DIVERSIFIED PORTFOLIO

DS CLUB - SUMMER CHALLANGE 2024

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GOAL
CREATE A WELL DIVERSIFIED PORTFOLIO

DATA SOURCING

Download price data of selected financial assets

CORRELATION ANALYSIS

In order to create a well diversified portfolio, select four assets with the least possible correlation between each other

PORTFOLIO VALUE

Visualize the change of the portfolio's value within the specified timeframe

DATA SOURCING, CLEANING AND NORMALIZATION

SOURCING

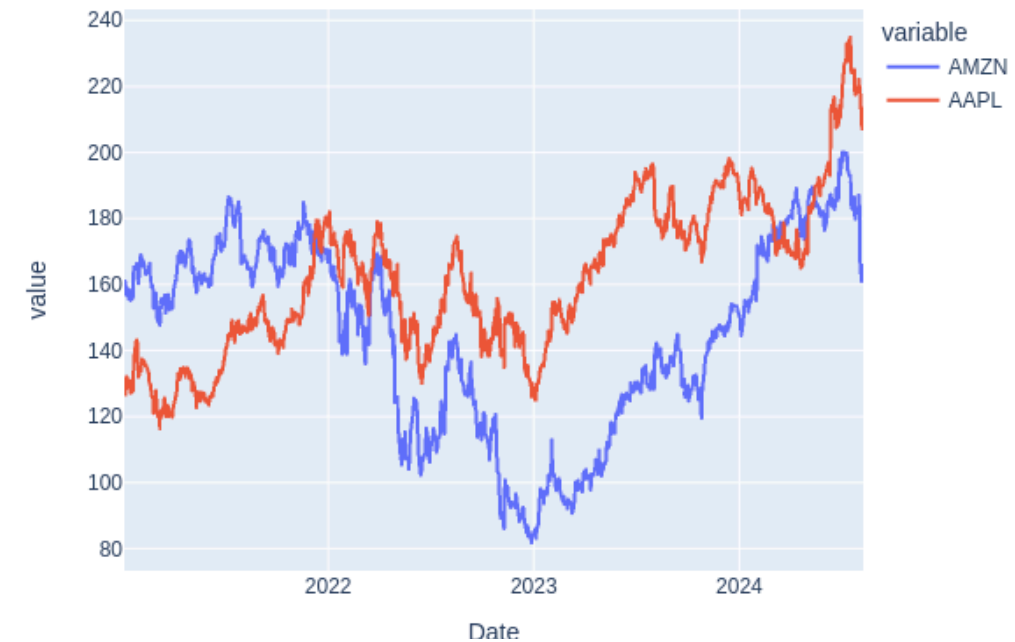Historical price data of 23 arbitrarily selected assets was acquired using the yfinance library.

CLEANING

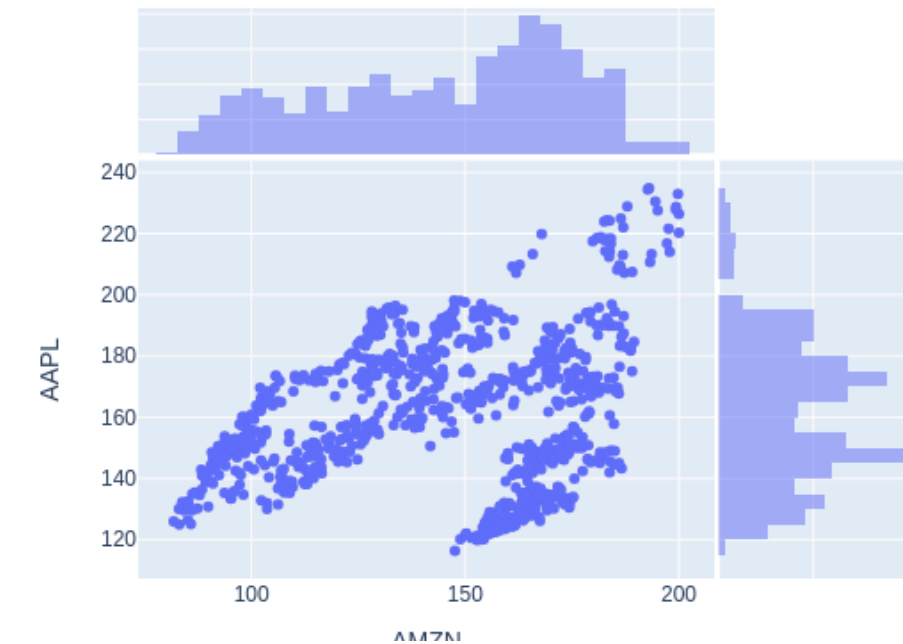Weekends and holidays when traditional markets are closed were dropped.

