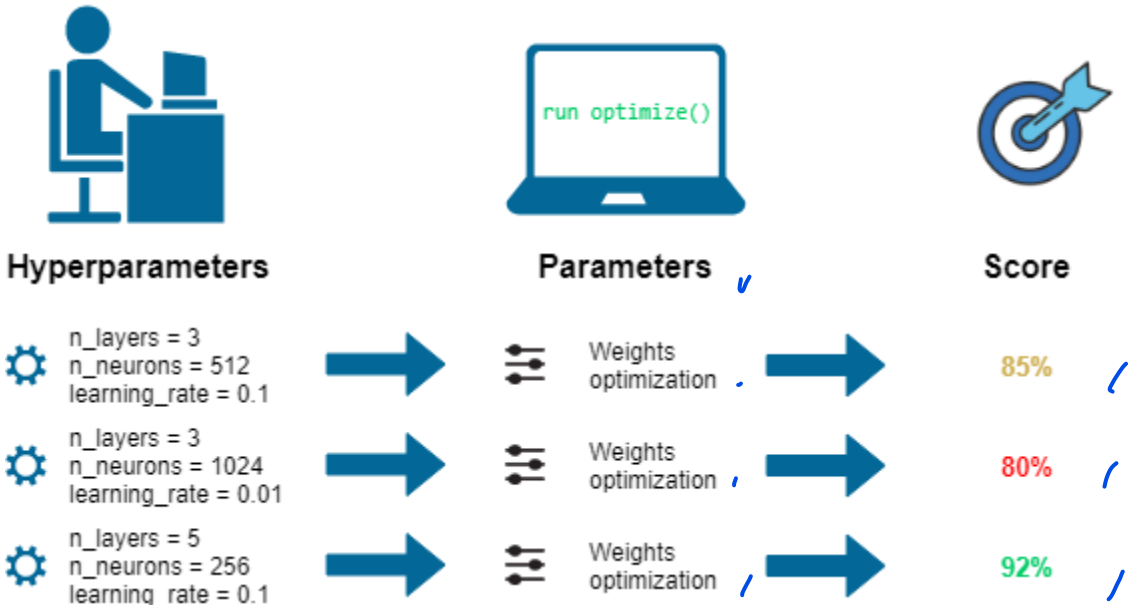
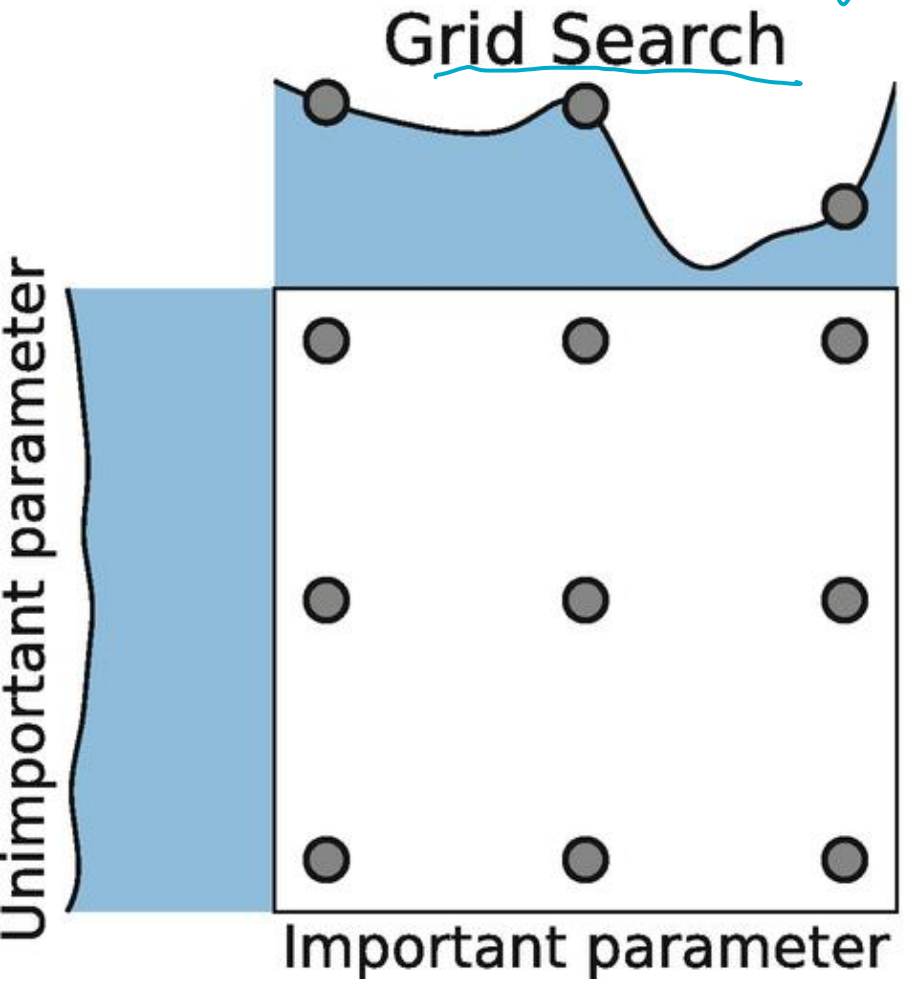
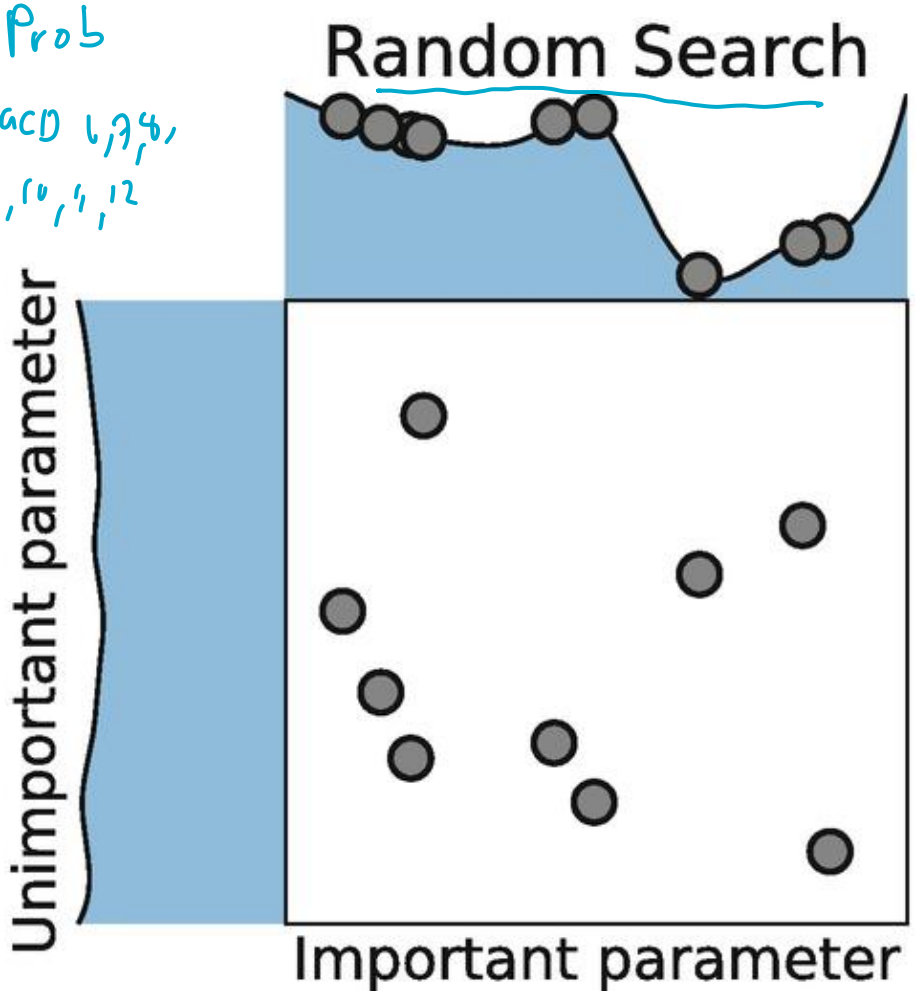
GridSearch Wrapup



INVESTIC

GridSearch Wrapup





INVESTIC

GridSearch Wrapup

Macd Fast EMA	MACD Slow EMA	MACD SMA	Profit in pips
12	26	9	390
12	26	5	381
12	26	18	376
24	52	18	370
24	26	9	360
12	34	9	314
12	14	9	306
6	26	9	260
6	13	5	220
			forex.in.rs

