Forex Data Dashboard Documentation

Overview

The Forex Data Dashboard provides real-time visualization and analysis of currency pair data, helping users track trends, volatility, and make informed trading decisions.

1. Dashboard Architecture

1.1 Core Components

- **Frontend:** Streamlit-based web interface
- **Data Processing:** Pandas for data manipulation
- **Visualization:** Plotly for interactive charts
- **Data Storage:** Snowflake Cloud Data Warehouse

1.2 Data Flow

- Data loading into Snowflake from source files
- Data preprocessing and cleaning
- Technical indicator calculation
- Visualization rendering
- User interaction handling

2. Detailed Feature Breakdown

2.1 Candlestick Chart Analysis

Components:
Price Action:

- Open Price (Green/Red candle)
- High Price (Upper wick)
- Low Price (Lower wick)
- Close Price (Green/Red candle)

Key Metrics:

- **Latest Close:** Current market price
- **Daily Change:** Absolute and percentage change
- **Period High:** Maximum price in selected range
- **Period Low:** Minimum price in selected range

2.2 Trend Analysis

Moving Averages:

SMA-20: Short-term trend indicator
  - Formula: SMA_20 = close.rolling(window=20).mean()
  - Usage: Identifies short-term price direction

SMA-50: Medium-term trend indicator
  - Formula: SMA_50 = close.rolling(window=50).mean()
  - Usage: Confirms trend direction

SMA-200: Long-term trend indicator
  - Formula: SMA_200 = close.rolling(window=200).mean()
  - Usage: Identifies major trend direction

Performance Metrics:

  - **Period Return Calculation:**
    period_return = ((filtered_data['close'].iloc[-1] - filtered_data['close'].iloc[0]) / filtered_data['close'].iloc[0]) * 100

2.3 Volatility Analysis

Components:

Daily Price Change:
  - **Formula:** daily_change = close - open
  - **Percentage:** daily_change_pct = (close - open) / open * 100

Daily Range:
  - **Formula:** daily_range = high - low
  - **Percentage:** daily_range_pct = daily_range / open * 100

Volatility Metrics:
  - **Average Daily Range:** daily_range_pct.mean()
  - **Maximum Daily Range**: daily_range_pct.max()
  - **Standard Deviation:** daily_change_pct.std()

2.4 Currency Pair Comparison

Features:

Normalized Comparison:
- Base value: 100
- Formula: normalized_close = close / first_close * 100
- Purpose: Equal comparison of different currency pairs

Actual Rate Comparison:
- Raw exchange rate comparison
- Multiple currency pair visualization