Extract clear insights from Uniswap trading activity

An Ethereum wallet analysis tool using TypeScript and Ethers.js

Why analyzing an Ethereum wallet?

Computing the Profit & Loss (P&L) of a wallet is invaluable:

- Traders can evaluate performance
- Protocols & investors gain insights into wallet behaviors
- Risk managers can assess exposure to specific tokens

The challenges of analyzing an Ethereum wallet

Traditional blockchain explorers like Etherscan give fragmented data, making it difficult to track how trades impact a wallet over time.

Multihop swaps further complicate things, distributing liquidity across different pools with varying prices.

Example of raw transaction logs on Etherscan

Transaction Receipt Event Logs

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Address 0x7fc66500c84a76ad7e9c93437bfc5ac33e2ddae9 (Aave: AAVE Token)

Name Transfer (index_topic_1 address from, index_topic_2 address to, uint256 value) View Source

Topics

0 0xddf252ad1be2c89b69c2b068fc378daa952ba7f163c4a11628f55a4df523b3ef

1: from Dec → 0x59c38b6775Ded821f010DbD30eCabdCF84E04756

2: to Dec → 0x51C72848c68a965f66FA7a88855F9f7784502a7F

Data value : 19855711927936440948 Dec Hex

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Address 0x1f9840a85d5af5bf1d1762f925bdaddc4201f984 (Uniswap Protocol: UNI token)

Name Transfer (index_topic_1 address from, index_topic_2 address to, uint256 amount) View Source

Topics

0 0xddf252ad1be2c89b69c2b068fc378daa952ba7f163c4a11628f55a4df523b3ef

1: from Dec → 0x51C72848c68a965f66FA7a88855F9f7784502a7F

2: to Dec → 0x59c38b6775Ded821f010DbD30eCabdCF84E04756

Data amount : 606626614486679420928 Dec Hex

To solve this, I built an Ethereum wallet analysis tool which

- Fetches transaction history via Etherscan
- Parses Ethereum logs with Infura to detect Uniswap V2 & V3 swaps
- Computes P&L for each ERC-20 token held in the wallet

Now, transactions are aggregated and it is straightforward to compute the PNL

```
PNL Analysis:
SPX:
  Realized PNL: 42641.754687724504 USD
  Unrealized PNL: - USD
  Fees: 60.93135946214645 USD
Trade history:
```

(index)	DATE	TYPE	WETH	SPX	USD	DEX	TX
0	2024-11-20T18:15:11.000Z	'buy'	6.33	39128.777	19704	'UNISWAPV3'	'0xad83...b379ca'
1	2024-11-20T18:15:11.000Z	'buy'	3.408	21344.682	10610	'UNISWAPV2'	'0xad83...b379ca'
2	2024-11-20T21:50:35.000Z	'buy'	2.434	14957.557	7576	'UNISWAPV2'	'0xd8b1...f97f23'
3	2025-01-09T22:05:23.000Z	'sell'	24.219	75242.439	80532	'UNISWAPV2'	'0xdb8a...75fbfd'

```
PNL: {
  realizedPNL: 42641.754687724504,
  unrealizedPNL: 0,
  bought: 37890.04512827653,
  sold: 80531.79981600103,
  balance: 188.57754139999452,
  fees: 60.93135946214645
}
```

Next step is real-time analysis

Streaming real-time transactions into an OLAP database for deeper insights would enable:

- Real-time trade tracking
- Discovering liquidity trends
- Analyzing cross-pool behaviors

What about you?

I am curious to know how you are approaching DeFi transaction analytics at scale.

What strategies have worked for you when analyzing complex swap patterns? Let’s discuss in the comments.

Thanks for reading!