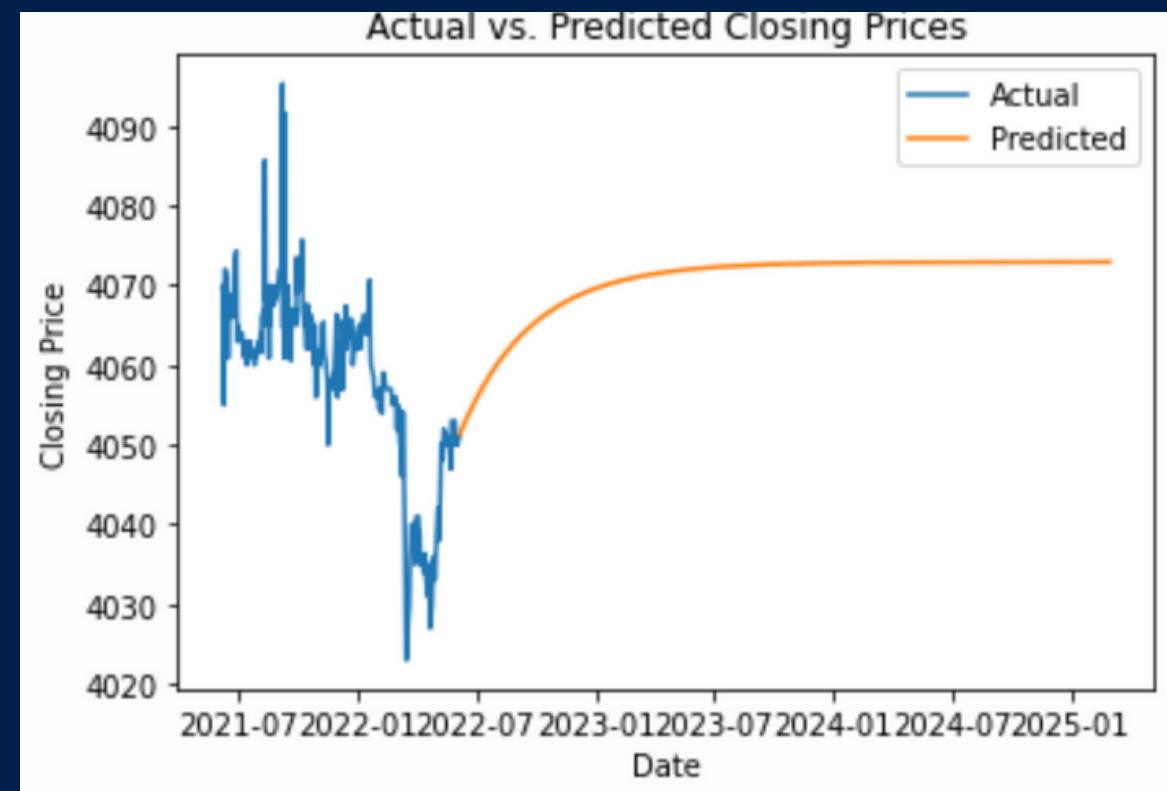
ETS model



ARIMA model



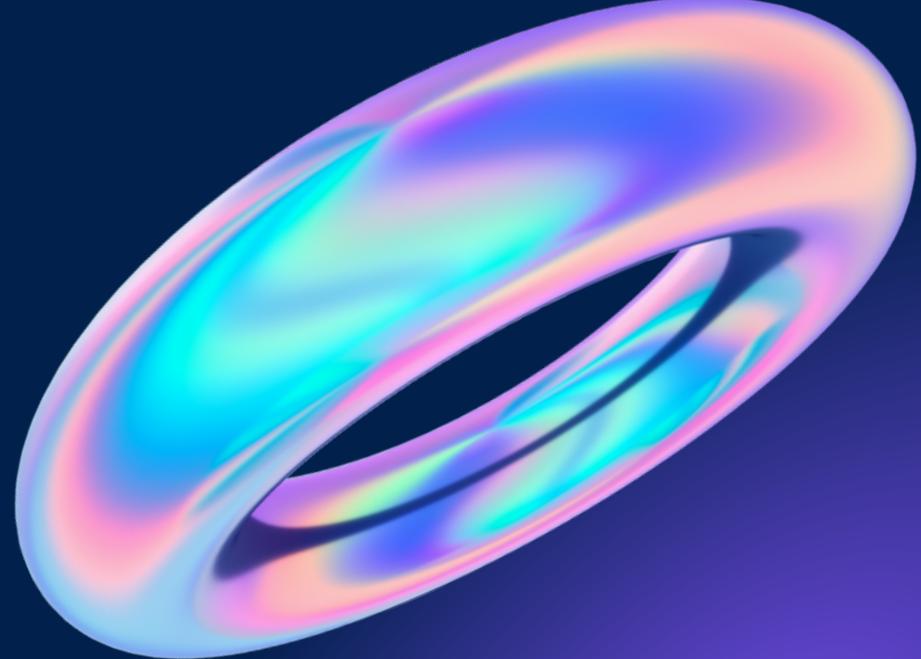
LSTM model



Characteristic of the *Predicted Price* from 01-01-2021 to 01-01-2025

Model Deployment

In what way that Flask, API and
Docker work tgt???



