Modern Portfolio Theory

Trade-off between risk and returns.

RLUSD-MPT combines the rigor of traditional financial theory with the transparency and automation of blockchain, making it a valuable tool for crypto investors and DeFi ecosystems.

The Problem & Opportunity

The Problem:

- The cryptocurrency market is highly volatile, with assets that often exhibit unpredictable and correlated price movements. Investors struggle to balance risk and return effectively.
- Traditional portfolio optimization lack transparency and are prone to manipulation.

Opportunity

- RLUSD-MPT uses principles of Modern Portfolio Theory (MPT) to suggest optimal asset allocations that maximize return for a given level of risk or minimize risk for a desired level of return.
- RLUSD-MPT stores portfolio recommendations on-chain, enabling decentralized finance (DeFi) protocols to access and utilize this data trustlessly.

Live Demo

Derive an optimal portfolio with data from last week

Assets Selected

Three relatively distinct classes of crypto currencies were selected. These include bluechips like bitcoin and ethereum, as well as well established DeFi protocols tokens. Last but not least a set of highly volatile meme coins were also selected.

1. L1	2. DeFi	3. MEMES
XRP	LINK	DOGE
BTC	UNI	PEPE
ETH		
SOL		

High-level Overview

1.

Collect
Price Data
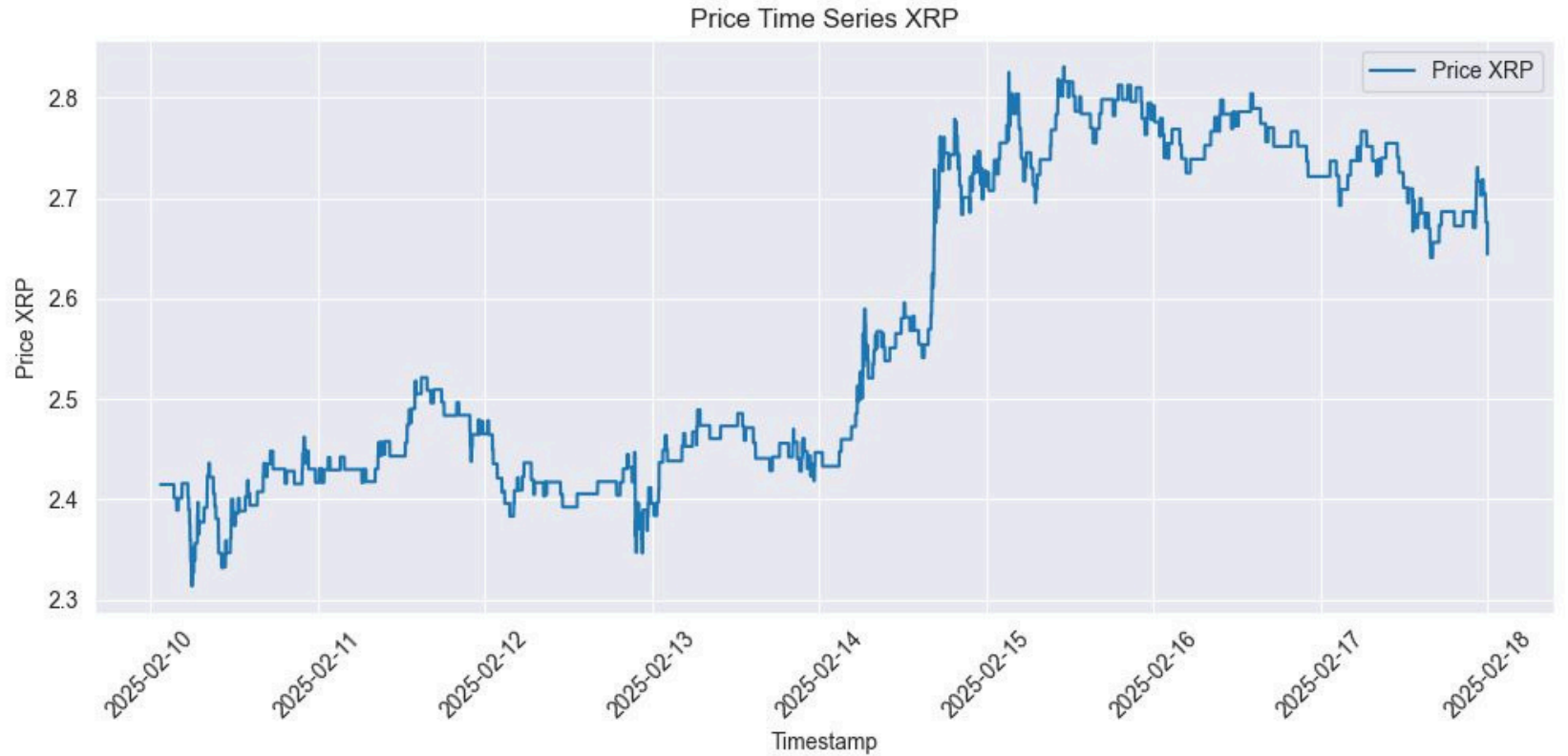
2.

