

Momentum Analysis Tool

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Momentum Analysis Tool: Agenda

- **Key Goals**
- About Momentum Investing
 - Analogy
 - Definition
 - Prior Work
- Momentum Analysis Tool
 - Organization
 - Demo
 - UI Generation using Claude(ChatGPT) and Streamlit
- Results
- Some Observations and Next steps

Momentum Analysis Tool: Key Goals

- “Broaden Audience” - Enable non-programmer to develop "Momentum investing" insights and hopefully, make some money
- “Teach Different” - Recognize that some people understand better by playing with an interactive tool than reading reports.
- Caveat: Instead of Norgate, the tool uses wikipedia for universes and yfinance for history.
 - This means that the analysis is subject to selection bias (but also does not use proprietary data).

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Momentum: a Freeway Analogy



- Do you hate drivers who zig and zag out of traffic on Freeways?
- Do you wish that people would just stay in their lane, even if it means that arrive a little later to their destination?
- Then you'll REALLY hate Momentum investing.
- Viewing stocks as "lanes", and return as "lane speed", the idea is to switch into whatever lane is moving fastest.

https://en.wikipedia.org/wiki/Momentum_investing

- Momentum investing is a strategy that seeks to capitalize on momentum to enter a trend as it is picking up steam. Simply put, momentum refers to the inertia of a price trend to continue either rising or falling for a particular length of time, usually taking into account both price and volume information.
- J - Lookback/Lag - Period(s) to measure return. (days or months).
- K - Hold Period - Period to hold a position. (days or months) #Taxes.
- **Universe – (Fixed) Collection of stocks being analyzed
 - Not mentioned (implicit) in the wikipedia definition!!!!
 - But if you want to go to San Francisco from the south Bay, choosing 280, 101 or 880 makes a BIG difference.

Momentum Investing: Prior Work

- 20060728 - Hellmut Scholtz
- 20100320 - Journal of Finance
 - 199303 Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency
 - NARASIMHAN JEGADEESH and SHERIDAN TITMAN*
 - 199802 International Momentum Strategies
 - K. GEERT ROUWENHORST
- 20161218 Paseman - "Rouwenhorst Sensitivity To $js[25,35,45,65,130]/ks[25,35,41,65,130]$ " - (j - days back; k - holding period)
 - 20201117 - "If your algorithm is good, it should be able to pick out the better stocks independent of the options that it is fed so long as the choices are broad."
 - The physical analogy supports this. It would seem that being able to switch lanes from a fast lane on 280 to a faster lane on 101 ought work out.

NO!

Momentum Investing: Prior Work

- “It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.” - Mark Twain
- 2017xxxx Don Maurer - j - 1,3,6,12; k- 1 month;
 - **UNIVERSE MATTERS**
- 20220501 Paseman - "DRAFT Data Dredging Momentum Strategies"
 - LESS SENSITIVE to js - 11 month lookback worked as well as 1,3,6,12
 - VERY SENSITIVE to Universe
 - The Universe is important NOT because of the stocks it INCLUDES.
 - It is important because of the stocks it EXCLUDES.
 - In particular, the Universe has to exclude stocks that look good over the Lookback period but don't continue returns during the Hold Period.
 - "Firecrackers"

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Momentum Analysis Tool

Strgy Analysis

Strgy rtn vs time

Strgy rtn vs risk

Uvrse Analysis

Uvrse rtn vs time

Uvrse rtn vs risk

Universe

FAANNG



Lags

1,3,6,12

Member count

6



Months back

12



Use Cache?

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[Help](#)

Universe: FAANNG Lags: 1,3,6,12 Member count: 6 Months back: 12 Use Cache?

[Submit](#) [FinGPT](#) [Articles](#) [Log](#) [Help](#)

Date	0	1	2	3	4	5	CASH?	Port1Rtn	Port2Rtn	Port3Rtn
2023-10-31 00:00:00	META	NVDA	NFLX	AMZN	GOOG	AAPL	CASH	0.8972	1.0271	1.0026

- The first tab recommends stocks to buy based on price momentum.
- The user picks the Universe, lagged return to compare, total stocks in the portfolio and how far back in time to start measuring the strategy return.
- The User then presses submit to generate a table (which scrolls left/right and up/down)
- And since the tool identifies about 3 stocks max, I have a link to finGPT where the user can plug in each one and see if they want to buy it or not. This subsumes the function of a timer.
- There are also links a list of articles I like, a place where the user can log their rationale for their choices and help.