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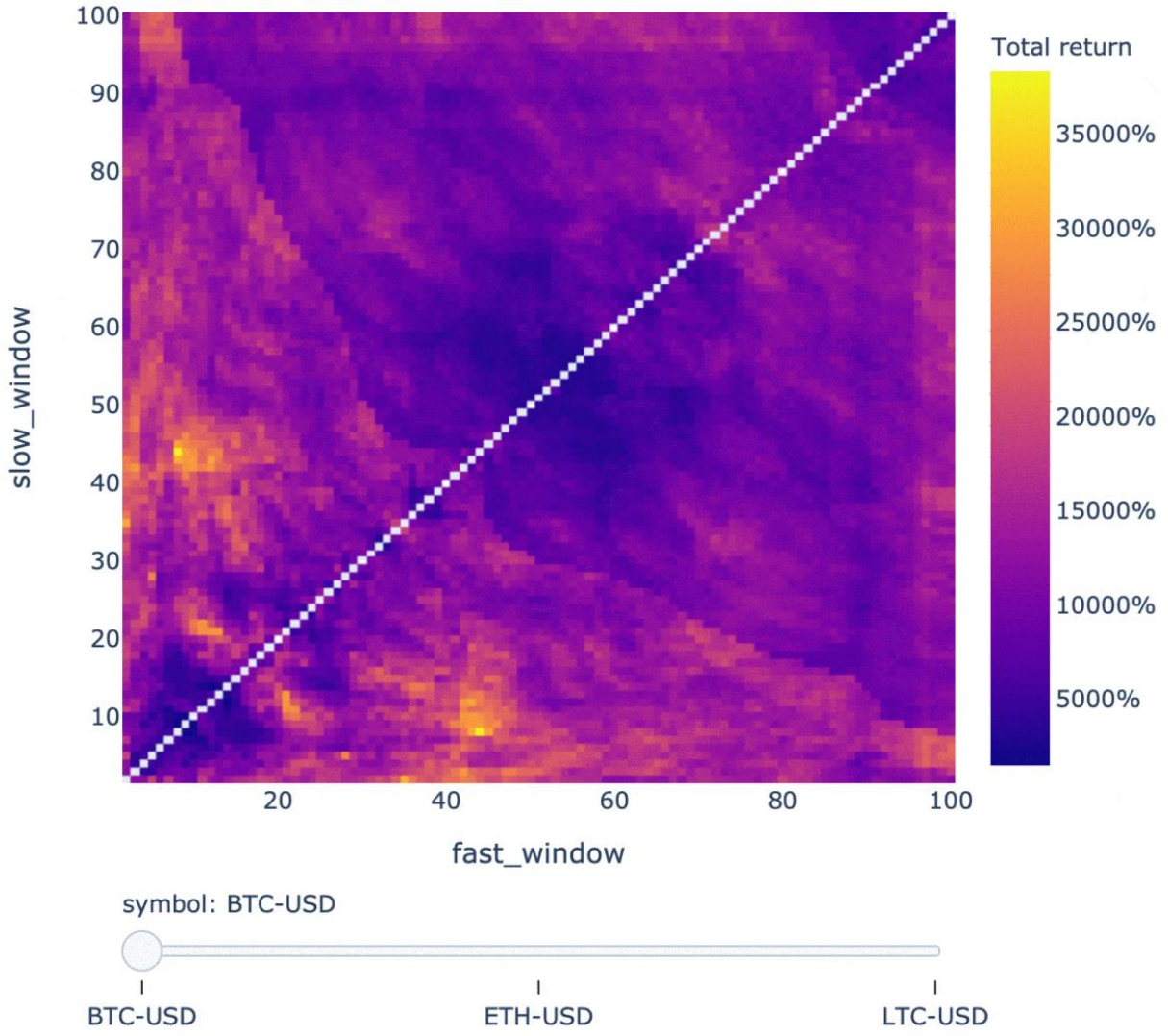
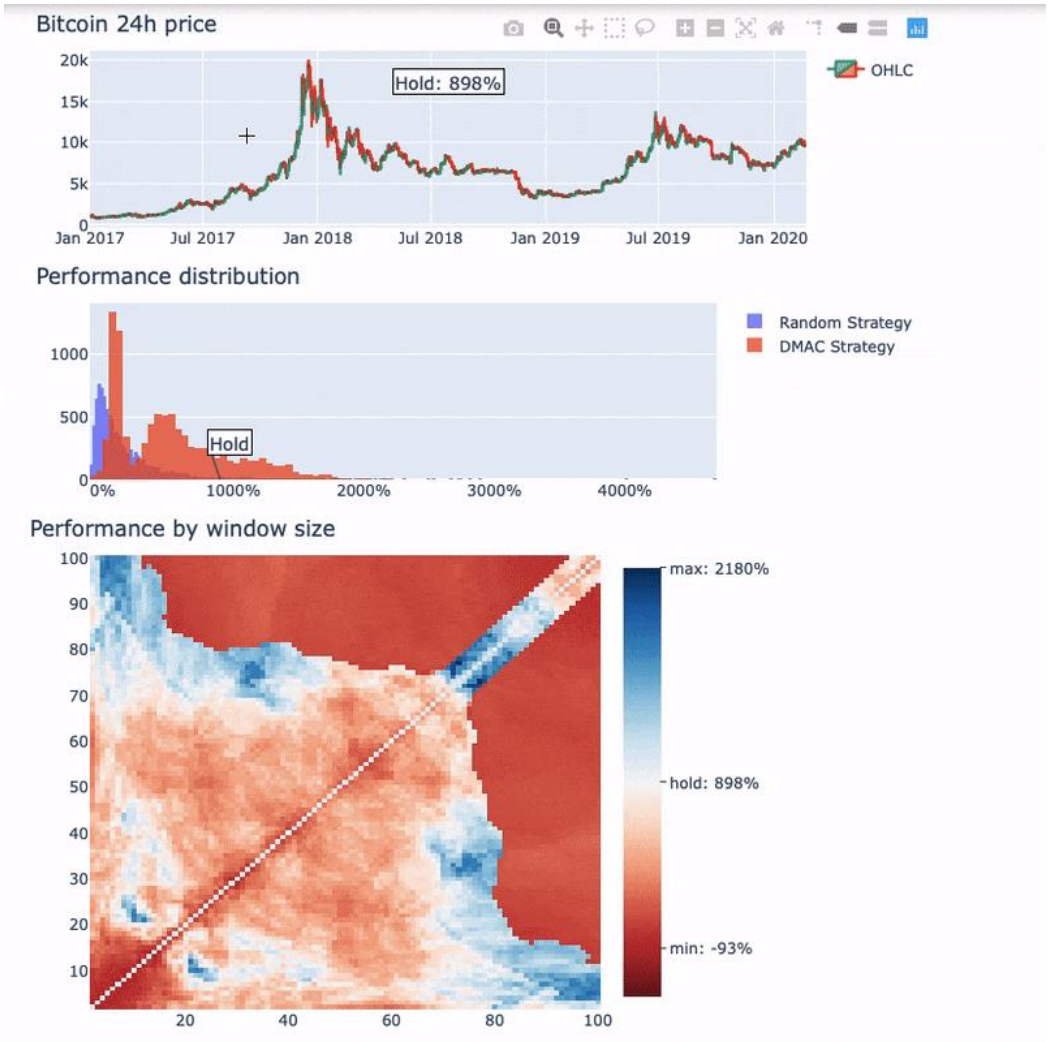
Backtesting vs Parameter Tuning

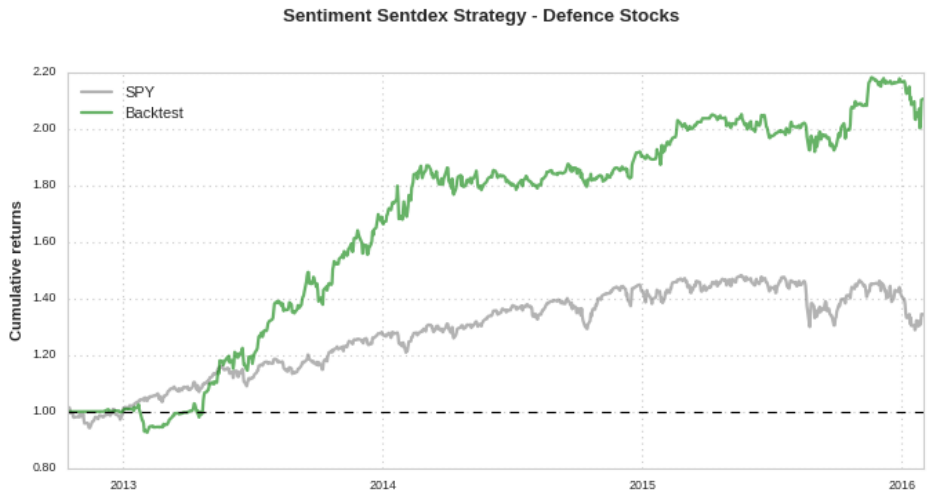


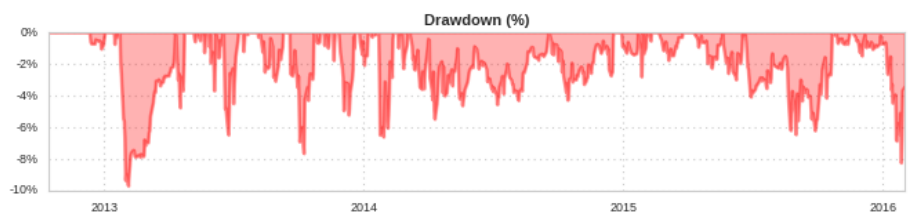
INVESTIC

Backtest Wrapup



Backtest Wrapup





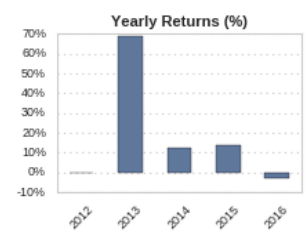
สายจัดพอร์ต

0 to Limit →

Drawdown

Monthly Returns (%)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2012	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0
2013	-7.0	2.4	4.7	7.8	9.1	1.5	11.9	1.2	6.9	5.7	6.4	4.2
2014	3.2	5.8	0.1	-1.4	0.3	-1.2	-0.2	2.3	1.1	-1.6	1.6	2.2
2015	0.8	4.7	1.5	-1.3	-0.6	-1.5	2.2	-3.3	-0.4	7.5	3.4	0.6
2016	-3.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Curve vs. Benchmark

Total Return	111%	34%
CAGR	25.45%	9.42%
Sharpe Ratio	1.69	0.75
Sortino Ratio	2.19	1.01
Annual Volatility	14.04%	13.21%
R-Squared	0.88	0.84
Max Daily Drawdown	9.69%	13.04%
Max Drawdown Duration	138	175
Trades per Year	24.6	

Trade

Trade Winning %	57%
Average Trade %	3.75%
Average Win %	8.33%
Average Loss %	-2.27%
Best Trade %	52.78%
Worst Trade %	-7.46%
Worst Trade Date	TBD
Avg Days in Trade	0.0
Trades	81

Time

Winning Months %	71%
Average Winning Month %	3.43%
Average Losing Month %	-1.80%
Best Month %	11.90%
Worst Month %	-7.04%
Winning Years %	60%
Best Year %	68.85%
Worst Year %	-2.76%