NORMALIZATION

Daily percentage returns were calculated. Their linear dependence and normal distribution, enables the use of Pearson correlation.
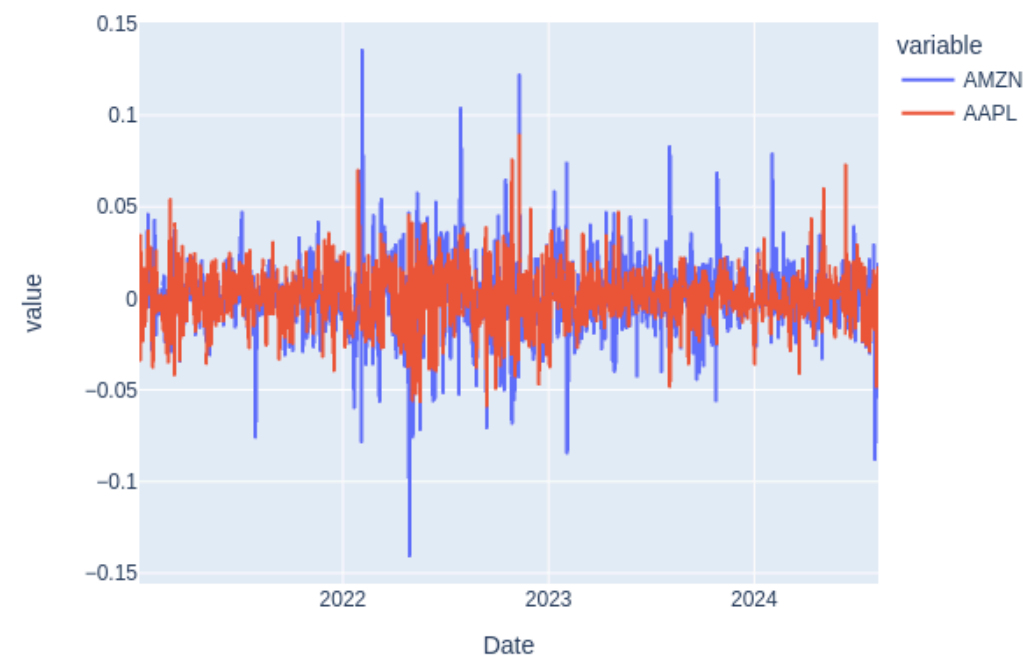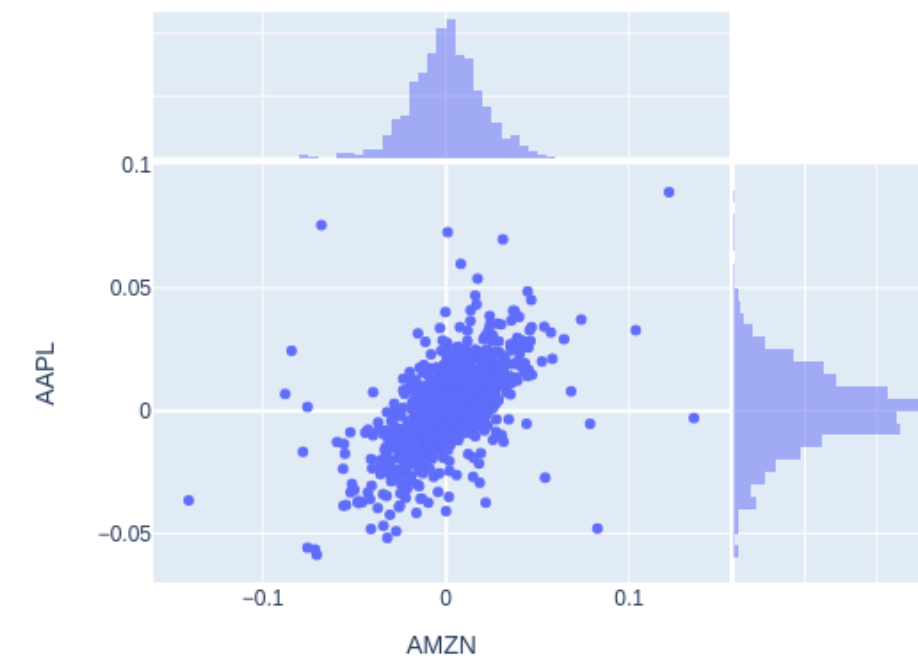