Date	0	1	2	3	4	5	CASH?	Port1Rtn	Port2Rtn	Port3Rtn	Port4Rtn	Port5Rtn	Port6Rtn	URtn
2023-08-31 00:00:00	NVDA	META	NFLX	GOOG	AMZN	AAPL	STOCK	0.8813	0.948	0.9222	0.9316	0.9295	0.9265	0.9265
2023-09-29 00:00:00	NVDA	META	GOOG	NFLX	AMZN	AAPL	STOCK	0.8263	0.92	0.8888	0.9274	0.9349	0.9305	0.9305
2023-10-31 00:00:00	META	NVDA	NFLX	AMZN	GOOG	AAPL	CASH	0.8972	1.0271	1.0026	1.0391	1.0378	1.0333	1.0333
2023-11-30 00:00:00	META	NVDA	NFLX	AMZN	AAPL	GOOG	STOCK	0.9708	1.0994	1.0588	1.0931	1.0838	1.0805	1.0805
2023-12-29 00:00:00	NVDA	META	AMZN	NFLX	GOOG	AAPL	STOCK	1.2061	1.2889	1.188	1.2365	1.1989	1.1685	1.1685
2024-01-31 00:00:00	NVDA	META	NFLX	AMZN	GOOG	AAPL	STOCK	1.5508	1.6382	1.4299	1.4683	1.3752	1.3079	1.3079
2024-02-29 00:00:00	NVDA	META	NFLX	AMZN	GOOG	AAPL	STOCK	1.7712	1.747	1.4967	1.5273	1.444	1.3512	1.3512
2024-03-28 00:00:00	NVDA	META	NFLX	AMZN	GOOG	AAPL	STOCK	1.6937	1.6091	1.3713	1.4199	1.3863	1.3047	1.3047
2024-04-30 00:00:00	NVDA	META	GOOG	AMZN	NFLX	AAPL	STOCK	2.1491	1.894	1.5591	1.5687	1.5483	1.4597	1.4597
2024-05-31 00:00:00	NVDA	META	NFLX	GOOG	AMZN	AAPL	STOCK	2.4217	2.09	1.6936	1.6915	1.6747	1.5823	1.5823
2024-06-28 00:00:00	NVDA	META	NFLX	GOOG	AMZN	AAPL	STOCK	2.5146	2.142	1.728	1.7264	1.71	1.6238	1.6238
2024-07-03 00:00:00	NVDA	META	NFLX	AMZN	GOOG	AAPL	STOCK	2.5146	2.142	1.728	1.7264	1.71	1.6238	1.6669

• Following each end of month time slot is a sorted list of stock recommendations.

• Following that is a recommendation to either buy stocks or stay in cash.

