# Research Categories

1. **Price Based/Technical Indicators**
2. Traditional: MACD/RSI/DMA
3. Alternative: Kendall Tau/Acceleration of Slope
4. Breakouts: Price Range breakout combined with Opening Gap
5. Levels: Find critical Support Resistance Levels
6. Constant Range Bars: Use revised Time Series to find trend in time series
7. High Low Distance: Distance of Close of the bar from its High and Low
8. N-bar Reversal: Reversal Signal based on previous N High-Low Data
9. Pattern based – like Storm, Afternoon, Ichimoku Clouds, Heikin-Ashi Candles
10. **Statistical Arbitrage**
11. Lead Lag Relationship
12. Pairs Trading
13. Time Series Pattern Clustering using Euclidean Distance
14. VPIN - Volume Synchronized Probability of Informed Trading
15. **SENTIMENT Based Strategies**
16. Volume – Price Profile

* Find Critical Levels to play breakouts (trend) or reversals (contra)
* Value Area Patterns: What happens to price when it enters a ‘High Traded Volume’ zone

1. Constant Volume Bars: Use revised Time Series to find trend in time series
2. Post Peak Volume & Price: Follow up move from High Volume Point
3. OI accumulation or drastic change in OI
4. Cash – Future divergence – extreme premiums or discounts
5. Flow based – Flows from Retail, DII or FIIs
6. **Order Book Information**
7. Bid Competition Ratio/Bid Pressure
8. Height & Size Imbalance
9. Order Flow Imbalance
10. VWAP Close Imbalance
11. Trade Imbalance
12. Price Bubbles (Require deeper Depth to be effective)
13. Limit Order Book Short Term Price Prediction using regression
14. **External Indicators**
15. Foreign Market Indicators (S&P, DAX, CAC, Currencies, Commodities, Bonds, etc)
16. Signal from Local Equity Index
17. Currency or Yield based indicators
18. Information from Options Markets

*LONG winner stocks with higher growth in call option implied volatility*

*SHORT loser stocks with largest drop in call option implied volatility*

1. Option Skew-ness Predicting Stock Returns

*IV (OTM Puts) – IV(ITM Calls)*

*LONG smallest skew stocks and SHORT highest skew stocks*

*Calculate Skew-ness at daily level (EOD) and play Intra-Day*

1. **Basket based**
   1. Sector based – existing systems on stocks
   2. Buy Losing Stocks in winning Industries and Sell Winning Stocks in Losing Industries
   3. High Alpha Basket
   4. Factors based baskets

*Defensive: Yield, Quality, Volatility*

*Diversified: Size, Value, Momentum, Yield, Quality, Volatility*

*Dynamic: Size, Value, Momentum*

1. **Market Neutral Long Short**
2. Statistical Factors: Skew/Kurtosis/Volatility/Range
3. Fundamental Factors: Probably hard to play at Intraday Level
4. Day High/Low MN Trend/Contra

# Factor-based Allocation Model

1. **Features**
2. Normal Distribution Moments: Skew/Kurtosis
3. Displacement/Distance (Can be calculated at different levels of granularity – Morning/Afternoon/n-Day
4. OC^2/R (Can be calculated at different levels of granularity – Morning/Afternoon/n-Day
5. Gap Magnitude/Gap Direction
6. Beta
7. Across-Day/Intra-Day Trend Parameter: Tau
8. Retracement/Swing Point Count
9. Fundamental
10. Adding local/global macro fundamentals for market regime detection
11. Liquidity most important criteria for regime – both local or global
12. Mapping features time duration to duration of system
13. Correlation among stocks, sectors or factors, global indices , asset classes & Systems
14. Calculating signal/noise ratio of stocks
15. **Attribution Techniques**
16. Principal Component Analysis
17. Regression
18. Reinforcement Learning for Feature/State Prediction
19. Model environment variable – predict environment & then allocate to different stocks & systems
20. Have two models – one to map different environment variables to systems (probably semi annual) & second to predict environments (probably biweekly)
21. Plus some outliers based allocation – to add stocks to universe on short term anomalies