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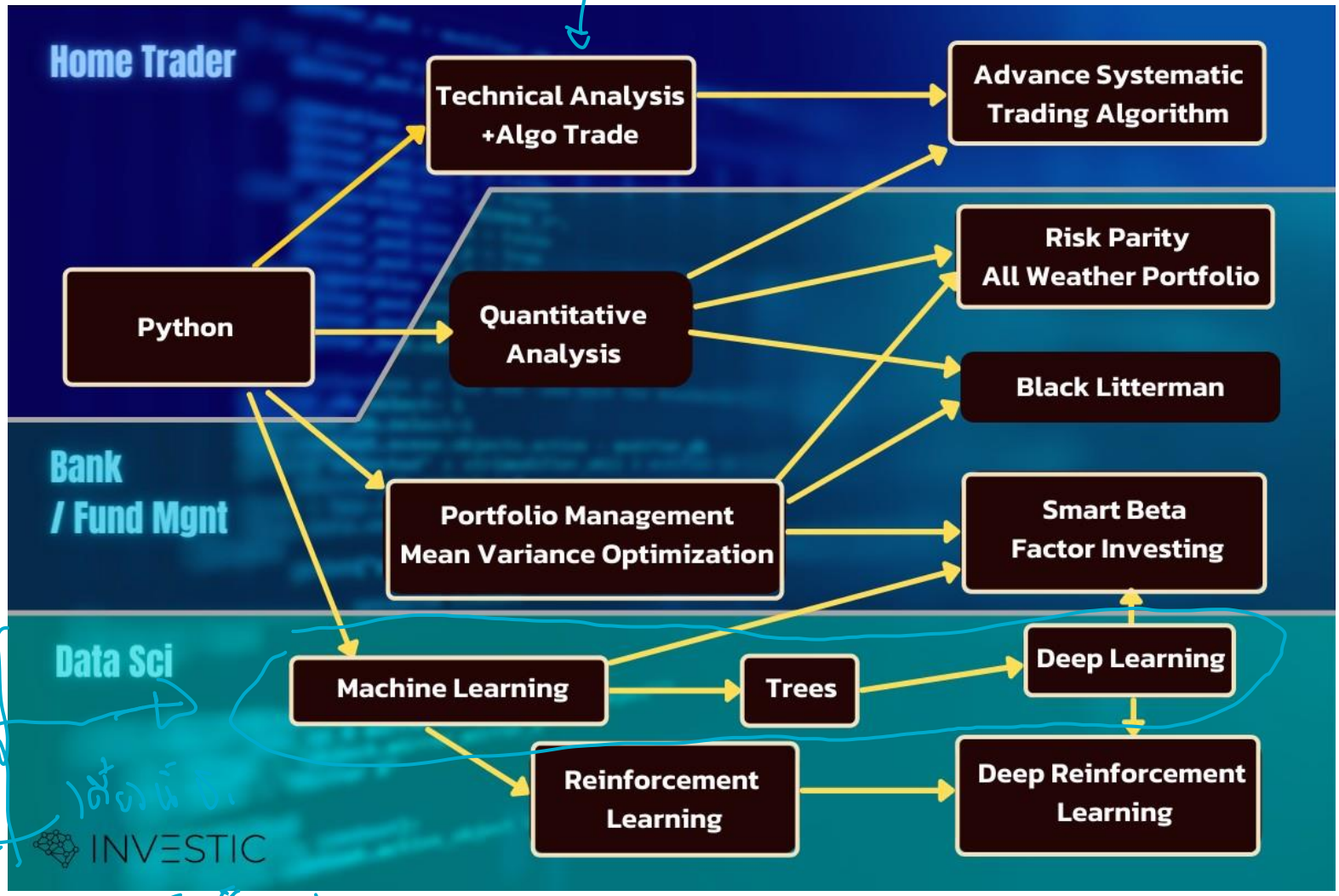
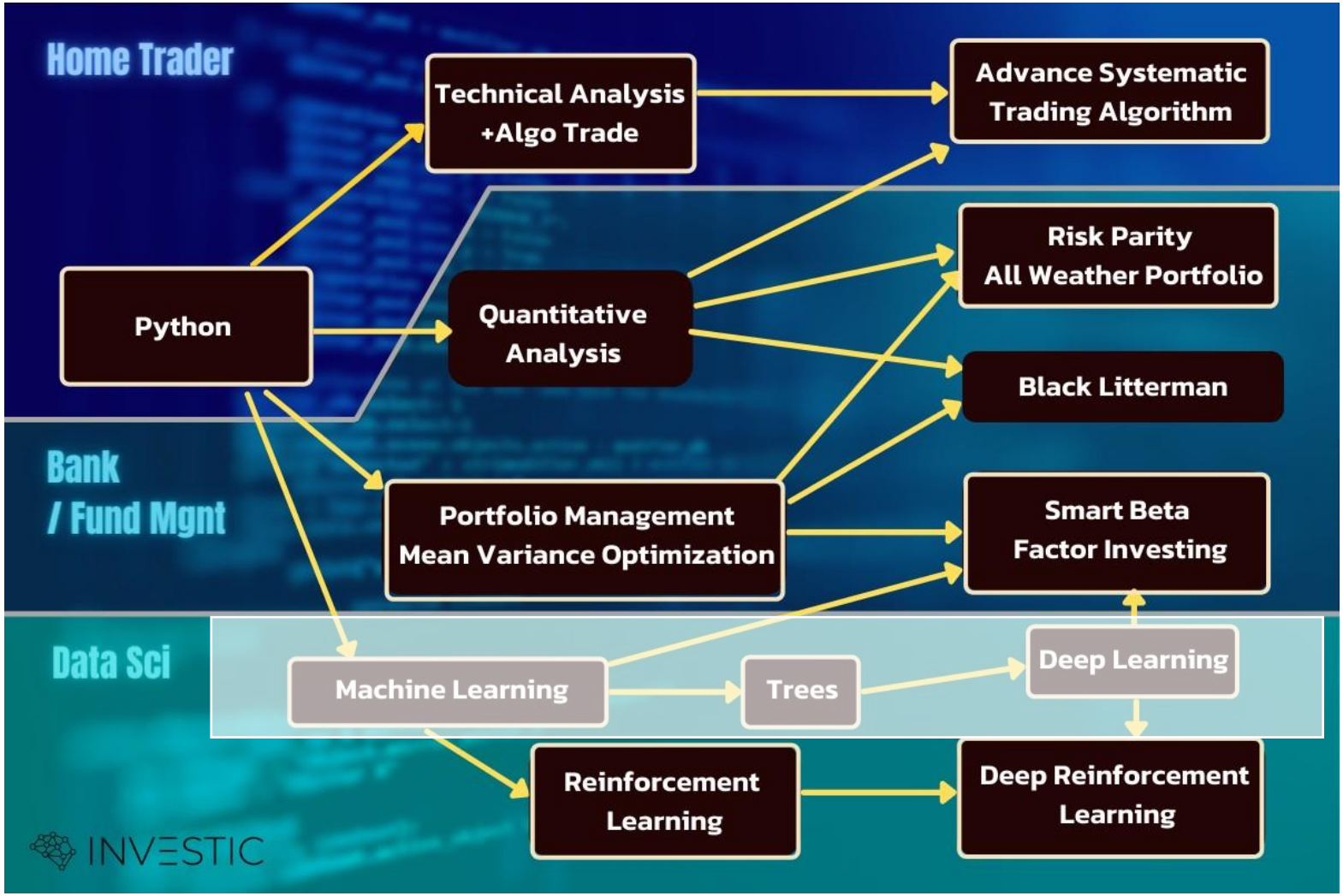
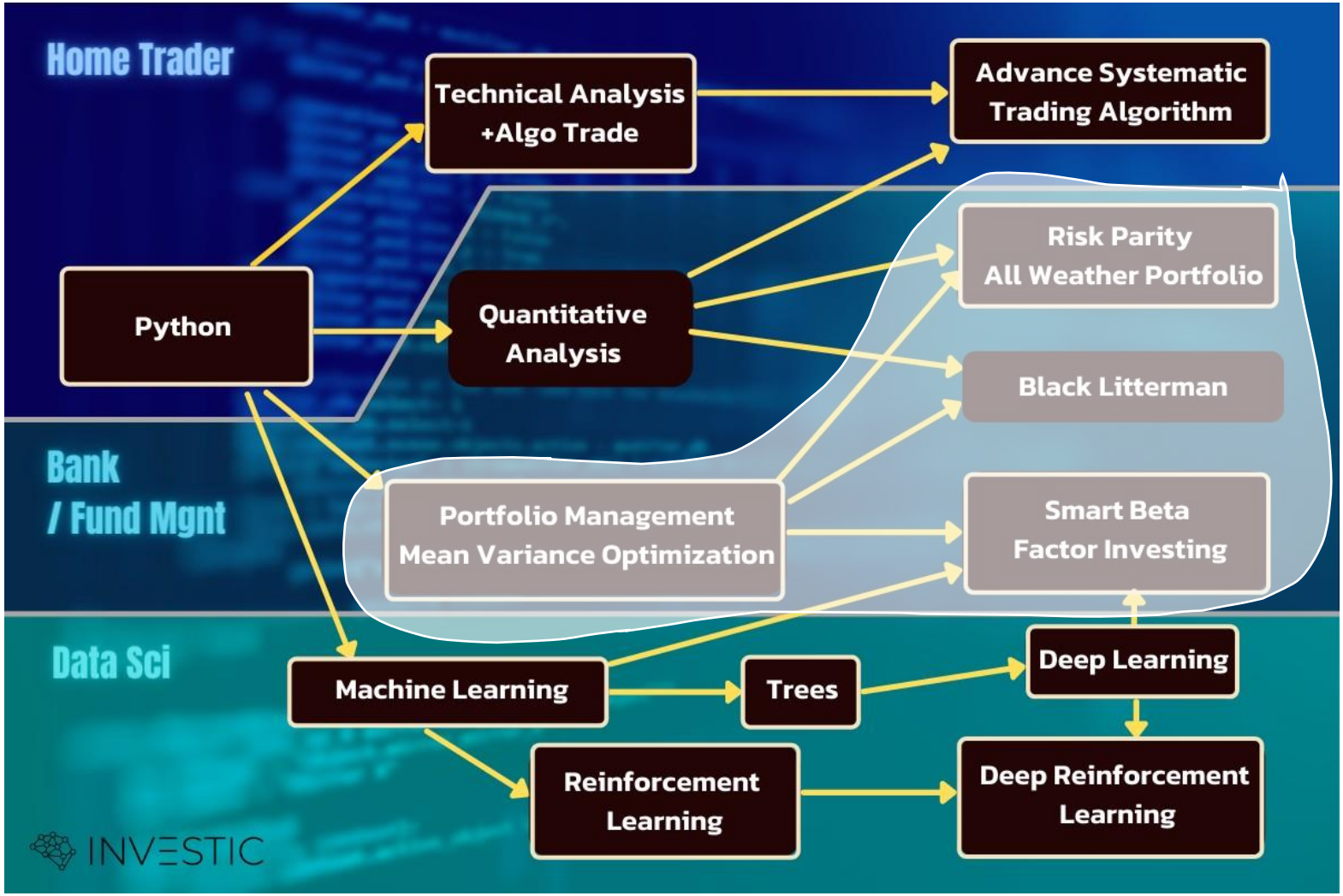
Skill Trees


Home Trader
Technical Analysis +Algo Trade
Advance Systematic Trading Algorithm
Python
Quantitative Analysis
Risk Parity All Weather Portfolio
Black Litterman
Bank / Fund Mgnt
Portfolio Management Mean Variance Optimization
Smart Beta Factor Investing
Data Sci
Machine Learning
Trees
Deep Learning
Reinforcement Learning
Deep Reinforcement Learning
INVESTIC