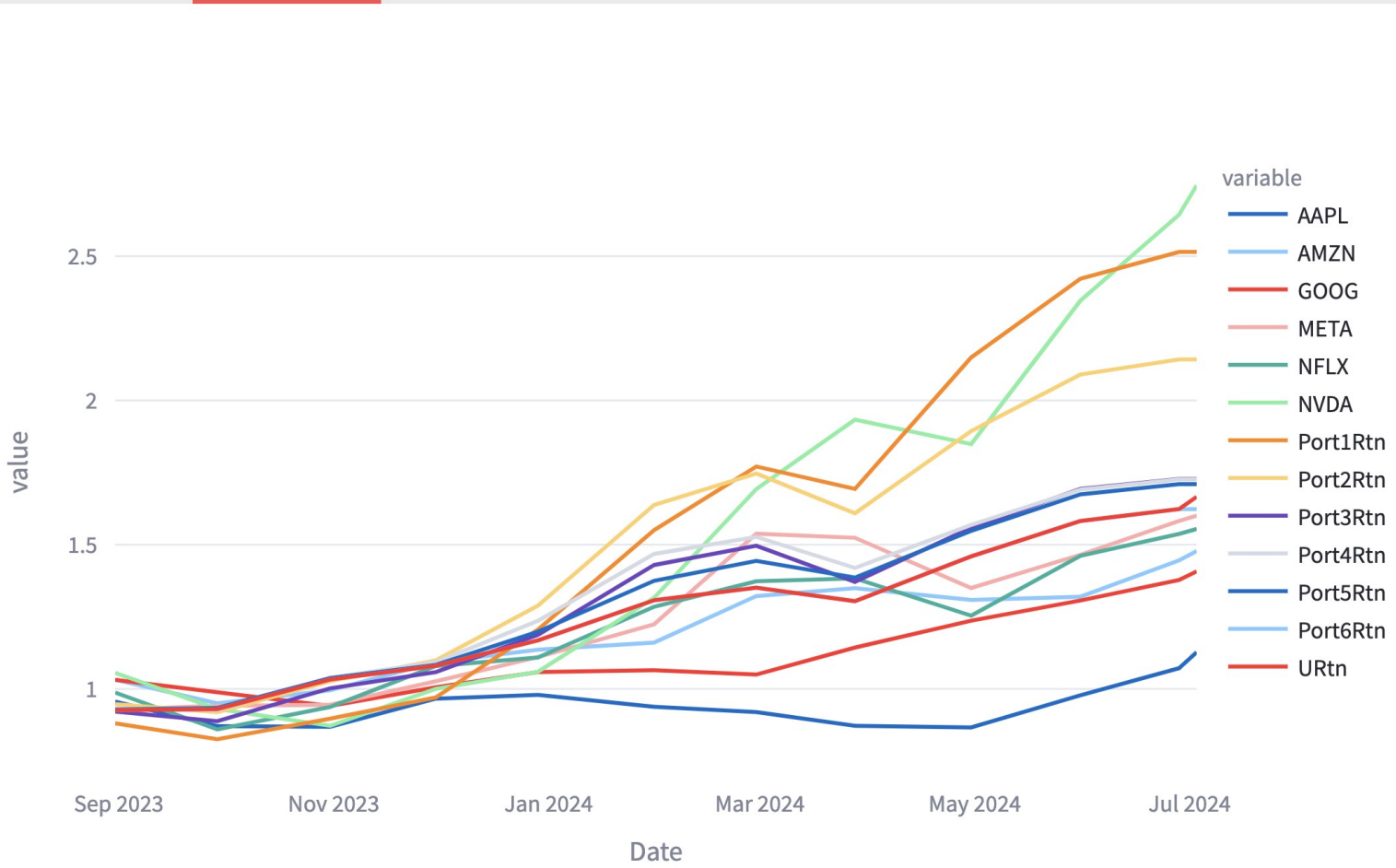
• Following that is the return from portfolios consisting of the top 1-6 of the recommended tickers.

• The final column shows the return of the universe.

- Portfolios of 2 stocks, rebalanced monthly, have done best lately.
- Note the 0.8263 entry. Here the system lost 17.37% of the portfolio value from 7 2023 to 10 2023.
- This occurred if you picked the top best stock each month.
- Note the 2.142 entry. Here the system added 114.2% to the portfolio value from 7 2023 to 6 2024.
- This occurred if you picked the top two best stocks each month.

