Report of Real-Time Regression and Classification Using FX Rate Data

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Real-Time Data Acquisition

Currency Handling: Retrieves real-time data for key currency pairs like EUR/USD and GBP/CHF for regression and others for classification.

API Integration: Uses the Polygon API to fetch current foreign exchange rates, essential for high-frequency trading analytics.

Regression Analysis

Aggregated Statistics: Calculates mean, maximum, minimum, volatility (VOL), and Fractal Dimension (FD) from live data, essential for regression analysis.

Feature Engineering: Enhances models by incorporating correlations with major currencies like EUR/USD and USD/JPY.

Classification

Data Labeling: Labels data as FORECASTABLE, NON-FORECASTABLE, or UNDEFINED after regression analysis.

Model Training: Utilizes PyCaret to train and apply classification models on labeled data to predict currency behaviors.

Part 2:

1. Position Analysis:

Employed a univariable time series regression over a dataset of 20 points to assess the directional movement (slope) of GBPUSD and USDJPY.

Chose the currency exhibiting an upward trend for the long position, while the currency showing a downward trend was selected for the short position.

2. Strategy Implementation:

Initiated the Long/Short (L/S) strategy starting at hour five, coinciding with the completion of the preliminary phase involving regression and classification analysis.

Adjusted the trade volumes to reflect the comparative valuation of the currency pairs involved.

3. Ongoing Strategy Management:

Applied the established L/S strategy beginning at the fifth hour, with repetitions at the sixth and seventh hours.

Terminated all positions by the completion of the eighth hour, concluding this cycle of the trading strategy.

4. Evaluation of Financial Outcomes:

Computed the profit or loss (P/L) for each trading interval, with each transaction involving a $100 stake and compiled the P/L figures from each of the three trading intervals to assess the cumulative success of the L/S strategy during the specified timeframe.