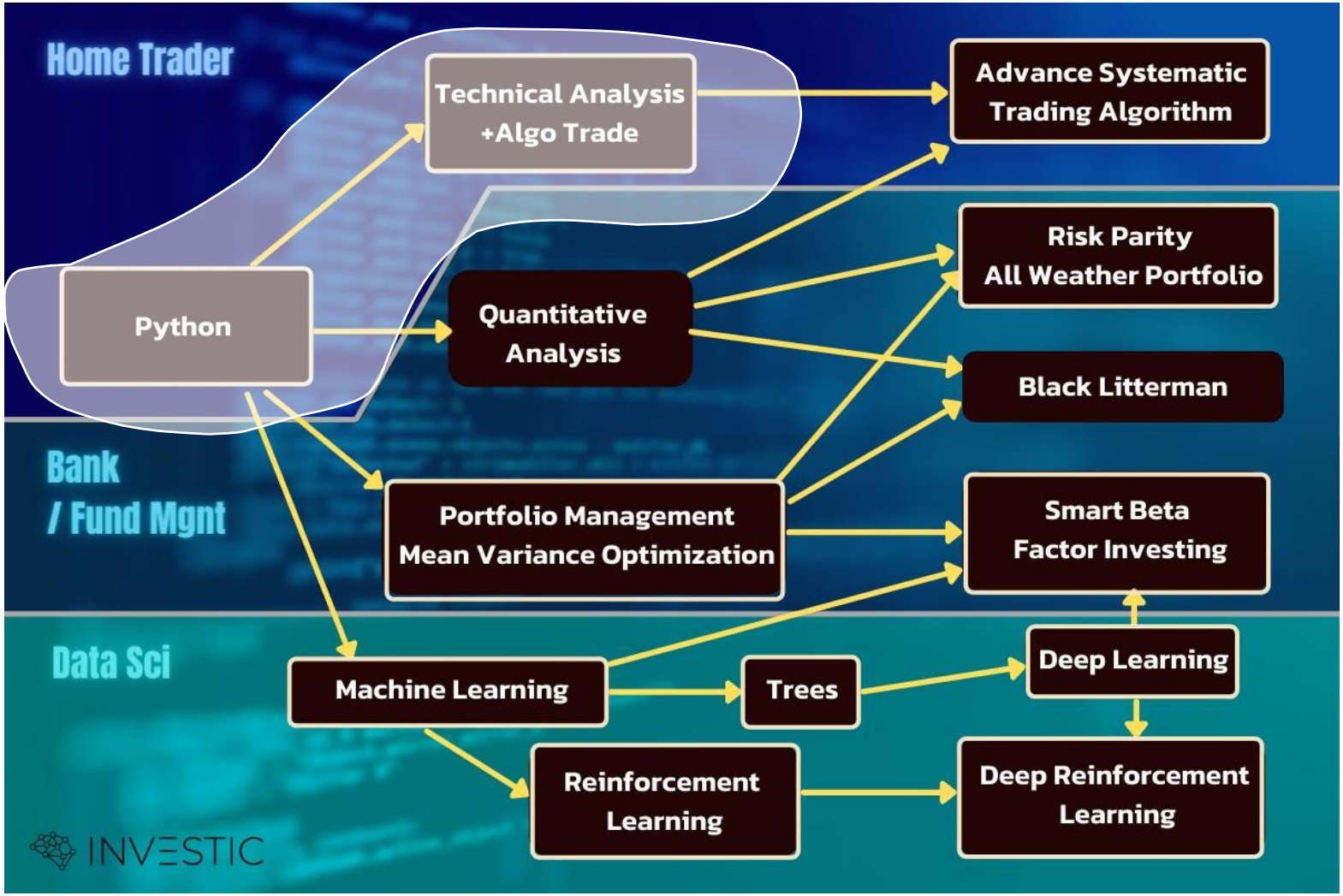
Machine Learning Trees



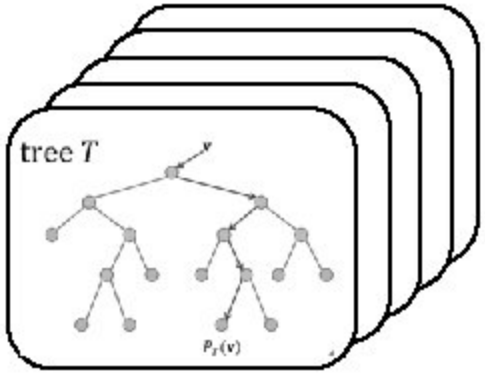
Portfolio Management Trees



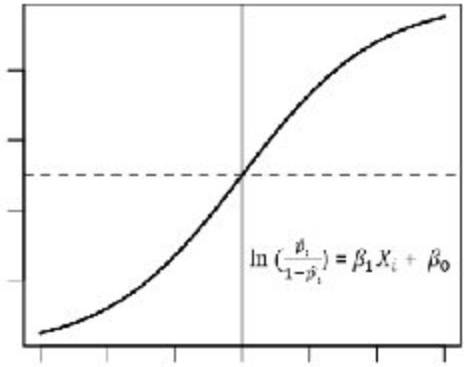
Technical Analysis Trees



What do you think?



VS



What do you think?

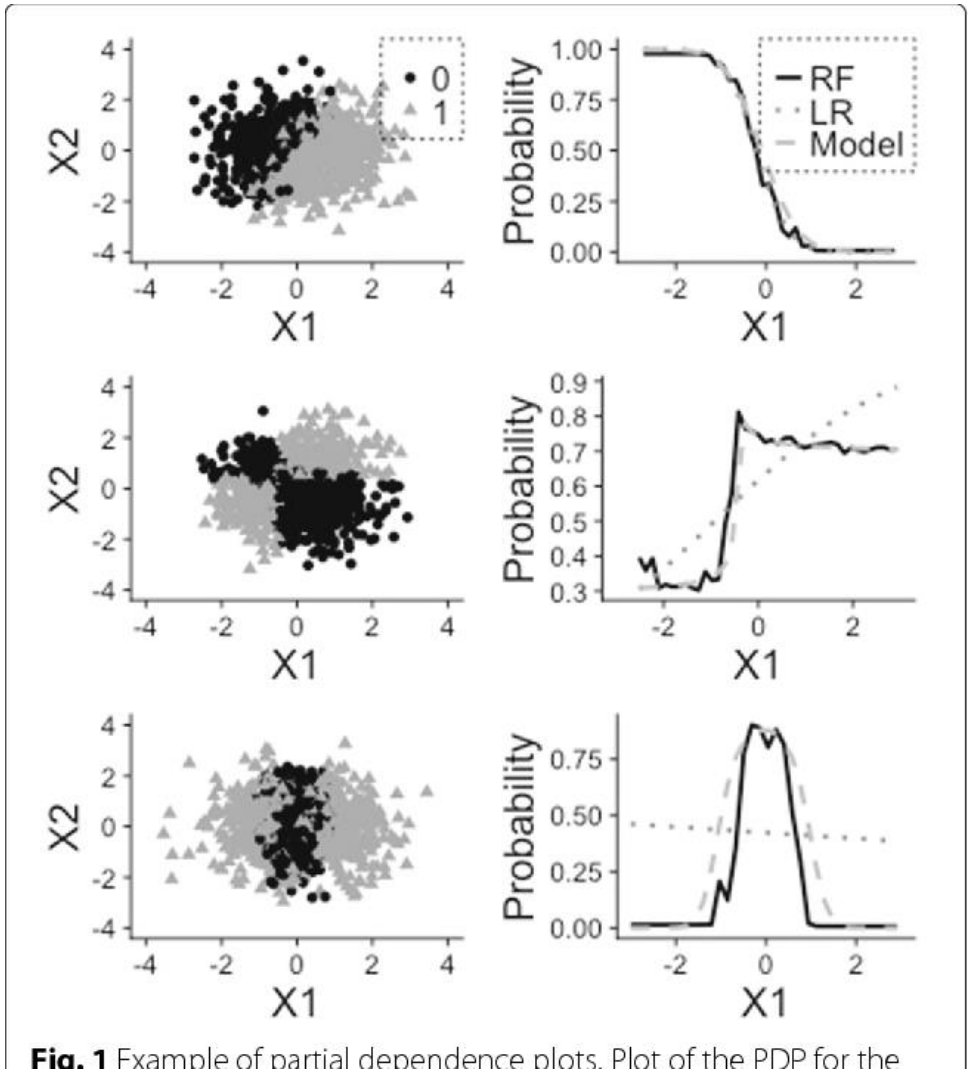
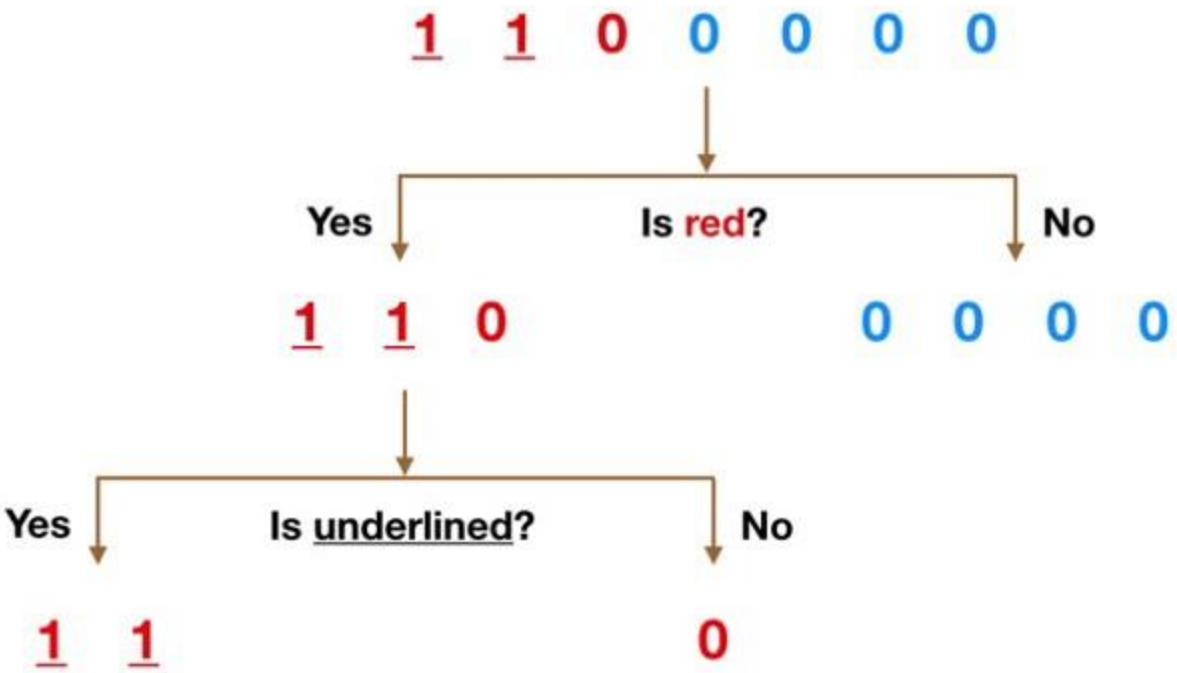