Momentum Analysis Tool

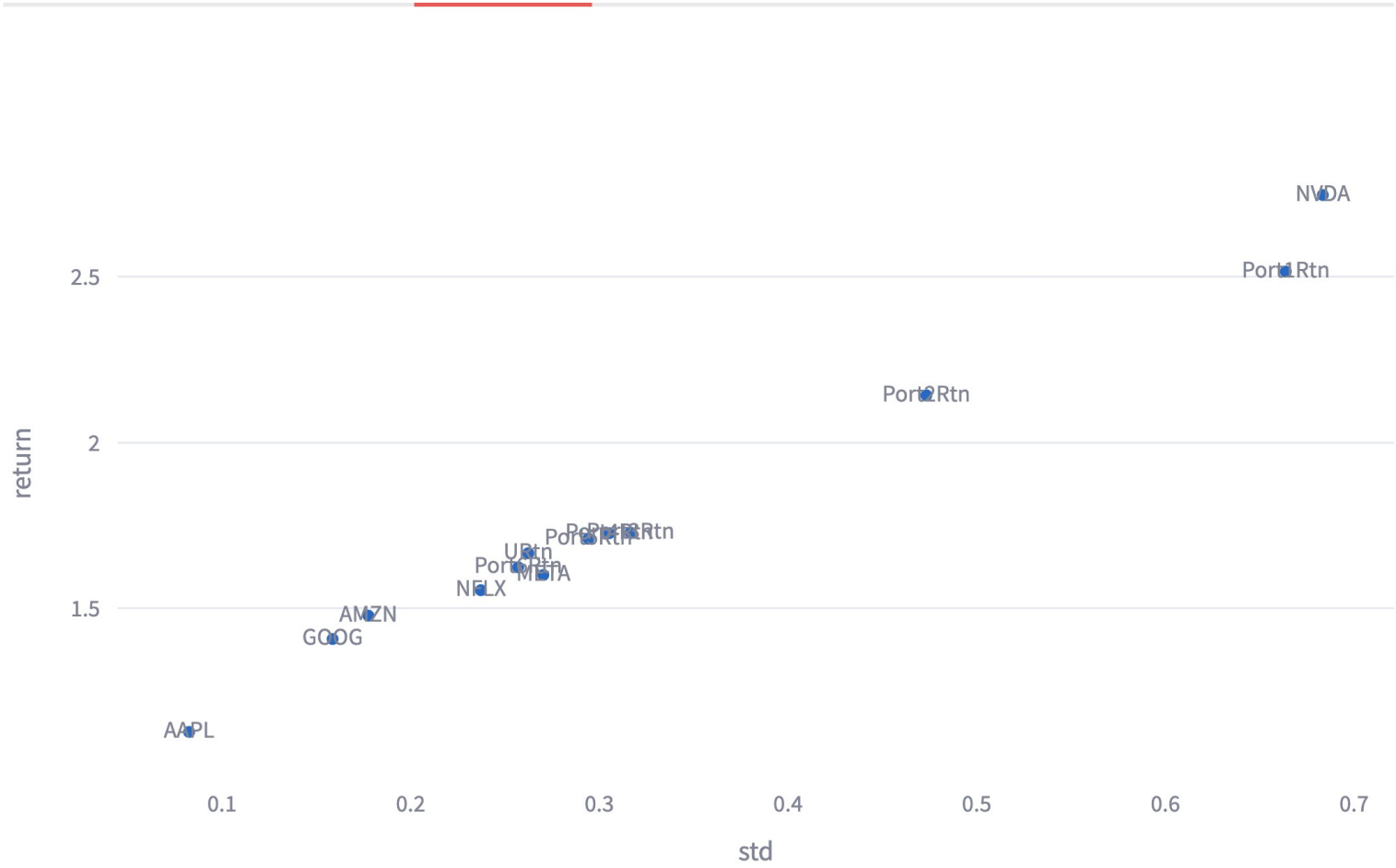
Strgy Analysis **Strgy rtn vs time** Strgy rtn vs risk Uvrse Analysis Uvrse rtn vs time Uvrse rtn vs risk



The Second tab shows the stock/portfolio returns vs time.

Momentum Analysis Tool

Strgy Analysis Strgy rtn vs time **Strgy rtn vs risk** Uvrse Analysis Uvrse rtn vs time Uvrse rtn vs risk



The Third tab is a risk/reward plot

Momentum Analysis Tool

Strgy Analysis Strgy rtn vs time Strgy rtn vs risk **Uvrse Analysis** Uvrse rtn vs time Uvrse rtn vs risk

