Some 4380 project ideas: NOTE: could have a lot of focus in technical, I am not so good in fundamental.  
- some special metrices I have encountered  
  
If our strategy is short term, we may need to consider market condition. (bull/bear/volatility)  
or alternating strategy: like Momentum in Bull; Value, Dividend in Bear; Low exposure in uncertainty

* Event trigger: 1. stock split, reverse split  
  is it possible to predict a stock would have such event if the price goes below certain low level, or goes above certain high level.   
  - e.g. goes too low -> stocks become untradable for funds (no position)   
  -> possible to reverse split -> positive effect -> potential fund inflows;  
  - e.g. goes too high (usually for hit stocks  
  -- even if hard to predict, it could still be a factor, such that a stock with higher prob of event, can put higher weights  
    
  ~~2. Earnings release and delayed response from fundamental investor (since they review not as frequently as daily, quant maybe, sometimes you need time to digest the ER)~~
* **Short ratio: short ratio/short squeeze/gamma squeeze**   
  -> Target: Downtrend/Beaten down stocks/Undervalued stocks OR Meme stocks  
  “The short Interest ratio takes the number of shares held [short](https://www.investopedia.com/terms/s/short.asp) in a stock and it divides this by the stock's [average daily trading volume](https://www.investopedia.com/terms/a/averagedailytradingvolume.asp). ”  
  - identify short squeeze: spike in volume, from down to up, abnormal price action (exceed 2SD//BB)  
  - different size may have different intervals of SI days to cover  
  - fund size concern: if low relative to stock mkt cap then good; if high, then we make the event happen.   
    
  **lv1:** identity short ratio stock w/ some extra criteria:   
  -> predict if it is going to get short squeezed.  
  **lv2**: identify short ratio stock AFTER BEING short squeezed, based on how much the short ratio was BEFORE short squeeze event, decide whether to get into the trade.   
  -> consider volume change (if the volume is lower between the data acquiring date, the effect could be greater)  
  -> contraction in both volatility and volume could mean temporary balance on Demand vs Supply, where suddenly strength in one side could have greater effect than normal.  
  **lv3**: ???  
    
  “if possible, i love to pair it with option too, because the funds love to hedge stocks with option, i would say it is quite inevitable that they need option to protect their downside (which in some sense is actually an irrational action: they dont want, but they need).

Then we could exploit the fact that they need to buy some certain options, and kinda take advantage”  
- Exploiting another strategy: “just a strategy that counter another strategy and takes advantage of it. For example, Breakout traders like to put stop loss below certain level, the mf funds love to trigger the stop loss, so that they can have a cheaper cost of purchase.”  
  
- gamma video: [Gamma Explained: What is it & How to Trade it](https://www.youtube.com/watch?v=t2ty3MuQ68Q)  
-> since the effect snowballs when the call volume is big (market makers need to hedge 100 shares\*delta, hence increase demand of the stock, price rises, delta rises, need to hedge more)  
-> a stock with high call to put ratio can also be a bullish signal the stock is about to explode   
(can even do regression on whether the call volume will increase, or will increase for which type of stocks/factors)  
-> Or trend of call volume Or target high delta stocks?

* information from option chain:  
  - if option chain is rational,
* Sentiment (residential investors):  
  - change of direction: party ends (maybe with technical level breakdown) or panic sell ends  
  - is more technical signals means more conviction?
* expanding/contracting historical volatility/implied volatility on option chain/ some funds use volatility as risk / BBands
* new factors based on new market (tech advancement)  
  - AI application sub industry??   
  -
* traffic (quite minor)?? [INTC - Intel Corp Website Traffic and Mobile Apps Usage](https://finviz.com/quote.ashx?t=INTC&p=m&ty=tr)  
  -> potential market share change in the future / network effect
* A graph of stock market

  AI-generated content may be incorrect.~~AI investment strategy: AI less cost, higher productivity, automated process  
  not enough data~~
* **Strong momentum: Weak hand shakeoff**, prob of shakeoff/ rebounce  
  (usually a stock is strong, or certain fundamental, a shakeoff is healthy for more upside)  
    
   *CLS 2025 Jan*:  
  - here can note another point: some ppl like to risk off (sell position) before ER especially when the stock is so A graph of stock market

  AI-generated content may be incorrect.high (far above 30/200MA)  
    
  *NVDA 2024 Feb*: you can see ppl risk off before ER,  
  but when ER, there could be pretty good results.  
    
  -> our trades: all before ER,  
  maybe **ER T-10 to ER T-1** is our range, and stocks with strong fundamental, but too strong momentum is our target.  
    
  Short sell strategy: the red bar quick drop is the target, see if we can model the prob of a stock being "risk-off" before Earnings Release. // or maybe better to use put option to directly trade with limited risk.   
    
  ER T to T+k: play rebound?
* Take advantage of extreme case that ppl fail to react rationally / chance to interpret wrongly:  
  1. Panic sell: stock falls over 20% or sth -> we buy them back  
  2. Party mode -> harder, can get crazier  
  3. Recency bias: Overweighting recent events and ignoring long-term trends.  
  (30MA and 200MA in different directions, w/ some “irrational” abnormal price fluctuations,   
  we assume 200MA has stronger effect than 30MA, take the trades of the direction of 200MA)  
  3.1 Combination with long term factors: which certain factors have a more **stable long term** movements. (value: KO, MCD > growth; dividend=mature; bigger size; separate business stream?;more…)  
  3.2 target: at least k% until ATH, avoid adding position at a too high price
* A graph with lines and points

  AI-generated content may be incorrect.BRK factor:   
  A graph of different colored lines

  AI-generated content may be incorrect.  
  Invest like Buffet. Outperformed SPY pre-covid. But seems tech is much stronger  
  Combine with tech: ??  
  A screenshot of a graph

  AI-generated content may be incorrect.  
  During downtime, QQQ may underperform BRK, even thought QQQ could be one of the best passive ETF to invest in.   
  BRK holdings may have some special factors. Can model this factor?  
    