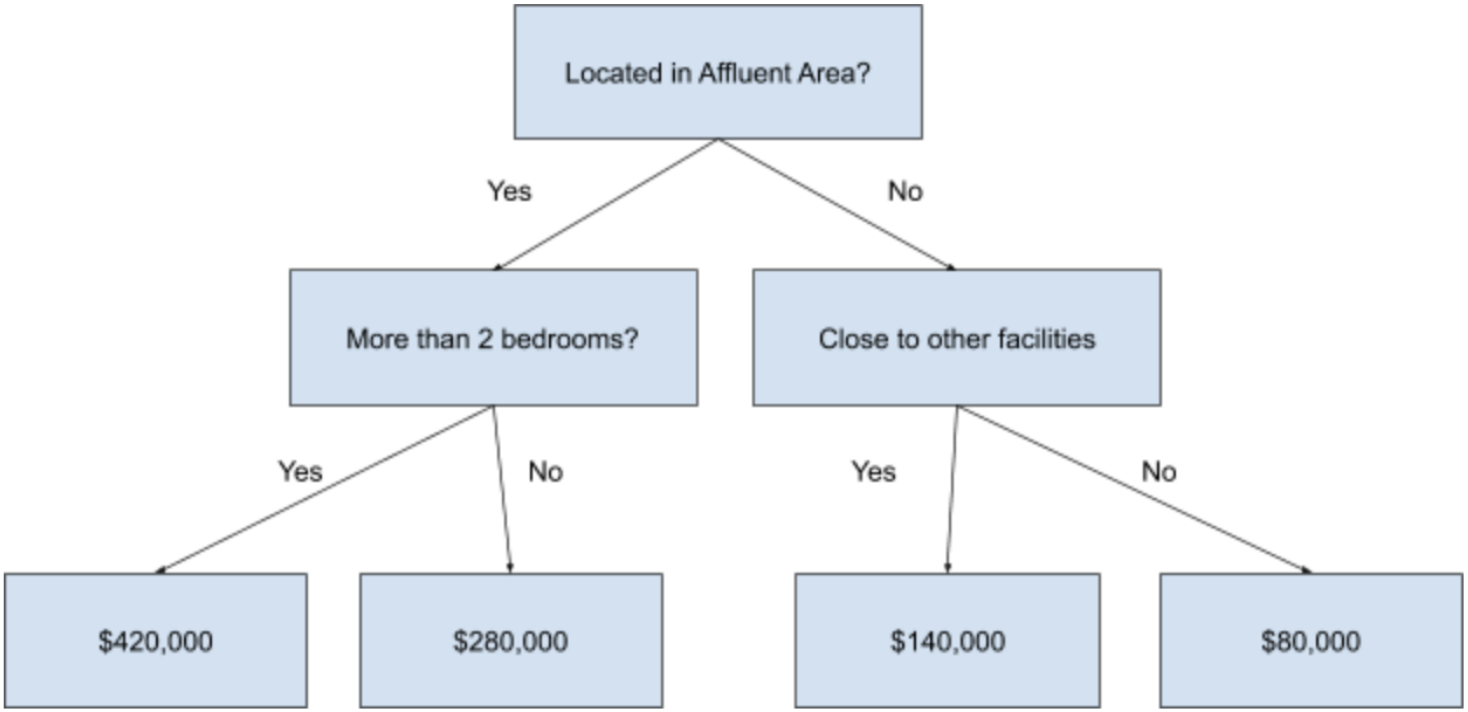
Fig. 1 Example of partial dependence plots. Plot of the PDP for the

Decision Trees

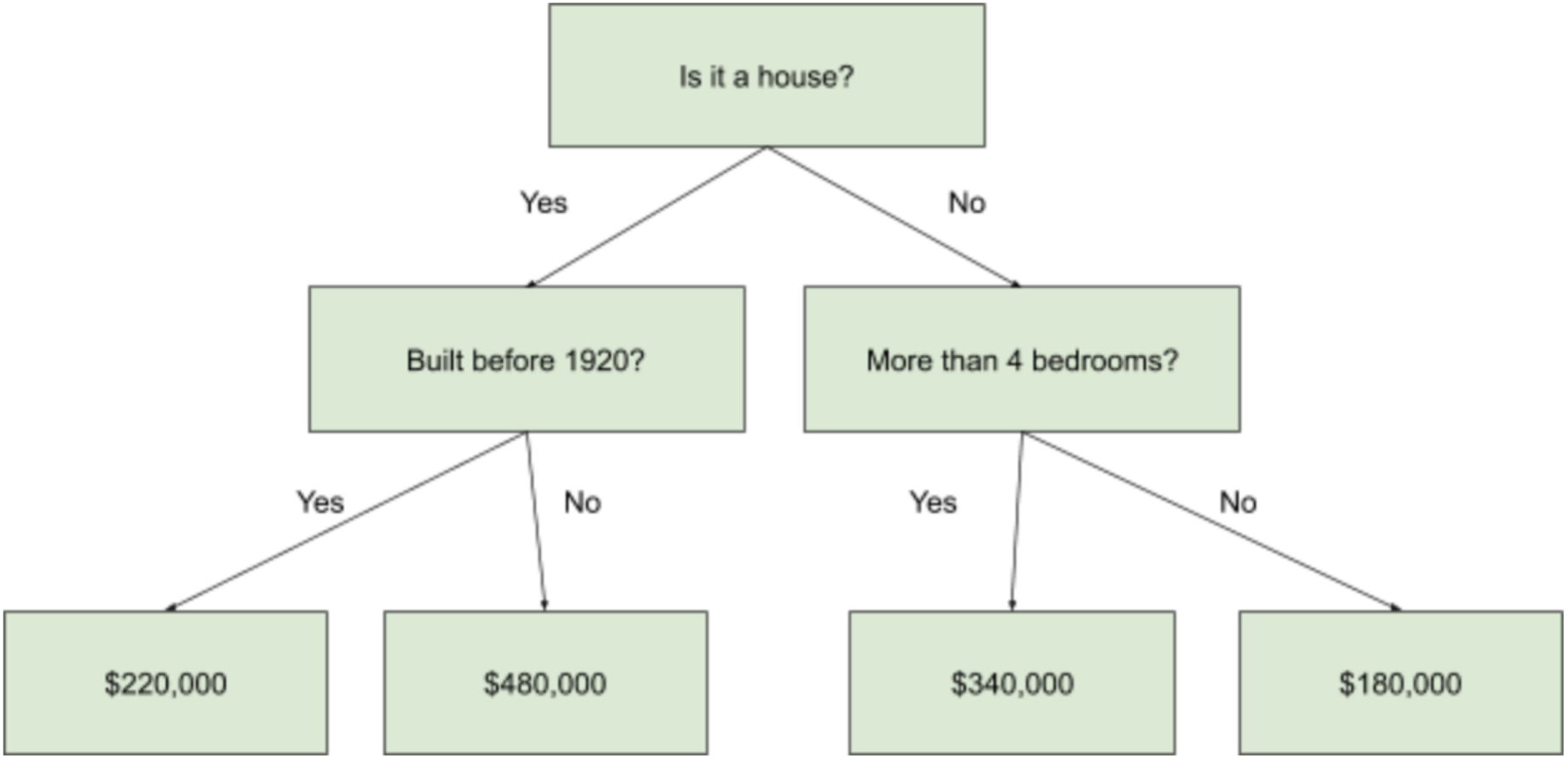


How do you think?

Buying a house: The obvious thing to do would be to look at historic prices of houses sold in the area, then create some kind of decision



How do you think?



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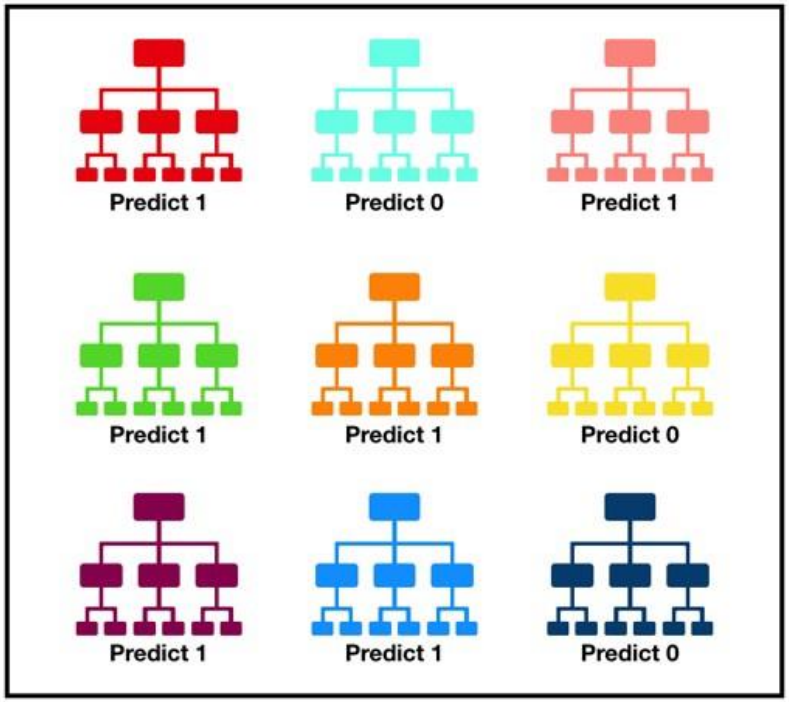
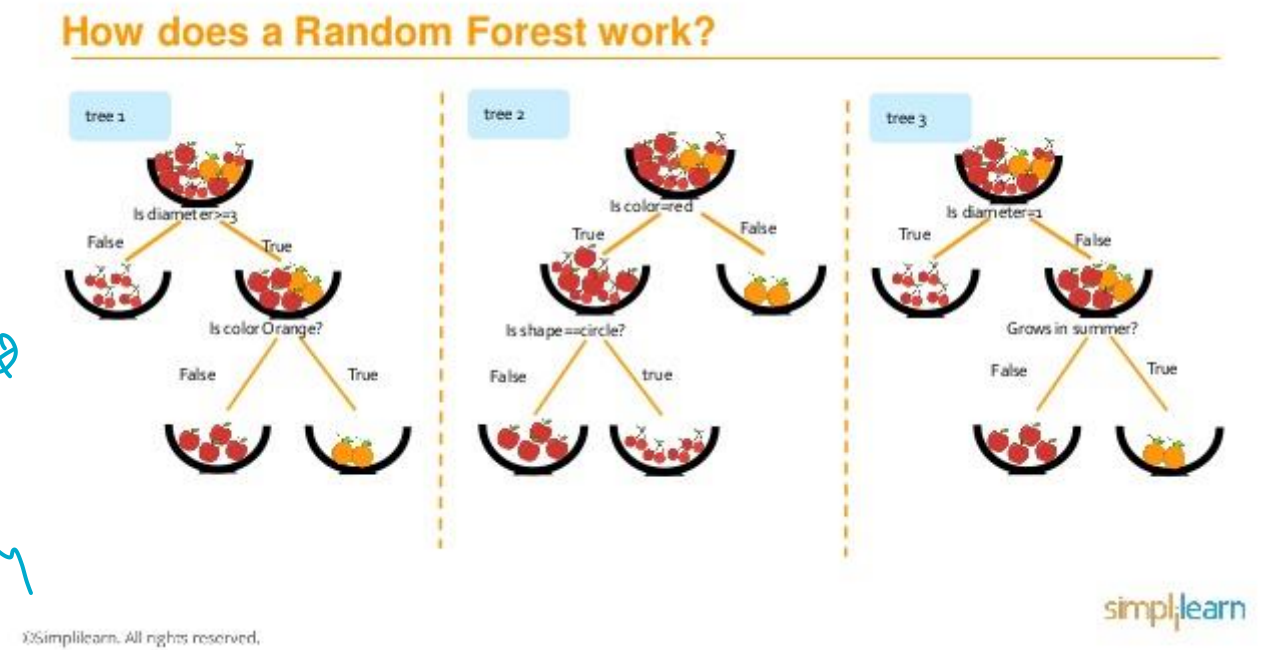
Random Forest