Universes

D30 ×
N100 ×
SP500 ×
R1000 ×
FAANNG ×

Lags

1,3,6,12 ×
1,3,6,6 ×
8 ×
9 ×
10 ×
11 ×
13 ×

Universe Member count: 6

Universe Months back: 12

Universe Submit

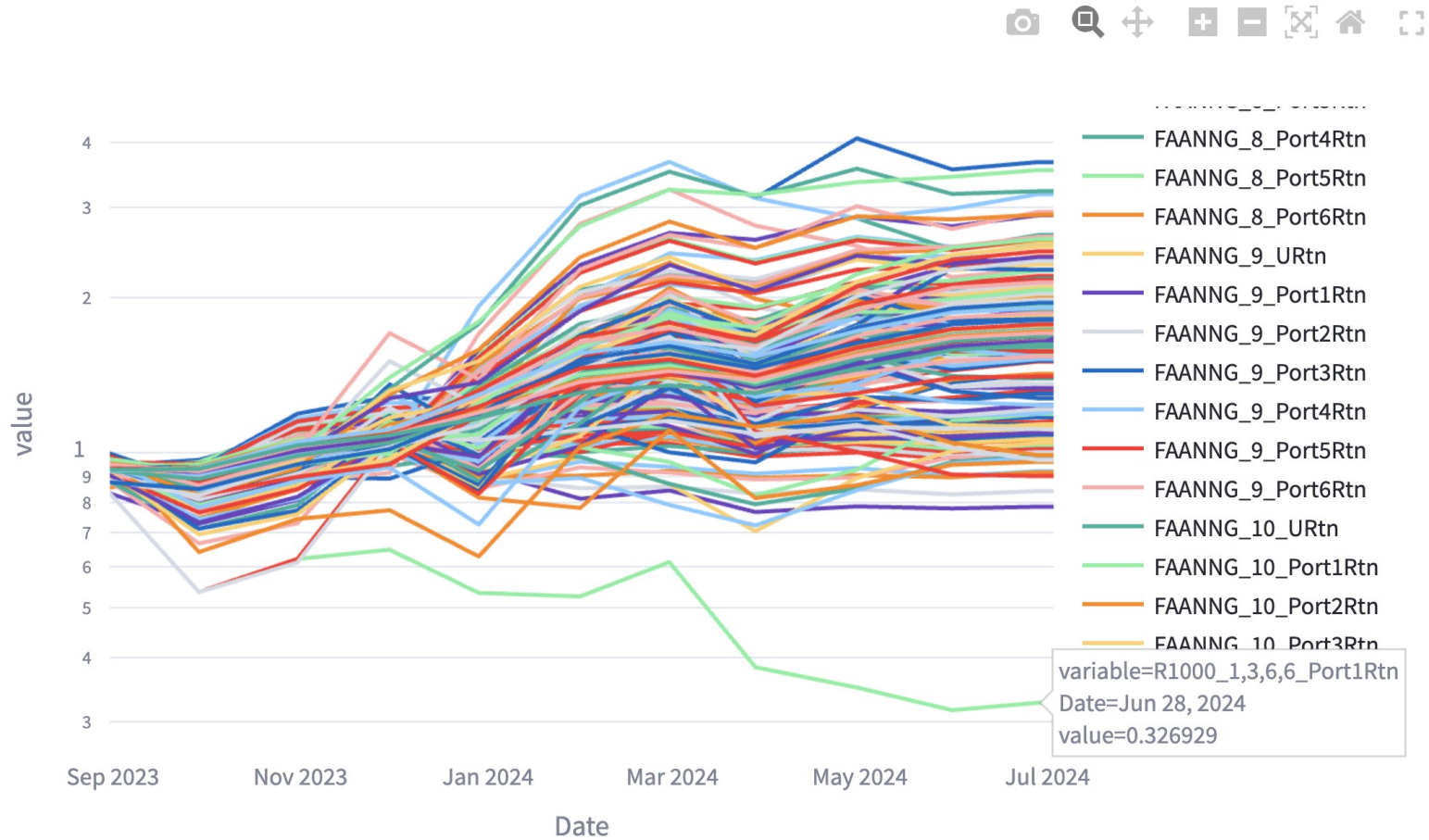
Universe Use Cache?

	UName	Lags	0	1	2	3	4	5	CASH?	Port1Rtn	Port2Rtn	Por
0	D30	1,3,6,12	AMZN	MSFT	GS	WMT	AAPL	JPM	STOCK	0.921	0.9902	1

