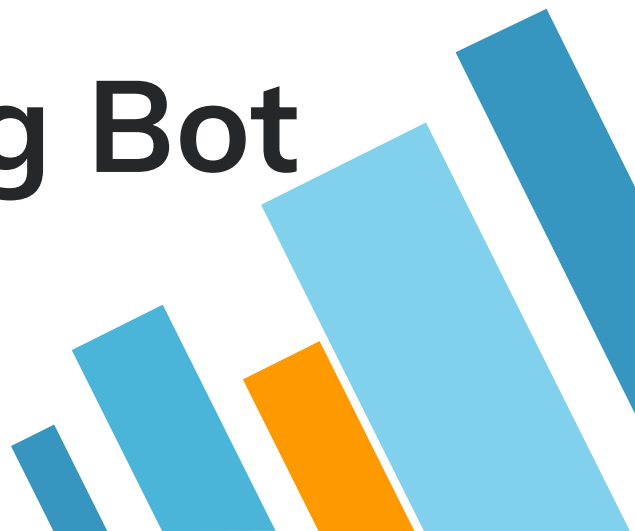# Developing FinByte's API backend & FinByte's Trading Bot

About FinByte

FinByte is a fintech startup centered around growing one's investment using algorithmic trading strategies.

Problem - Seeing continuous decline in interest rates of fixed deposits and increasing inflation rates in the country, there was a strong need for a firm which focuses on growing people's money and insuring their future. Current average FD interest rate is around 5% which is equal to the current inflation rate (which is going to increase in coming years). Investing money in FD is old-fashioned. FD no more grows your money and serves as safety only. So, the need for a safe medium which grows your money arises.

Algo Trading

Algorithmic trading, is a method of executing orders using automated pre-programmed trading instructions accounting for variables such as time, price, and volume. It is the process of using computers programmed to follow a defined set of instructions for placing a trade in order to generate profits at a speed and frequency that is impossible for a human trader.

Manual intervention is needed for placing orders as full automation is not permitted.

Introduction

FinByte API lets you execute orders in real time, manage user portfolios and stream live market data. All inputs are form-encoded parameters and responses are JSON (apart from a couple exceptions). The responses are Gzipped. Standard HTTP codes are used to indicate success and error states with accompanying JSON data. The API endpoints are *not* cross site request enabled, hence cannot be called directly from browsers.

An api_key + api_secret pair is issued and you have to register a redirect url where a user is sent after the login flow.

FINBYTE USER CONSOLE

User Profile

pycrash ✎
as**@**.com
UID: 62807258 | (UTC+5:30) Asia/Calcutta ✎

Verification
Verified Gold User

Account Security
Security Level: High

Trading Fee Level
Maker: 0.01%,Taker:0.005%%

Email ✓
as**@**.com

Phone ✓
**9966

Google Verification ✓
Enabled

API
3 API Enabled

Trading Bots
0 Running

Password ✓
Enabled

Trust this device and IP

Response Structure

All GET and DELETE request parameters go as query parameters, and POST and PUT parameters as form-encoded (application/x-www-form-urlencoded) parameters, responses from the API are always JSON.

A successful 200 OK response always has a JSON response body with a status key with the value success. The data key contains the full response payload.

A failure response is preceded by the corresponding 40x or 50x HTTP header. The status key in the response envelope contains the value error. The message key contains a textual description of the error and error_type contains the name of the exception.

Successful request

HTTP/1.1 200 OK
Content-Type: application/json

```
{
    "status": "success",
    "data": {}
}
```

Failed request

HTTP/1.1 500 Server error
Content-Type: application/json

```
{
    "status": "error",
    "message": "Error message",
    "error_type": "GeneralException"
}
```

Exceptions

TokenException	Indicates the expiry or invalidation of an authenticated session. This can be caused by the user logging out, a natural expiry, or the user logging into another instance.
UserException	Represents user account related errors
OrderException	Represents order related errors such placement failures, a corrupt fetch etc
InputException	Represents missing required fields, bad values for parameters etc.
NetworkException	Represents a network error where the API was unable to communicate with the OMS (Order Management System)
DataException	Represents an internal system error where the API was unable to understand the response from the OMS to inturn respond to a request
GeneralException	Represents an unclassified error.

Common HTTP error codes

400	Missing or bad request parameters or values
403	Session expired or invalidate. Must re login
404	Request resource was not found
405	Request method (GET, POST etc.) is not allowed on the requested endpoint
429	Too many requests to the API (rate limiting)
500	Something unexpected went wrong
502	The backend OMS is down and the API is unable to communicate with it
503	Service unavailable; the API is down
504	Gateway timeout; the API is unreachable

API rate limit

end-point	rate-limit
Historical candle	3req/second
Order placement	10req/second
All other endpoints	10req/second