The random forest regression algorithm takes advantage of the ‘wisdom of the crowds’. It takes multiple (but different) regression decision trees and makes them ‘vote’

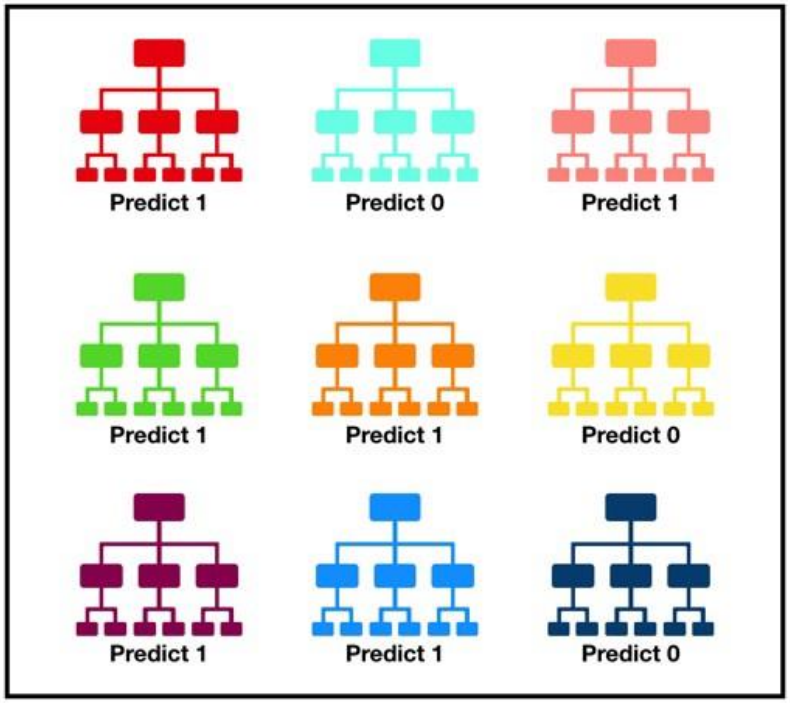


Random Forest

Each tree needs to predict the expected price of the real estate based on the decision criteria it picked



Random Forest



Tally: Six 1s and Three 0s
Prediction: 1

Random Forest

Extremely high accuracy

It usually produces better results than other linear models, including linear regression and logistic regression.

Scales well

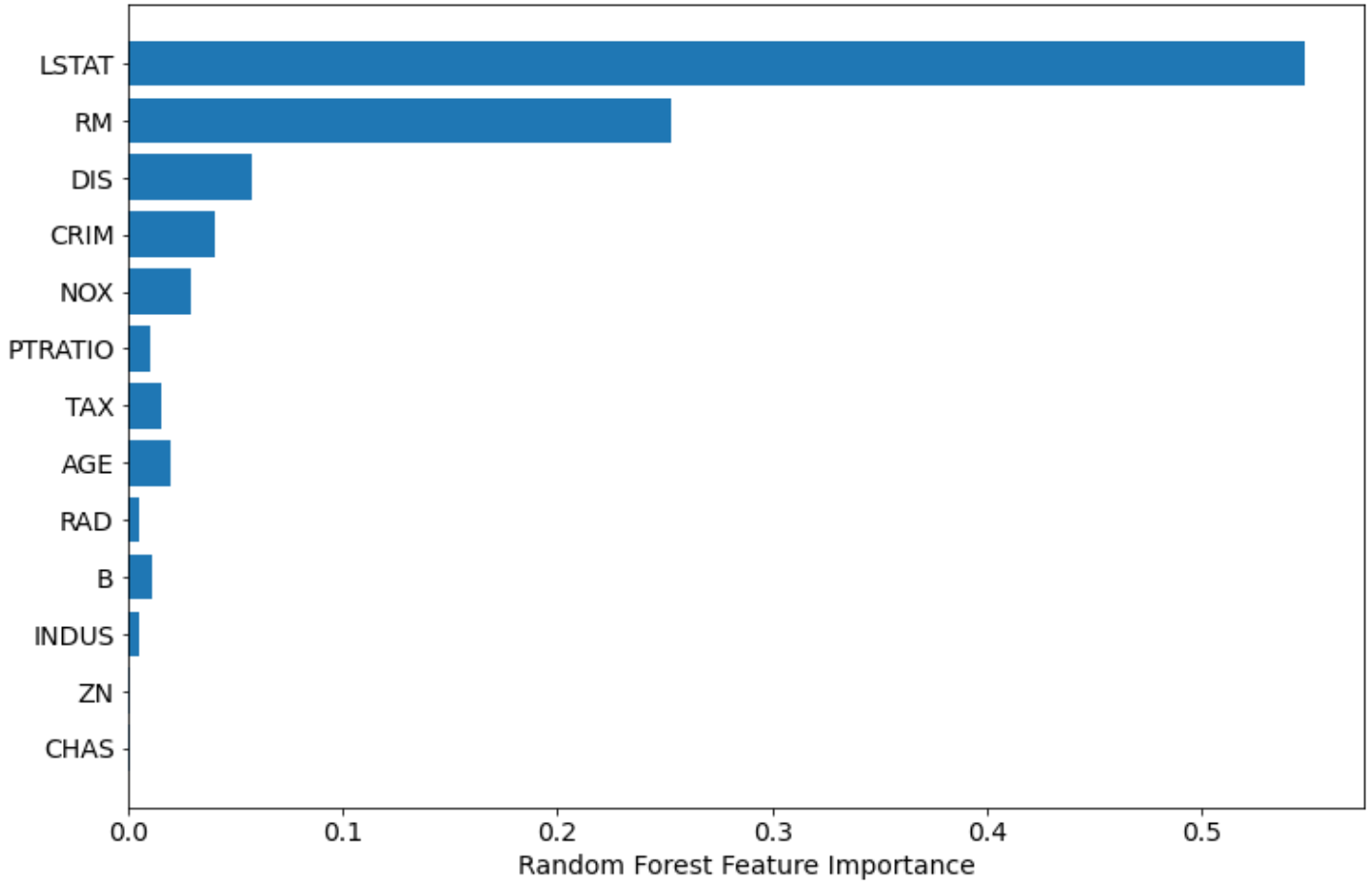
Computationally, the algorithm scales well when new features or samples are added to the dataset.