The Fourth tab compares universe/lag/timeframe/period cross products

Momentum Analysis Tool

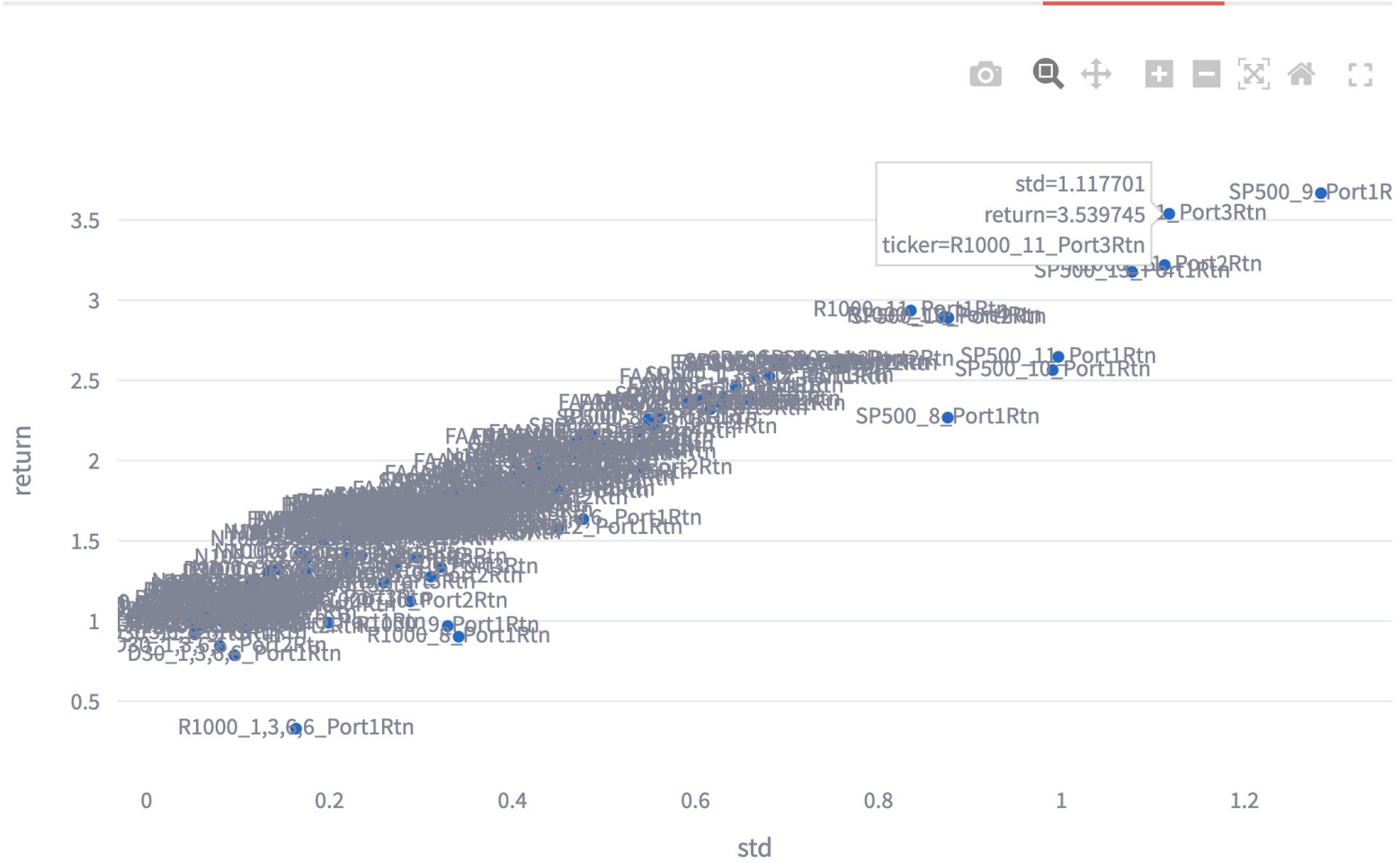
Strgy Analysis Strgy rtn vs time Strgy rtn vs risk Uvrse Analysis **Uvrse rtn vs time** Uvrse rtn vs risk



The Fifth tab shows cross product time behavior

Momentum Analysis Tool

Strgy Analysis Strgy rtn vs time Strgy rtn vs risk Uvrse Analysis Uvrse rtn vs time **Uvrse rtn vs risk**



The last tab is a cross product risk/reward plot

Demo

20240705

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Silicon Valley Computerized Investing

UI Generation – First GPT Prompt

- Please generate streamlit application with
- a pulldown labeled "universe" with items labeled "N100", "R1000" and "FANG" that defaults to "N100".
- a text field labeled "lags" that allows me to enter a list of comma delimited numbers and initialized with the string "1,3,6,12",
- a pulldown labeled "member count" with 6 items labeled 1-6 that defaults to 6.
- a text field labeled "months back" initialized to 12.
- and a "Submit" button.
- When "Submit" is pressed, I want the application to call streamlitEntry passing (universe,lags,memberCount,monthsback=12).
- It will return a text field with embedded carriage returns.
- Please print the result in a text area called "Results".