Types of Bots

Following types of bot were made according to different trading strategies

- Spot Grid
- Futures Grid
- Smart Rebalance
- DCA
- Own Strategy

Spot Grid `Spot`

Volatility killer, sell high & buy low

Create Bot

Futures Grid `Short`

Long/Short to profit from both trends

Create Bot

Smart Rebalance `Spot`

Investment portfolio, Risk spread, Long-term

Create Bot

DCA `Spot`

Spot Grid

It enables you to place a series of purchase and sell orders within a given price range. When a sell order is fully executed, the bot instantly places another purchase order at a lower grid level, and vice versa
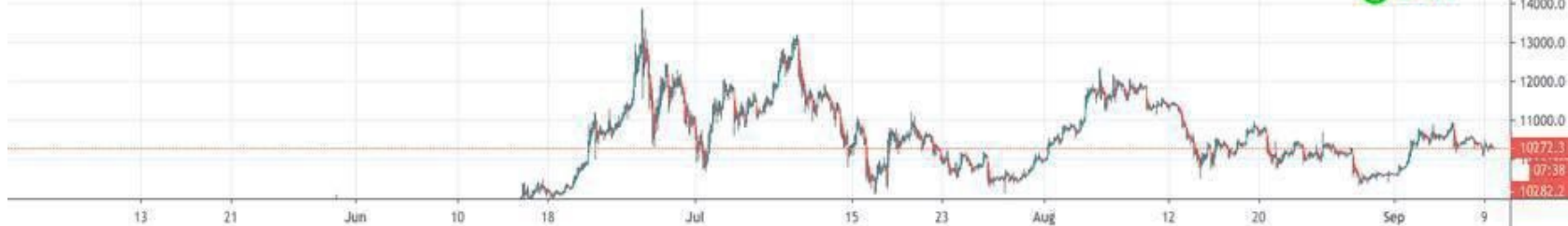
Image Src - https://miro.medium.com/max/3000/0*p51fjK_zppThXf9b.jpg

Spot Grid `Spot`

Volatility killer, sell high & buy low

Futures Grid `Short`

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Smart Rebalance `Spot`

Investment portfolio, Risk spread, Lo

DCA `Spot`

Spot Grid

🎓 Tutorial

AI Parameters   Customize

ONGC ▾   146 🕯️

Price Range (USDT)	133 - 155
No. of Placed Orders	100
Profits/Grid (after -0.08% fee)	0.30% ~ 0.69%

Total Investment   Use ONGC ⬜

Min. 500   Rs.

Tr Available Balance   0 ⇅

Create

Spot Grid

AI Parameters	Customize

ONGC ▼   146 ▯◊

Price Range   ✎ Fill AI Parameters

Low	Rs.	~	High	Rs.

No. of Placed Orders

2-100	—	+

Interval(Rs.)   0

Profits / Grid   --

Total Investment   Use ONGC ⬤

Min. 500	Rs.

⫿

Tr Available Balance   0 ⇕

Advanced Settings (optional) ⌃

Stop Price   ⬤

Take profit price   ⬤

Entry Price

Spot Grid Spot

Volatility killer, sell high & buy low

Futures Grid Short

Long/Short to profit from both trends

Smart Rebalance Spot

Investment portfolio, Risk spread, Lo

Order Confirmation

Will transfer from the [Trading Account] 4000Rs.

Stock	ONGC
Price Range(Rs.)	133-155
Placed Orders	5
Profits per Grid	0.30%~0.69%
Trading Fee	0.08%

Confirm

Running 1

Spot Grid
ONGC

0D 0H 16M

0 arbitrages in 24hrs/Total 0 arbitrages

Investment	Total Profits Rs.
4000	**0** 0.00%

Grid Profits	Floating PNL	Grid APR
0	0	--

Current Price	Entry Price	APR
146 00	146	--

Price Range 133 ~ 155

51 49

Add investment	Details

Running 1

Spot Grid ONGC

Spot Grid
ONGC

0D 0H 14M
0 arbitrages in 24hrs/Total 0 arbitrages

Investment USDT
4000

Total

Grid Profits
0

Floating PNL
0

Current Price
0.99966 00

Entry Price
146

Price Range   133 ~ 155

Add investment

Open Orders(22)	Order History	Parameters

INR Positions	ONGC Positions
13	9

Buy	13			9	Sell
No.	Amount(USDC)	Price(USDT)		Amount(USDC)	No.
1	1	145	1	1	1
2	1	144	1	1	2
3	1	143	1	1	3
4	1	142	1	1	4
5	1	141	1	1	5
6	1	140	1	1	6
7	1	139	1	1	7
8	1	138	1	1	8
9	1	137	1	1	9
10	1	136		1	
11	1	135		1	
12	1	134			

Futures Grid

The way a Futures Grid Bot works is similar to a Classic Grid Bot, both of them can make passive income by buying low and selling high. But Futures Grid has two unique features that can help investors make more profits.

1) The Futures Grid Bot allows you to long or short when starting the bot.
2) Leverages are supported on Futures Grid. Presently, it supports up to 2 times leverage, which can increase the returns of your success trades by 2 times.

   Higher returns imply higher risks.

