Hello, I wanted to share some results on a recent paper I submitted to arxiv (will be available early next week).

I used the Mapper algorithm, a topological data analysis (TDA) tool, to identify six statistically distinct MEV behaviors within an Olympus MEV dataset, curated from on chain data [(can read more here)](#).

Mapper algorithm lets us transform continuous spaces of datasets to discrete graph structures while preserving topological and geometric information. I [wrote a preview post on mirror](#) which contains charts and a paper overview.

The initial findings are very interesting because Mapper can group MEV addresses that perform the same type of actions (atomic dex-to-dex arbitrage and liquidations) and qualify distinct behavior from a statistical point of view. Some questions that can be initially answered are:

1. Is the MEV bot performing dex-to-dex arbitrage in reaction to human trading volume?

2. Is the MEV bot performing dex-to-dex arbitrage in reaction to liquidations?

3. Is the MEV bot performing dex-to-dex arbitrage in reaction to broader market conditions?

The TDA toolset contains very general tools and it's relatively straight forward to adapt code to any MEV (or non-MEV) dataset and can be integrated into existing scikit-learn ML pipelines. Based off of these initial findings, I expect to build a more general end to end machine learning pipeline from these results.

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image

793×642 98.3 KB

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