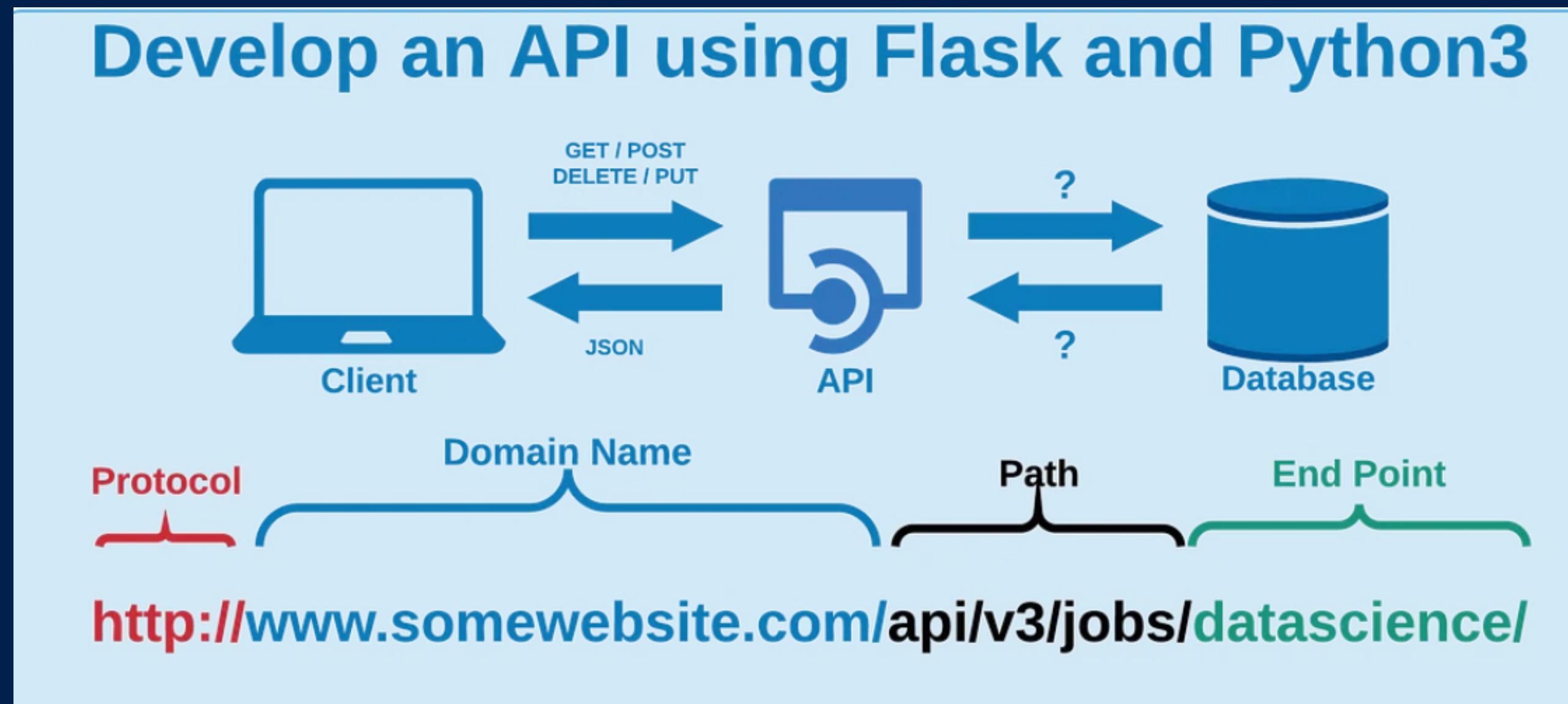
API (Application Programming Interface)

Flask is a popular web framework in Python that allows developers to build web applications. It provides a simple and flexible way to handle HTTP requests, route URLs to specific functions, and generate dynamic HTML content.