Interpretable

INVESTIC

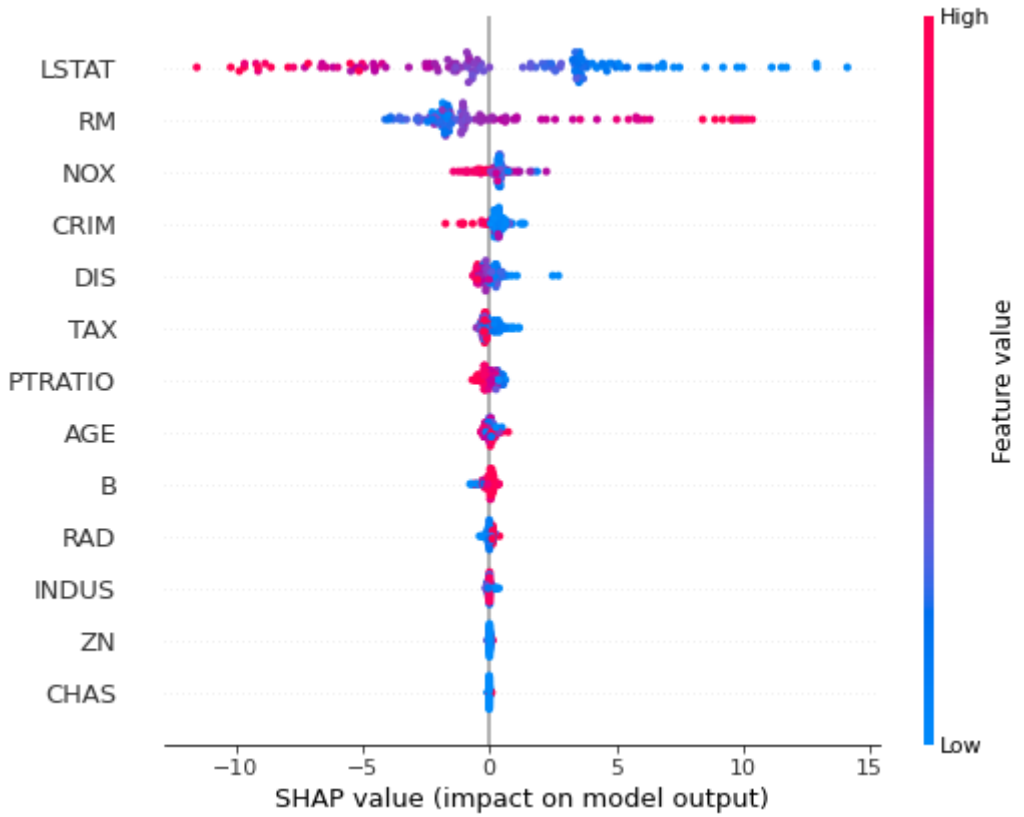
Feature Importance

Interpretable



Feature Importance

Interpretable



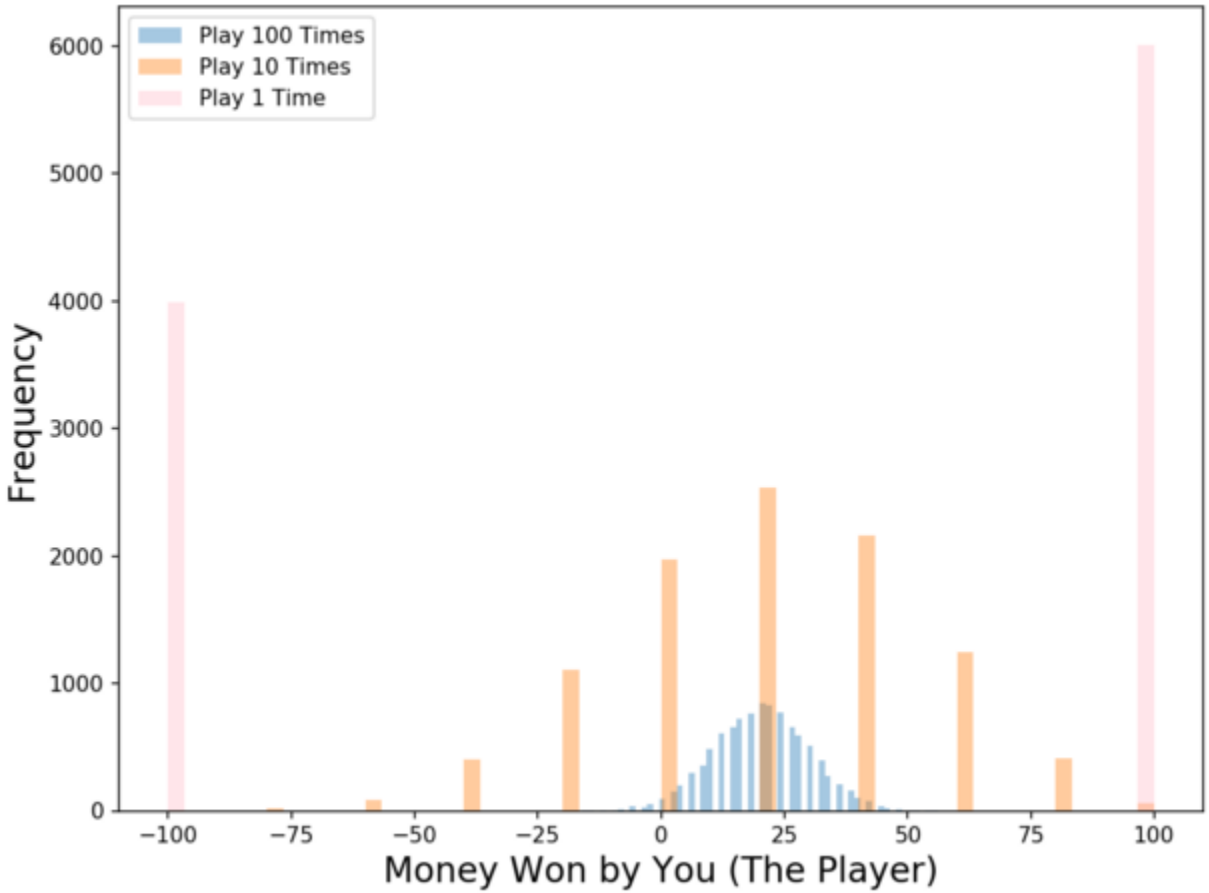
Consider

A game – random 0-100 , if number >40 = win

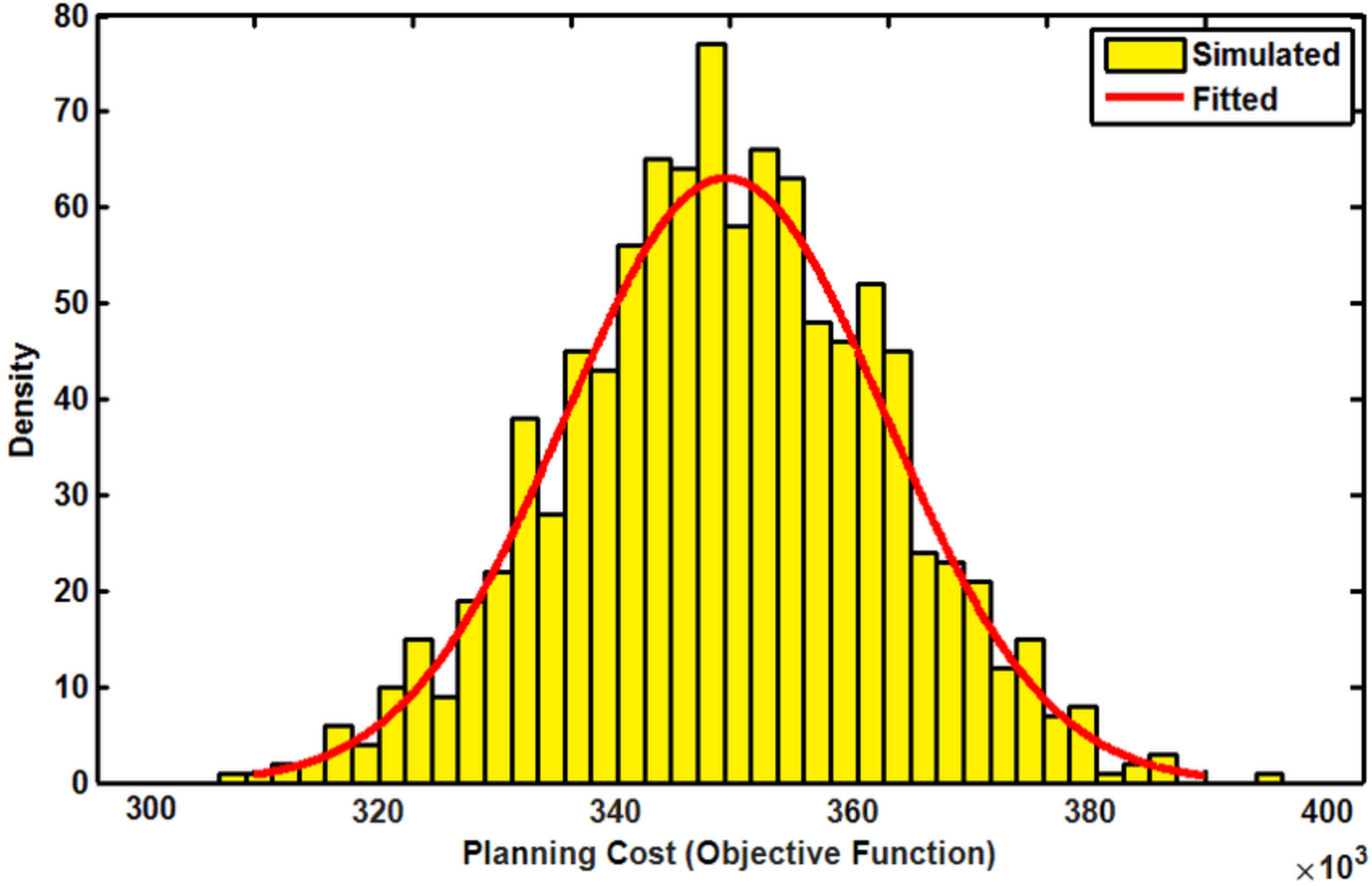
1. **Game 1** — play 100 times, betting $1 each time.
2. **Game 2**— play 10 times, betting $10 each time.
3. **Game 3**— play one time, betting $100.

*Expected Value Game 1 = (0.60*1 + 0.40*-1)*100 = 20*
*Expected Value Game 2= (0.60*10 + 0.40*-10)*10 = 20*
*Expected Value Game 3= 0.60*100 + 0.40*-100 = 20*

Monte Carlo Simulation



Monte Carlo Simulation



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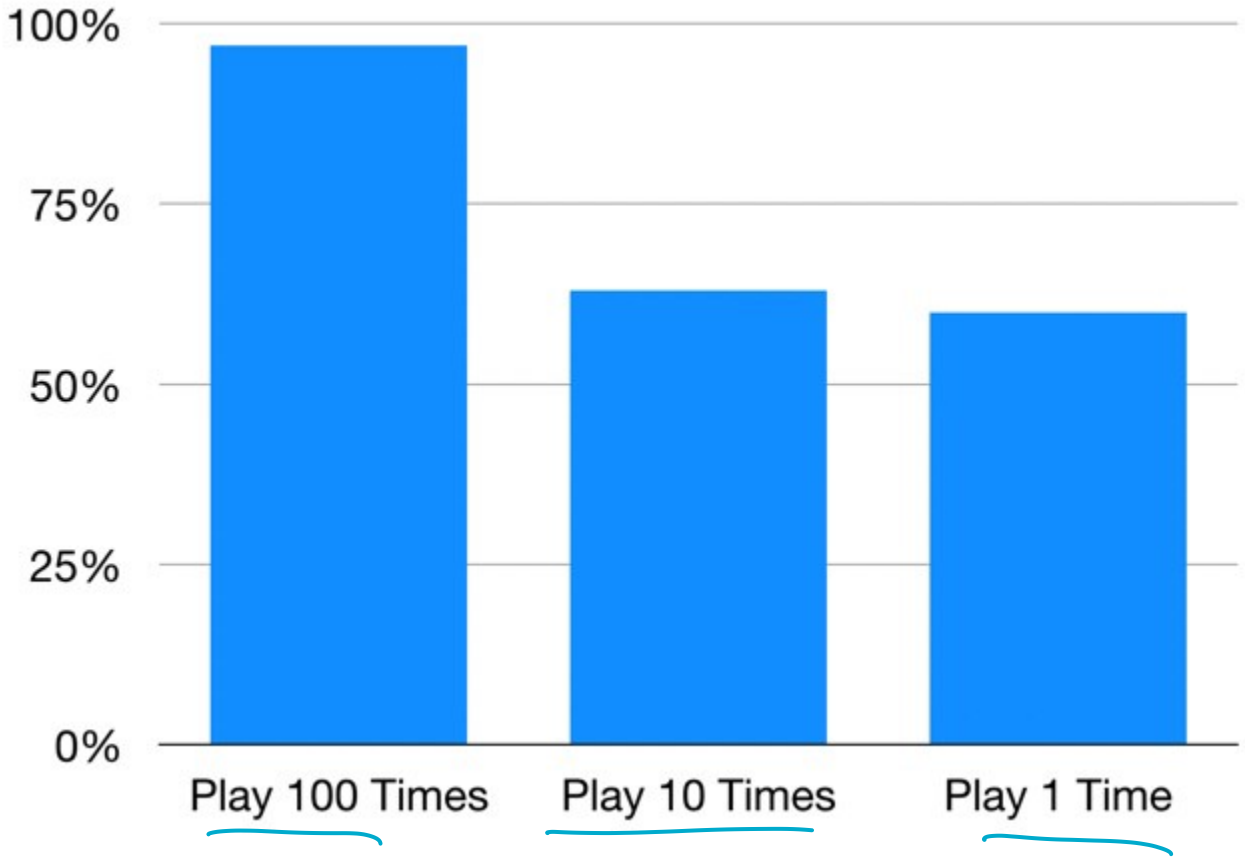
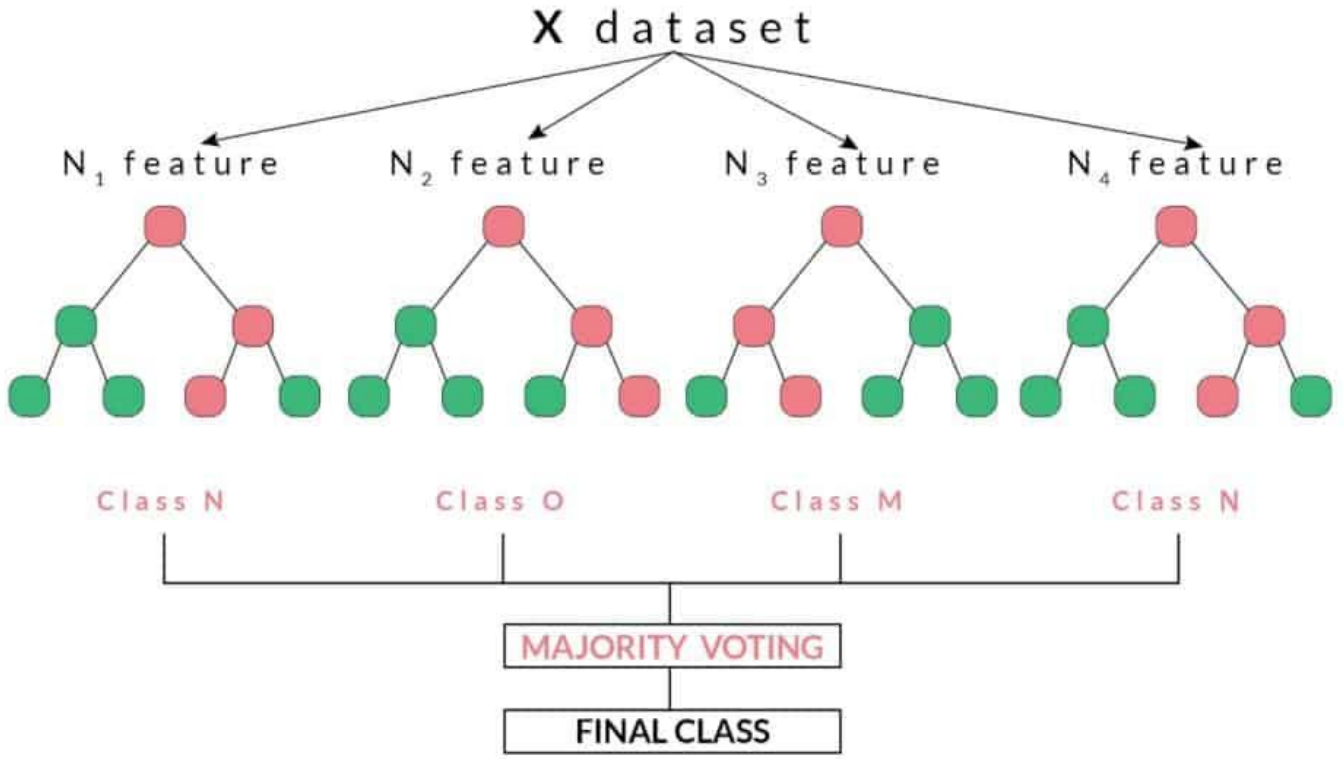
Monte Carlo Simulation