UI Generation – Generated Code

- `from momentumtiming import strategyAnalysis`
- `import streamlit as st`
- `import plotly.express as px`
-
- `def main():`
- `st.title("Momentum Analysis Tool")`
-
- `tab1, tab2, tab3 = st.tabs(["Strategy Analysis", "Strategy rtn vs time", "Strategy rtn vs risk"])`
-
- `with tab1:`
- `row1 = st.columns(5)`
- `universe = row1[0].selectbox("Universe", ["N100", "SP500", "R1000", "FAANNG", "D30"], index=3)`
- `lags = row1[1].text_input("Lags", "1,3,6,12")`
- `member_count = row1[2].selectbox("Member count", [str(i) for i in range(1, 7)], index=5)`
- `months_back = row1[3].text_input("Months back", "12")`
- `use_cache = row1[4].checkbox("Use Cache?", value=True)`
-

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Account Summary

Total Accounts Value
\$24,571.92

Total Cash & Cash Invest¹
\$304.87

Total Market Value
\$24,267.05

Total Day Change¹
+\$722.22
 (+3.03%)

Total Cost Basis
\$19,783.44

Total Gain/Loss²
+\$4,483.61
 (+22.66%)

Positions Details *

Settings

Symbol	Name	Qty	Price	Price Chng	Mkt Val	Day Chng	Cost Basis	Gain/Loss	Ratings	Reinvest?	% of Acct
▼ Equities											
NVDA	NVIDIA CORP	80	\$126.91	-1.07%	\$10,148.00	-1.11%	\$6,875.20	+47.6%	C	No	41.3%
MSFT	MICROSOFT CORP	9	\$465.86	+1.1%	\$4,192.57	+1.1%	\$3,541.59	+18.38%	C	No	17.06%
AMD	ADVANCED MICRO DEVICE IN	10	\$170.23	+3.86%	\$1,701.50	+3.81%	\$1,995.35	-14.73%	D	No	6.92%
Total	Equities				\$16,042.07	-0.04%	\$12,412.14	+29.24%			65.29%
▼ ETFs & Closed End Funds											
FBL	GRANITESHARES META DAILYETF	275	\$29.78	+9.24%	\$8,224.98	+9.72%	\$7,371.30	+11.58%	Ratings	No	33.47%
Total	ETFs & Closed End Funds				\$8,224.98	+9.72%	\$7,371.30	+11.58%			33.47%
▼ Cash & Money Market											
Cash & Cash Investments ¹					\$304.87	0%	--	--	--	--	1.24%
Total	Cash & Money Market				\$304.87	0%	N/A	N/A			1.24%
Account Total					\$24,571.92	+3.03%	\$19,783.44	+22.66%			

20240705

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Observations and Next Steps

- Since I believed in my own 20230601 GenAI presentation, these results were expected.
 - Ie: NVDA, NVDA,
- However...

Correlation

Date	0	1	2	3	4	5
2023-08-31T00:00:00.000	SMCI	NVDA	BLDR	LLY	RCL	PHM
2023-09-29T00:00:00.000	SMCI	NVDA	JBL	META	RCL	GE
2023-10-31T00:00:00.000	SMCI	META	NVDA	JBL	ANET	DECK
2023-11-30T00:00:00.000	SMCI	CRWD	META	NVDA	UBER	FICO
2023-12-29T00:00:00.000	CRWD	NVDA	SMCI	RCL	META	BLDR
2024-01-31T00:00:00.000	SMCI	CRWD	NVDA	AMD	META	ANET
2024-02-29T00:00:00.000	SMCI	NVDA	META	VST	CRWD	AMD
2024-03-28T00:00:00.000	SMCI	NVDA	VST	CEG	CRWD	MU
2024-04-30T00:00:00.000	SMCI	VST	NVDA	GE	CEG	NRG
2024-05-31T00:00:00.000	VST	SMCI	NVDA	CEG	NRG	DECK
2024-06-28T00:00:00.000	SMCI	NVDA	VST	CRWD	ANET	CEG
2024-07-03T00:00:00.000	VST	NVDA	ANET	SMCI	CEG	CRWD

• Selection Bias: Note: SMCI joined SP500 20240318
20240705

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