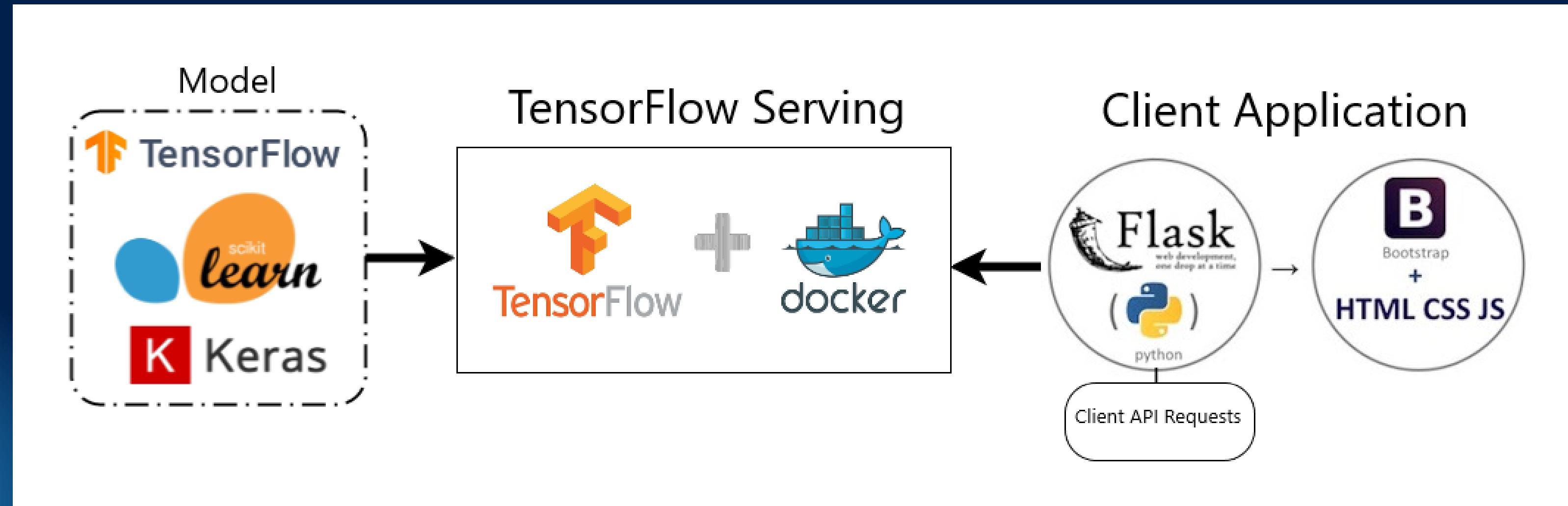
Flask

Flask is a Python web framework that allows for the quick and easy development of web applications and APIs.