Spot Grid `Spot`

Volatility killer, sell high & buy low

Futures Grid `Short`

Long/Short to profit from both trends

Smart Rebalance `Spot`

Investment portfolio, Risk spread, Lo

DCA `Spot`

Futures Grid

AI Parameters	Customize

-- ▼   0 ▯▯

Leverage	2x
Price Range(Rs.)	--
No. of Placed Orders	2
Profits/Grid	--

Long	Short

Investment (Margin)   Each grid: NaN (0 lots)

Rs.

⊞ ──────────────────────────

Tr Available Balance   ⇄

Advanced Settings (optional) ⌃

📉 Stop Price   ⬤

📈 Take profit price   ⬤

🕐 Entry Price   ⬤

Create(Long)

Spot Grid `Spot`

Volatility killer, sell high & buy low

Futures Grid `Short`

Long/Short to profit from both trends

Smart Rebalance `Spot`

Investment portfolio, Risk spread, Lo...

DCA `Spot`

Futures Grid

🎓 Tutorial

AI Parameters | **Customize**

-- ▼ | 0 00

| Long | Short |

50% Long | Short 50%

✏️ Fill AI Parameters

Price Range | Leverage 2x ⌄

| Low -- | ~ | High -- |

No. of Placed Orders

| 2-100 | − | + |

Interval(--) | 0

Profits/Grid(after -0.00% fee) | --

Investment (Margin) | Each grid: NaN (0 lots)

| | Rs. |

Tr Available Balance | ⇅

Est. Liq. Price | --

Smart Rebalance

The core of this strategy is to increase the total amount of assets while maintaining the portfolio percentage basically unchanged. Assuming that you want to allocate 40% of your fund to ONGC, 30% to AIRTEL and 30% to TATA STEEL, if you are simply holding, the value of these tokens may change over time and the portfolio percentage will soon no longer be 40% - 30% - 30%. With a Smart Rebalance Bot, the percentage can always be close to your expectation as once it deviates from the initial setting, the bot will make a rebalance.

Smart Rebalance (Cont'd)

Let's say your portfolio percentage has changed from 40% - 30% - 30% to 45% - 30% - 25%, the bot will then sell some ONGC to reduce its percentage from 45% to 40%, meanwhile buy some TATA STEEL to make it back to 30%. In a sense, grid trading is to buy low and sell high between two tokens, while Smart Rebalance is to do so among all the tokens in your portfolio.

AI Rebalance

24H ⇕ 7D ⇕ 30D ⇕

+ Customize

Metals

Aggressive Metals

+3%   +14%   +45.36%

24H   7D   30D

● Tata Steel ● JSW Steel ● NALCO ● SAIL

Introduction   **Create Now**

Banks

Aggressive Banks

+8%   +26.1%   +28.1%

24H   7D   30D

● ICICI ● HDFC ● KOTAK ● Central Bank ● SBI

Introduction   **Create Now**

Cement

Aggressive

+8.62%   +22.83%   +27.11%

24H   7D   30D

● Ultratech ● ACC ● J.K ● HIL ● KCP

Introduction   **Create Now**

Nifty 50

Growth

-0.63%   +17.07%   +33.2%

24H   7D   30D

● TATA Steel ● Adani Ports ● HCL ● Bajaj Auto

Introduction   **Create Now**

Agriculture

Moderate Financial giant

Giant Jump

Moderate Trading Giant

(background, partially visible)

Volatility killer, sell...

Futures Gri...

Long/Short to prof...

Smart Reba...

Investment portfol...

DCA Spot

Make profits from r...

Smart Rebalance

✓ AI Proportion   Equal   By market cap

+ Add Stocks

Total Investment   Multi-stocks ⬤

Min. 0   Rs.

[slider]

Tr Available Balance   ⇄

Advanced Settings (optional) ⌃

⚙ Auto-Rebalance   By Stock Ratio 1% ›

📈 Stop Loss By Ratio   Set ›

📉 Take Profit By Ratio   Set ›

Create

Futures Grid [Short]

Long/Short to profit from both trends

Smart Rebalance [Spot]

Investment portfolio, Risk spread, Lo...

DCA [Spot]

Make profits from regular investment

Volatility killer, sell high & buy low

USER'S PROFIT CONSOLE

Total Profits Rs. ⊙

-1.822   Assets in Running Rs. **0**   Today's Profit Rs. **0**

Historical Profits >

Total Profit
Updated per hour

| 7 Days | 30 Days | 90 Days |

5
4
3
2
1
0
2021-08-27   2021-11-24
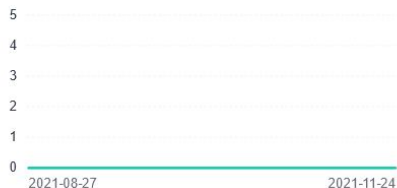
Daily Profit
Real-time update

| 7 Days | 30 Days | 90 Days |

5
4
3
2
1
0
                11-24

Profit Distribution
Updated per hour

Spot Grid ------------------------------- -1.822

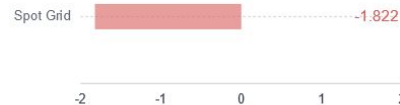-2   -1   0   1   2

Win Rate Statistics
Updated per hour

THANK YOU