# Dominos Stock Price Prediction Using LSTM with Residual-Based Anomaly Detection

This project uses Long Short-Term Memory (LSTM) networks to predict Domino's stock prices and identify anomalies using residual-based anomaly detection. The model was trained on historical stock price data sourced from Kaggle under the CC0: Public Domain license, covering the period from October 16, 2019, to October 15, 2021.

Implementation Details:

1. The dataset was preprocessed by scaling the 'Close' prices using Min-Max Scaling.
2. A sliding window technique was used to create input-output pairs for time-series modeling.
3. A two-layer LSTM model was built and trained using the Adam optimizer and Mean Squared Error loss function.
4. Residual-based anomaly detection was implemented to identify unexpected market movements. Anomalies were defined as data points where residuals exceeded three standard deviations.

How to Run the Code:

1. Run the code on Google Colab.
2. Install the required libraries using the provided commands.
3. Upload the dataset (a CSV file) when prompted.
4. The output will include:
- A plot showing actual stock prices (blue), predicted prices (orange), and anomalies (red dots).
- A dynamic paragraph summarizing the results.

Dataset Information:

The dataset contains Domino's stock price data from October 16, 2019, to October 15, 2021. It is publicly available on Kaggle under the CC0: Public Domain license.
URL: https://www.kaggle.com/datasets/pratmo/dominos-pizza-stock-data

Usage Notes:

This project is designed to help analyze stock price trends and detect anomalies using deep learning techniques. The code can be extended or modified for other datasets and use cases.