Strategy Backtester - User Manual

# Table of Contents

1. Introduction

2. Installation

3. Quick Start

4. Features

5. Usage Guide

6. Output Files

7. Troubleshooting

8. Support

# Introduction

The Strategy Backtester is a powerful Python-based tool for testing cryptocurrency trading strategies using historical data from Binance. It allows you to evaluate trading strategies before risking real capital.

## Key Features

* Real-time data fetching from Binance
* Multiple pre-built trading strategies
* Detailed performance metrics
* Excel-formatted reports with trade analysis
* Easy strategy customization

# Installation

## Prerequisites

* Python 3.x
* Git

## Setup Steps

1. Clone the repository:

git clone [repository-url]  
cd strategy-backtester

2. Create a virtual environment:

# Windows  
python -m venv venv  
.\venv\Scripts\activate  
  
# Linux/Mac  
python3 -m venv venv  
source venv/bin/activate

3. Install dependencies:

pip install -r requirements.txt

# Quick Start

1. Activate your virtual environment (if not already activated)

2. Run the backtester:  
```bash  
python main.py  
```

3. Find results in the `backtester\_output\_[DATE]` directory

# Features

## Implemented Strategies

### MACD Strategy

* Uses MACD line crossing its EMA
* Configurable parameters for different timeframes
* Suitable for trend following

### RSI-EMA Strategy

* Combines RSI and EMA indicators
* Entry: RSI > 30 and price > EMA(21)
* Exit: RSI > 70 or price < EMA(21)

## Technical Indicators

* EMA (Exponential Moving Average)
* MACD (Moving Average Convergence Divergence)
* RSI (Relative Strength Index)

# Usage Guide

## Basic Usage

Run the backtester with default settings:

python main.py

# Output Files

## Location

All output files are saved in a directory named:

backtester\_output\_YYYY\_MM\_DD/

## File Types

### Trade Results (backtester\_results\_YYYYMMDD\_HHMMSS.xlsx)

* Entry Time
* Entry Price
* Exit Time
* Exit Price
* Strategy Name
* PnL (Profit/Loss)
* Trade Status

### Summary Metrics (summary\_metrics\_YYYYMMDD\_HHMMSS.xlsx)

* Total Trades
* Win Rate
* Total PnL
* Average PnL

# Troubleshooting

## Common Issues

### Installation Problems

* Ensure Python 3.x is installed
* Use a fresh virtual environment
* Update pip: pip install --upgrade pip

### Data Fetching Issues

* Check internet connection
* Verify Binance API availability
* Ensure symbol names are correct

### Excel Output Errors

* Install openpyxl: pip install openpyxl
* Close any open Excel files
* Check write permissions in output directory

# Support

* Check the [Issues] section on GitHub
* Create a new issue with detailed description
* Include system information and error messages

# Footnote: Suggested Improvements

## Immediate Enhancements

### Risk Management Features

* Implement stop-loss and take-profit functionality
* Add position sizing based on risk percentage
* Include maximum drawdown calculations

### Advanced Analytics

* Add visualization of trade entries/exits
* Include equity curve analysis
* Calculate Sharpe ratio and other risk metrics

### Strategy Enhancements

* Add support for multiple timeframes
* Implement portfolio backtesting
* Add support for short positions

### User Interface

* Create a web-based dashboard
* Add real-time strategy monitoring
* Include interactive parameter optimization

### Data Management

* Add support for multiple data sources
* Implement data caching
* Add custom timeframe resampling

## Future Roadmap

### Version 2.0

* Machine learning strategy integration
* Real-time paper trading mode
* Strategy optimization using genetic algorithms

### Version 3.0

* Live trading integration
* Mobile app for monitoring
* Cloud-based backtesting