Close prices of two selected stocks

Scatter plot of the closing prices

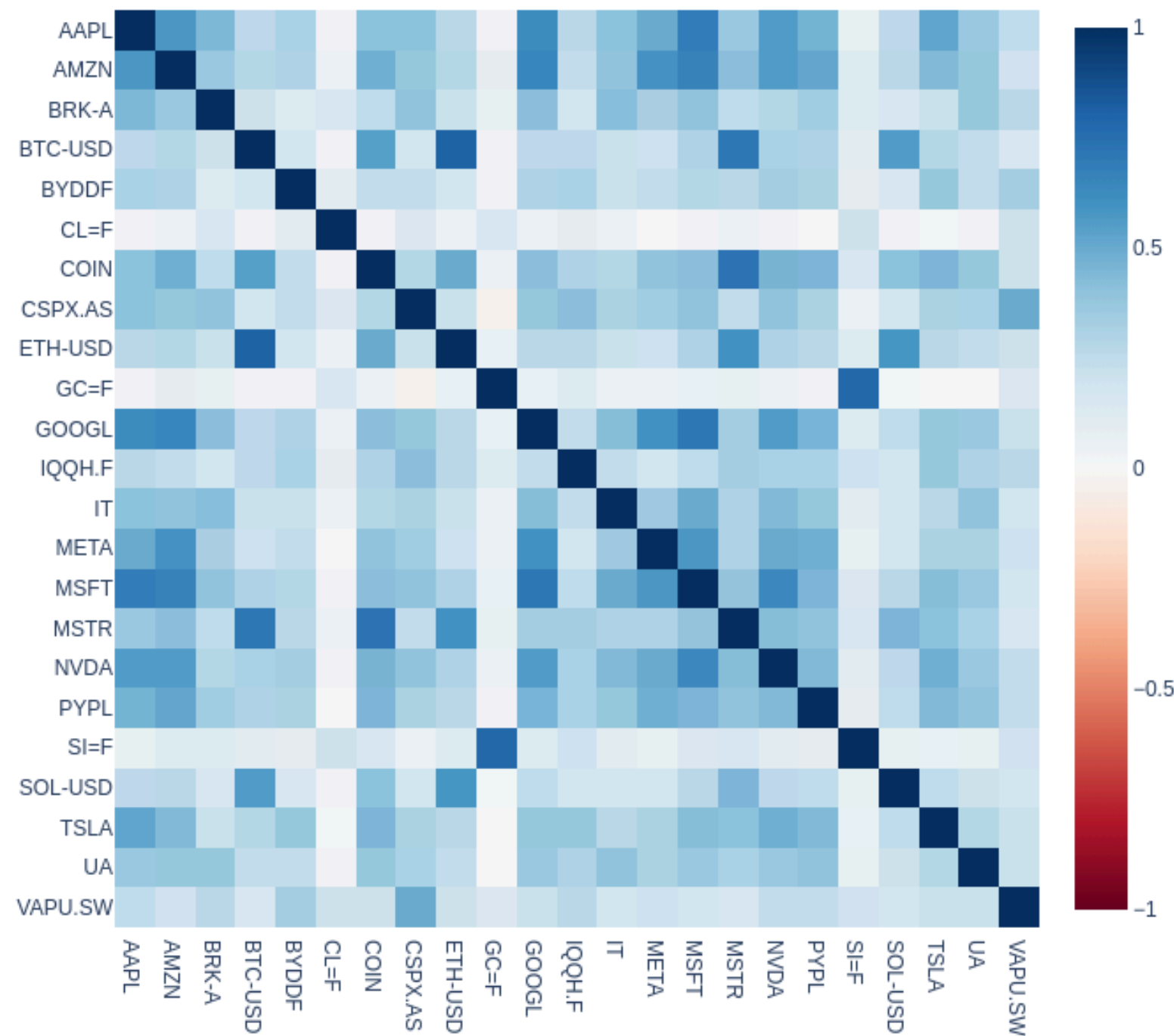Daily returns of two selected stocks

Scatter plot of the daily returns

CORRELATION ANALYSIS

Correlation Matrix Heatmap

Key observations

- Almost all correlations are positive (negative ones are close to zero).
- Highly correlating assets belong to the same industry or have similar purposes, e.g.:
  - Microsoft, Google, Apple, and Amazon
  - Coinbase and MicroStrategy
  - Bitcoin and Ethereum
  - Gold and Silver
- Commodities (gold, silver, and crude oil) do not correlate with the equity and crypto markets.
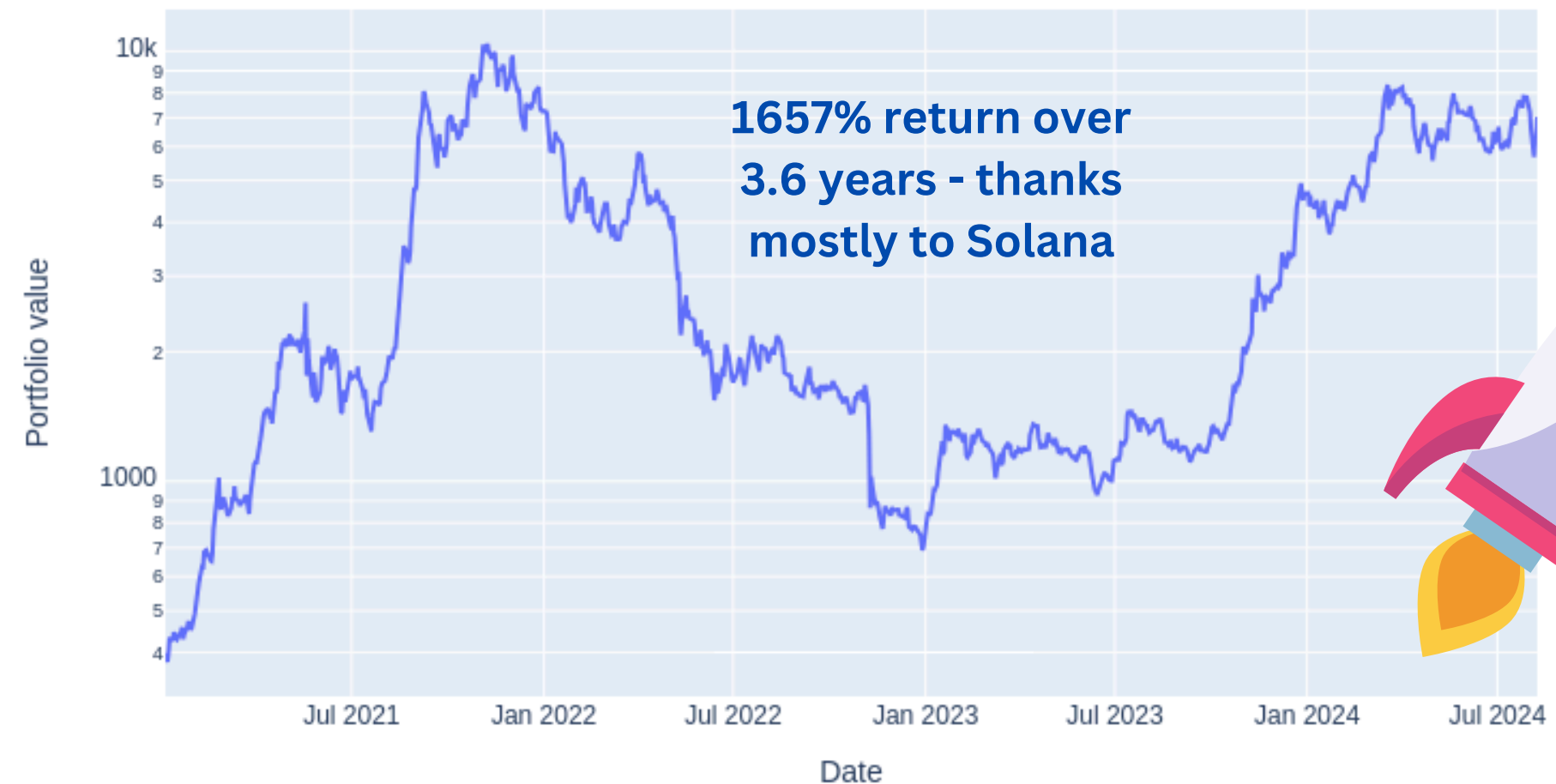
FINDING WELL DIVERSIFIED SET OF ASSETS

Average pairwise correlation was calculated for all possible combinations
(23 choose 4 = 8855)

Assets	Average pairwise correlation
Crude Oil, Gold, Meta, Solana	0.0739
Crude Oil, Gold, Solana, Under Armour	0.0772
Crude Oil, Gold, Solana, Tesla	0.0821
Crude Oil, Gold, S&P 500, Solana	0.0822
Crude Oil, Gold, Meta, Bitcoin	0.0827

As expected from the general analysis, oil and gold are "mandatory" elements if we want to have a well diversified, low-correlation portfolio.

Portfolio peprformance from 2021-01-04 to 2024-08-08 - Curde Oil, Gold, Meta, Solana

1657% return over 3.6 years - thanks mostly to Solana

THANK YOU
FOR ATTENTION