Calculate
Correlations

3.

Output
Allocations
with best
Sharp Ratio

1.1 XRP Historical Price Data
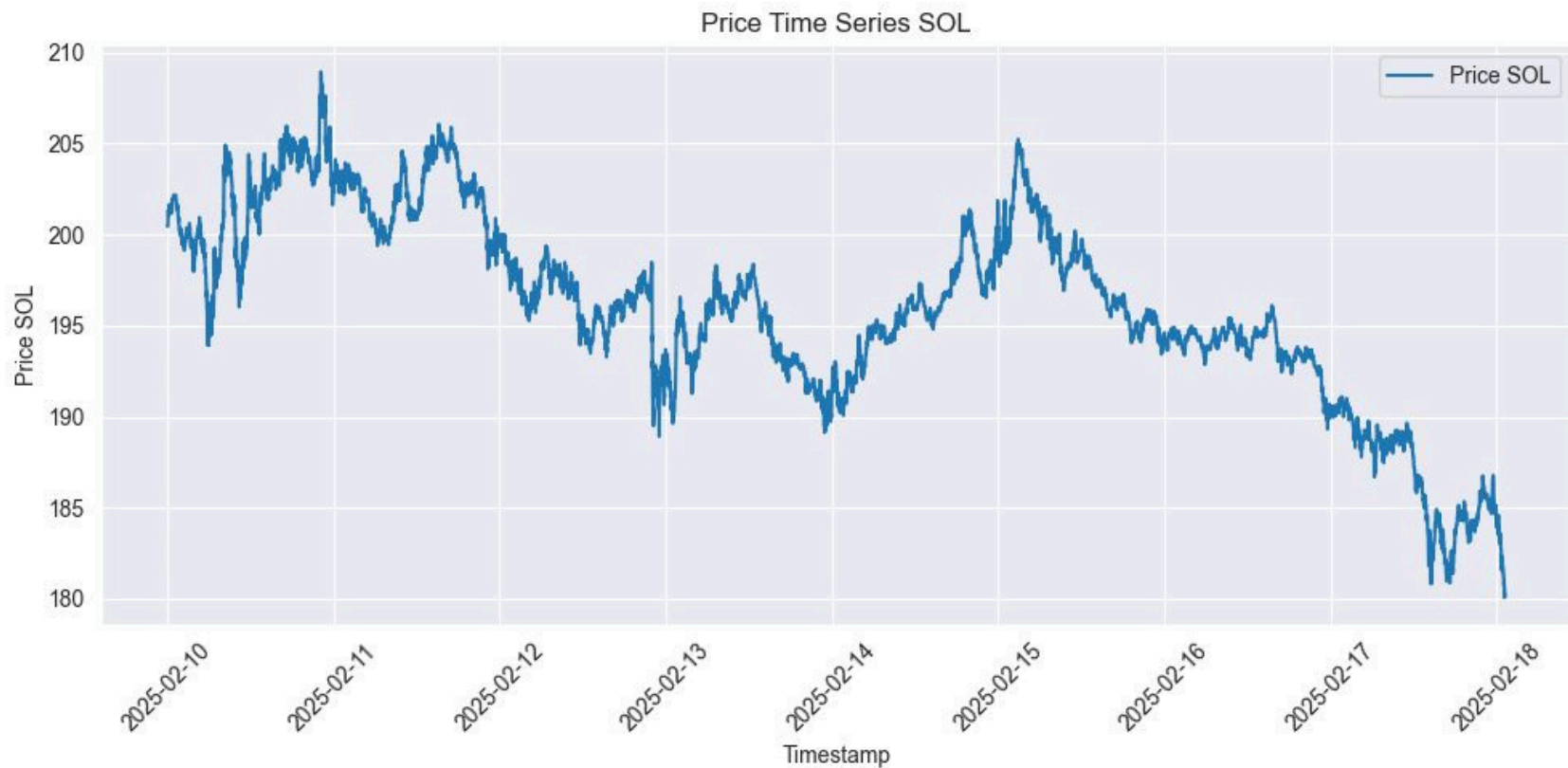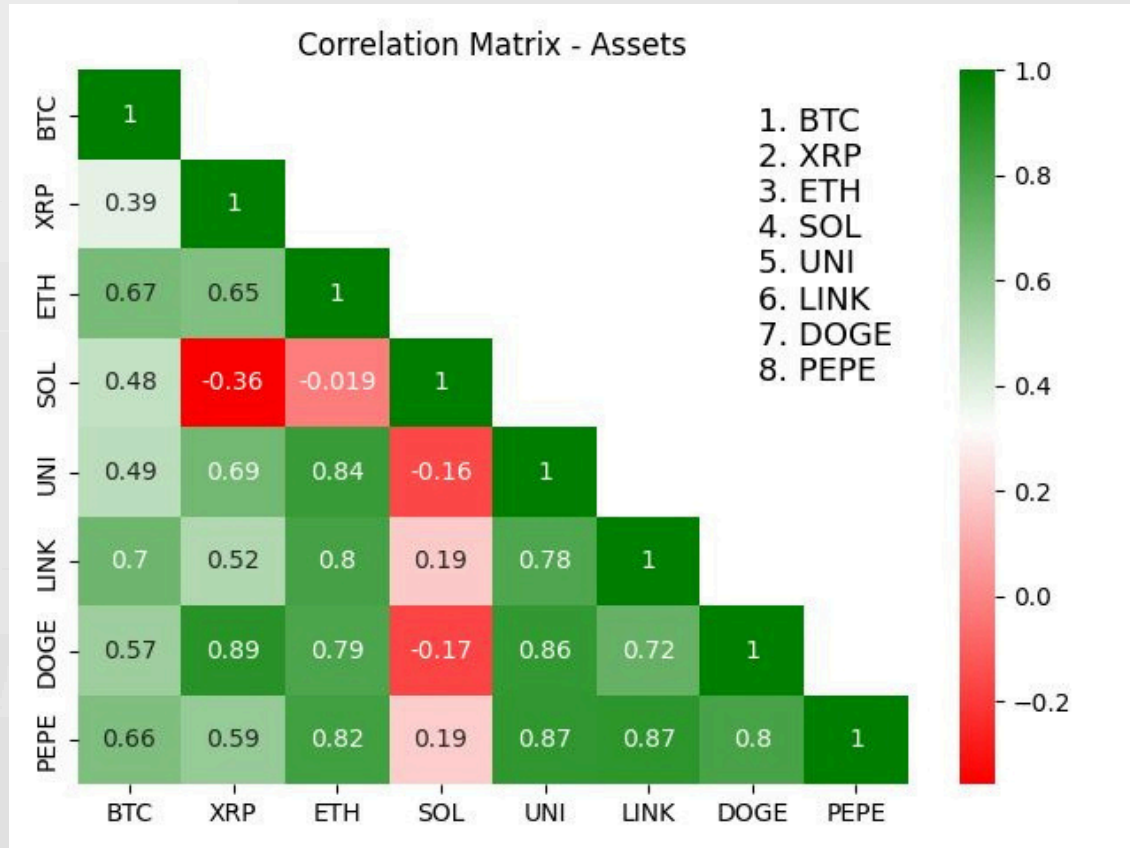

Price Time Series XRP

1.2 BTC Historical Price Data

Price Time Series BTC

1.3 SOL Historical Price Data

Price Time Series SOL

2. Asset Correlations

Correlation Matrix - Assets

3. Simulated Portfolios
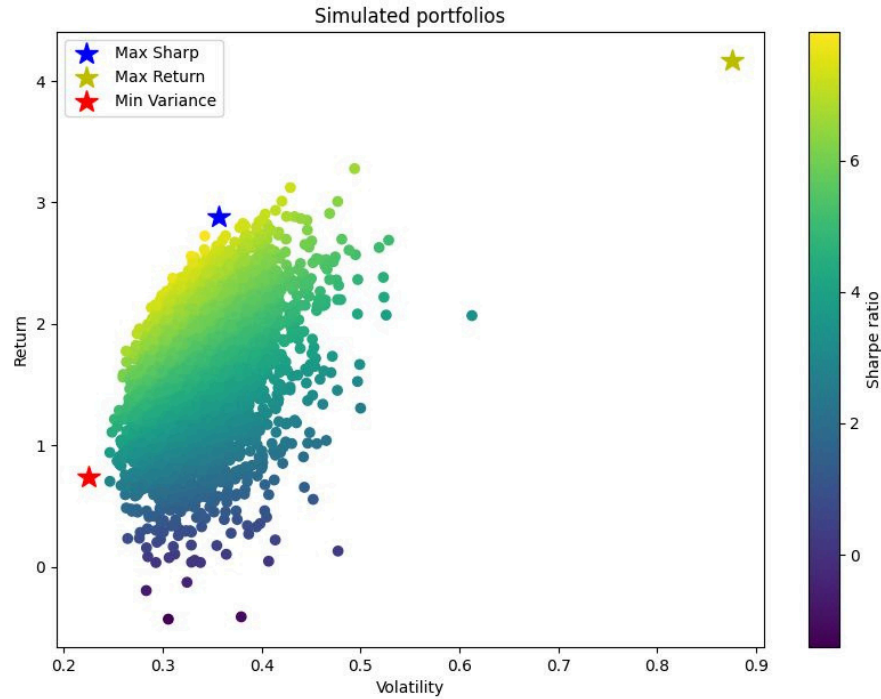
4. Portfolio Allocations

With RLUSD-MtT it is possible to choose a portfolio that minimizes risk (variance), maximizes potential returns, or find a good balance between risk / rewards.

=== Lowest Variance ===

Portfolio allocations:

btc : 45.24%
xrp : 6.66%
eth : 13.81%
sol : 10.62%
uni : 6.87%
link : 5.96%
doge : 7.38%
pepe : 3.46%

Expected   return   : 81.60%