  Interpretation:   
  QQQ tops -> Sector rotation -> BRK rise time -> both tops -> bear market

QQQ and interesting indexes:   
https://www.tradingview.com/watchlists/180650811/

**TQQQ and QLD: Fund could get liquidated for 60-80% downside (not for individual)   
-> ruled out.**

After all those formulas on QLD component, seems that QQQ is the best   
OR at least it is very hard to find such a combination to outperform QQQ.  
(otherwise, we will use that one as the project)  
  
A graph with lines and a yellow circle

AI-generated content may be incorrect.  
If count from QQQ top date, BRK only down 10% to its bottom, compared to 28% from its own top.   
  
A screenshot of a computer screen

AI-generated content may be incorrect.  
How about this two?   
  
-> What’s next: We take components from QQQ instead.

* **Factor X QQQ: 102 stocks.**Since it is the best, we are only going to take the top 10% but take bottom 10% from other category. **!! Caution: Consider when the stock get in the index because we are overvaluing the model if we count the performance before entry** (the stock was good/representing so it get in the index, but we didn’t know which one would become that good..)  
  [About QQQ - Holdings and Sector Allocations - Invesco QQQ | Invesco US](https://www.invesco.com/qqq-etf/en/about.html)  
    
  A screenshot of a company's financial report

  AI-generated content may be incorrect.  
  **Tech is obviously important element of winning. (winning since 1999.)**  
  **-> More tech = more alpha? But more downside risk too ->**

Bottom 10% could be

* **Leading stock factor**need to define leading stock: best performing stock over last k period  
  Rationale: if a stock is gaining, the fund would look for a similar stock in the same industry, hence driving up the demand  
  Concern: if the factor is too strong, this could mean a huge concentration into that industry for our portfolio. Yet, this could still mean the factor will keep being strong that if you take out the position, the opportunity loss could be even more.
* **Multi-factor modelling but we try to model how the factors change under different environments: - see wts**
* **Focus on bear market signals.**- produce many false signals: un investment too much -> no good.  
  - very accurate, but can miss timing:   
  -> how?   
  Instead of focusing on the index, we focus on our momentum portfolio.  
  because if the index is performing so badly, that mean the stocks that had great momentum should also crash (or even worse) because of so many ppl holding it initially, which on the flipside, so many ppl have to sell it.   
  While index have more strong hand, ppl tend to hold no matter what, should not depend if it goes below some level, we should sell. -> we should watch the portfolio that shows momentum.
* **Perfect Model: TA + factors?? – see pycharm  
  A screenshot of a computer

  AI-generated content may be incorrect.**

**Smart beta scheme – A Better VOO -> S&P450???? When to add stocks?**- because of we wanting to invest in the stock that WILL have the most future demand, we can just use VOO as based because the feature is almost the same, while VOO also is the highest inflow among all passive ETFs. (QQQ is quite concentrated, but can try as well)- **Capital-weighted VOO** consists of momentum factor itself because of how it weighs, but most of the stock insides also are high cap (size factor), consist some value, quality, so that it got some fundamental investor support, mature (low volatility),  
However, we don’t need to choose the best, the best usually are there already. We choose the worst stock in VOO.  
  
Choosing the worst: give each stock a score based on 6 main factors. Kick out the bottom 10% stock with the lowest score.   
[**How Are S&P 500 Stocks Chosen?**](https://finance.yahoo.com/news/p-500-stocks-chosen-123000102.html)

* **EXIT RULE**  
  Assumption: Big funds usually increase exposure by investing in large-cap first, because they are the most liquid, and not prone to quick downfall.   
    
  Outflow of large-cap:  
  - positive: risk appetite up, smaller-cap should benefit, usually have a quicker rise than large-cap, since volume is much lower. – can see Russell 2000  
  - negative: completely risk off from market, since large-cap is usually last invested assets, because they want to protect from downside due to small caps in bear market.   
    
  SPX + Russell 2000:  
  - SPX goes down, while Russell 2000 not going up could mean a short to intermediate-term pullback of the market, momentum factor usually sucks here.   
    
  Consider Sector rotation / Market Breadth:  
  - even if both index go down, there could be some small amount of stocks tanking up the whole market.  
  - EW index: e.g. SPXEW: should go down  
  - Momentum index: Number of stocks above 50MA: should go down  
  -> Need testing: Potential confirmation of momentum crash here?   
  !! But if there are few stocks tanking up the market, they are usually momentum stocks…  
  - possible exit only when they break some technical levels (e.g. TSLA exit on 410 based on PA)  
  (In this case, our model enters in a technical phase, more frequent (week) phase, where it sees if the “few” momentum stock is still good anymore  
    
  Expectation: the market confidence should have gone here, and need some time to repair,  
  even worse, there could be a bear market for a few months, where momentum factor model would not participate here.   
    
  Action after exit:   
  - reverse momentum factor (smaller portion) to keep track market momentum,   
  - short growth stock
* **Momentum Premium Index? SPX – SPXEW  
  What about momentum premium Prediction Index?  
  - What equity usually shows tops before SPX and SPXEW or SPX-SPXEW (don’t care other areas)  
    
  - Going back? What makes SPX tops? The tops of its component equity.**