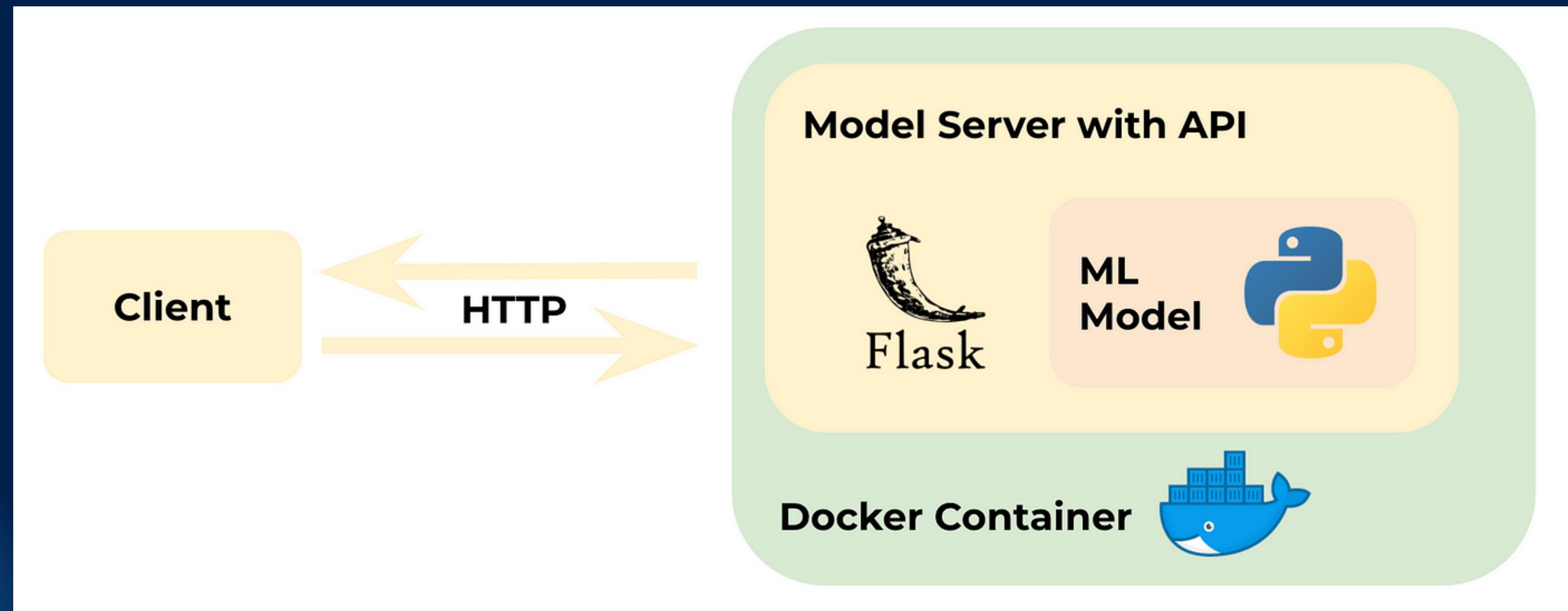


Docker

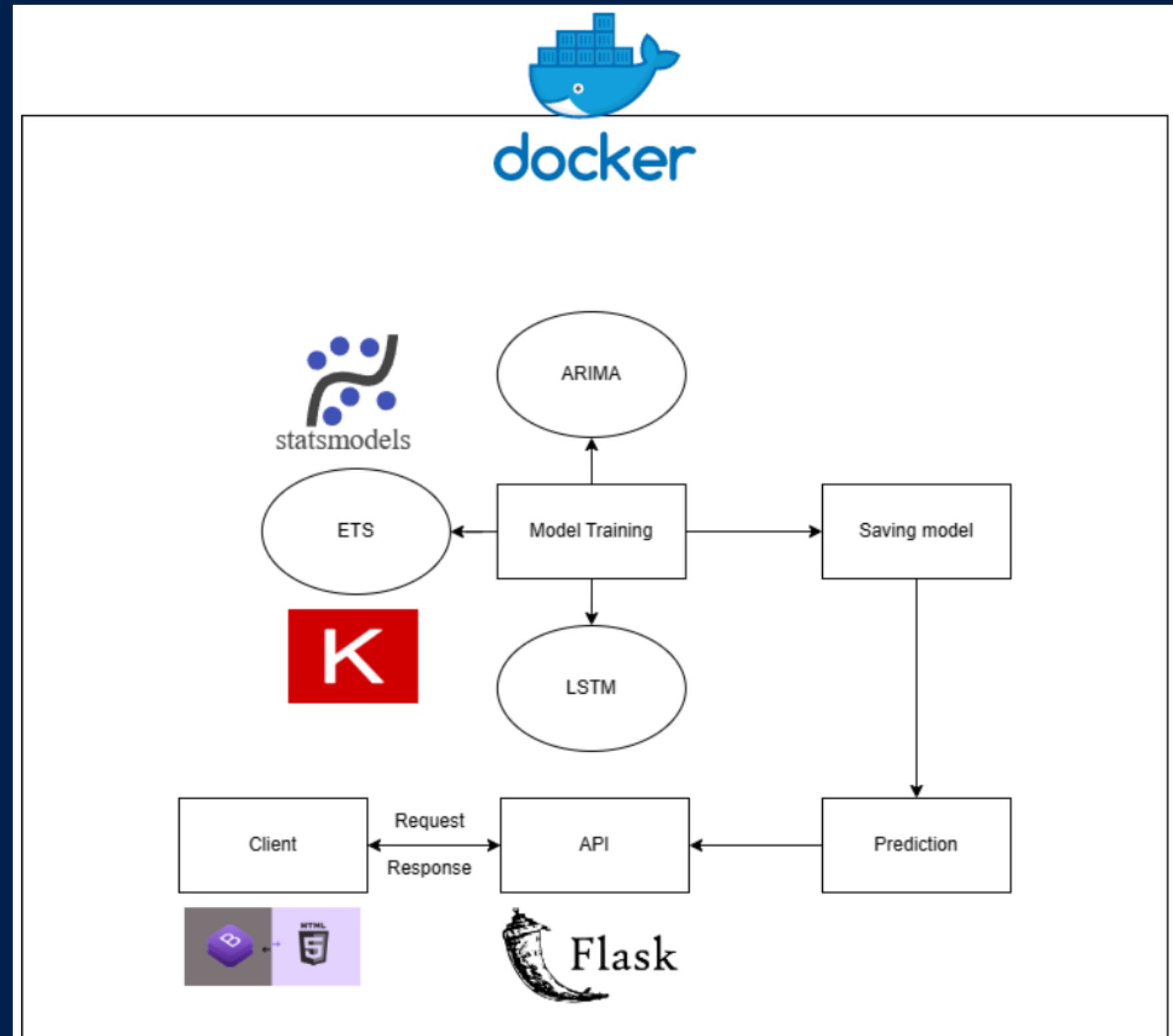
Docker is a platform designed to help developers build, share, and run modern applications.



Process of How Flash, API and Docker work tgt



Process of How Flash, API and Docker work together in Khmer Riel Forecasting





Thank You!