Sharpe ratio   : 3.30
Expected volatility : 24.76%

=== Best Sharpe Ratio ===

Portfolio allocations:

xrp : 23.96%
eth : 22.71%
uni : 20.94%
link : 10.52%
doge : 13.58%
pepe :   8.31%

Expected   return   : 317.41%
Sharpe ratio   :   8.11
Expected volatility : 39.16%

=== Maximise Returns ===

Portfolio allocations:

xrp : 100.00%
Expected return   : 459.14%
Sharpe ratio   :   4.77
Expected volatility   : 96.32%

5. Deployed RLUSD Oracle + Allocator

An demo/prototype RLUSD Oracle + Asset Allocator was deployed on Sepolia Testnet:

Contract Address: **0x284dae20099c497B97CC1992f2c484922686Cf53**

Contract is deployed and verified:

https://sepolia.etherscan.io/address/**0x284dae20099c497b97cc1992f2c484922686cf53**#code

6. RLUSD Liquidity Provided

RLUSD / WETH v2
● In range

Migrate to V3 Add liquidity Remove liquidity

Current position value	-
Your total pool tokens:	0.154
Deposited RLUSD	8.00
Deposited WETH	0.003
Share of pool	100%

Future Vision

Data Feeds
On-chain Oracles

RLUSD MTP
An open platform that keeps track of asset allocations that optimise for highest sharpe ratio

Consumers
Better Understanding of Risk / Rewards

DeFi
Automated Lending and Rebalancing

- ❑ **Globally accessible from anywhere anytime**
- ❑ **Immutable and auditable history**
- ❑ **Transparent portfolio insights**
- ❑ **Decentralized and trustless**
- ❑ **Secure and reliable metrics**
- ❑ **Open source and open data**
- ❑ **Fostering innovation and collaboration**

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THANK - YOU

Does anyone have any questions?

Code available:

@github/anton-io/easya-2025-hk-rlusd-mpt