Random forest is the same — each tree is like one play in our game earlier.

Random Forest

OVERFIT?



Understand Model

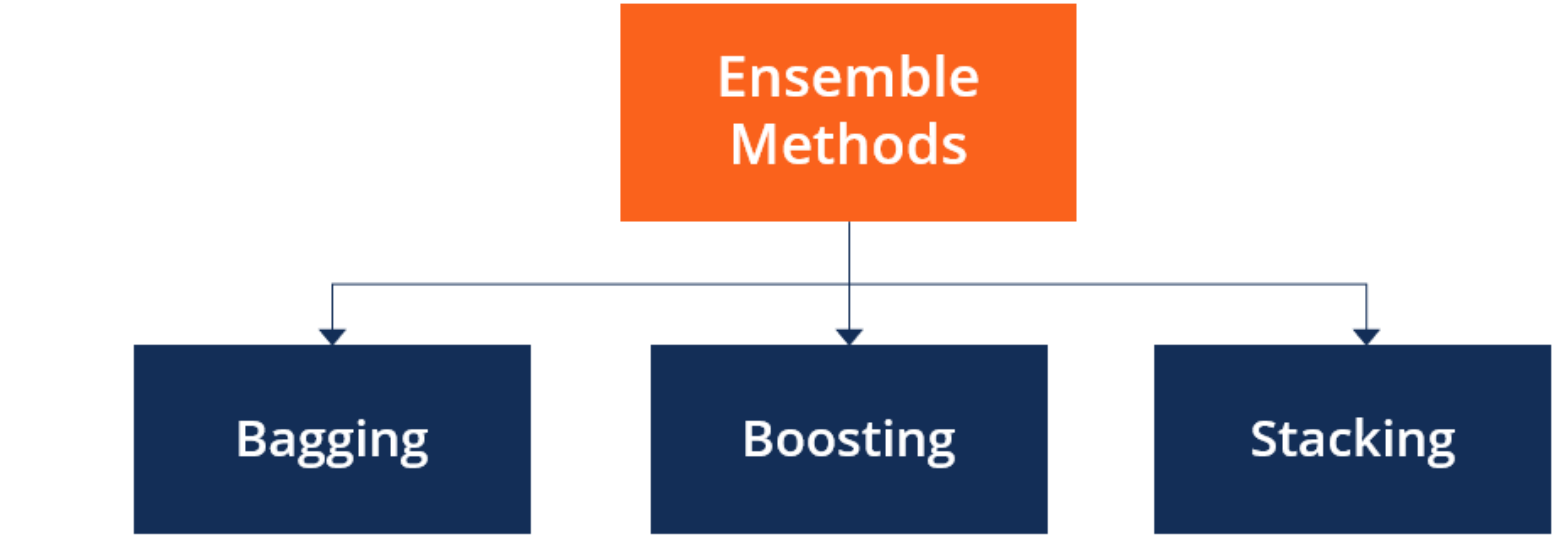
Random forest is both a **supervised learning** algorithm *and* an **ensemble** algorithm.

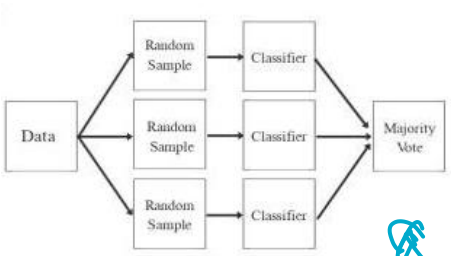
Ensemble algorithms **combine** multiple other machine learning algorithms,

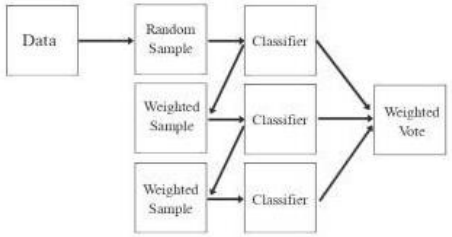
in order to make more accurate predictions than any underlying algorithm could on its own.

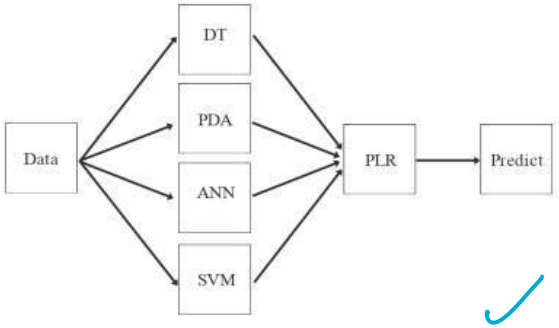
In the case of random forest, it ensembles multiple decision trees into its final decision.

Understand Model



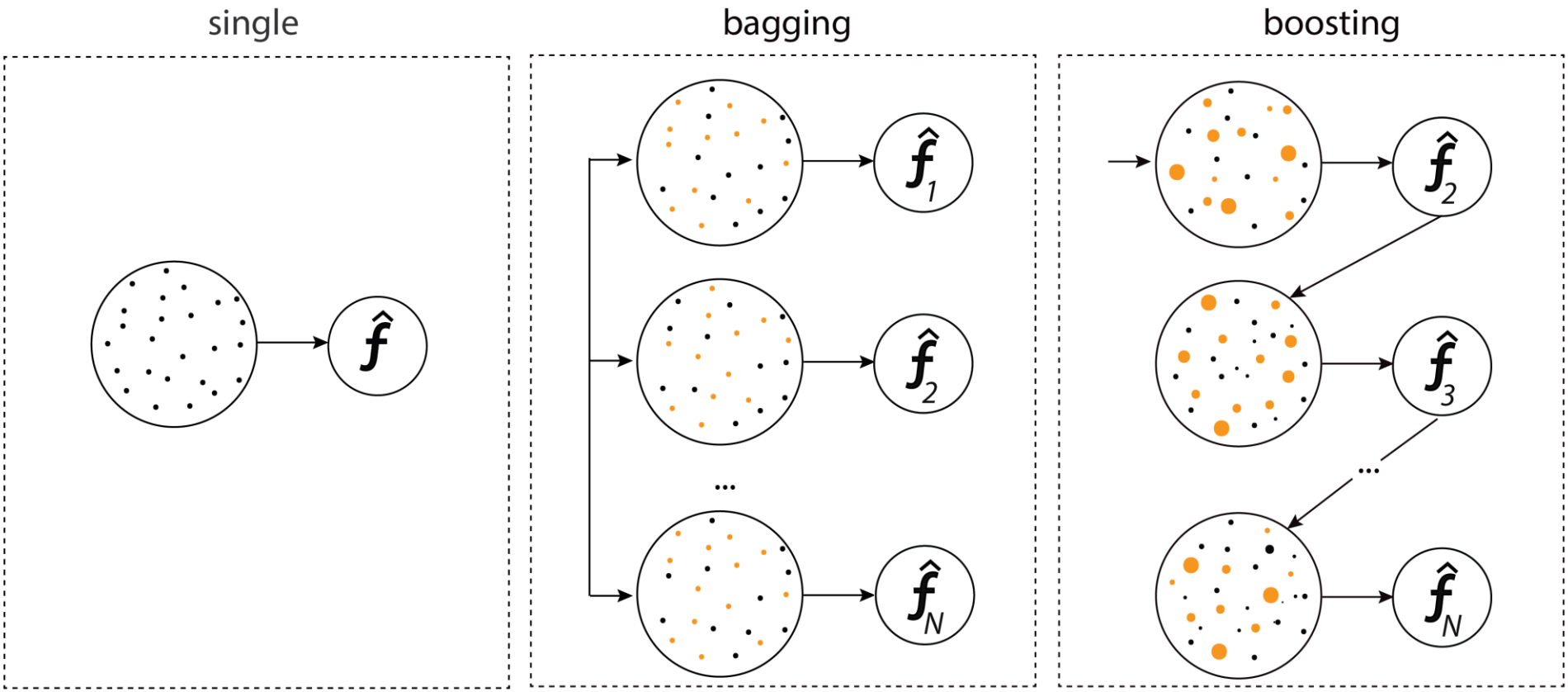






Random forest like Bagging

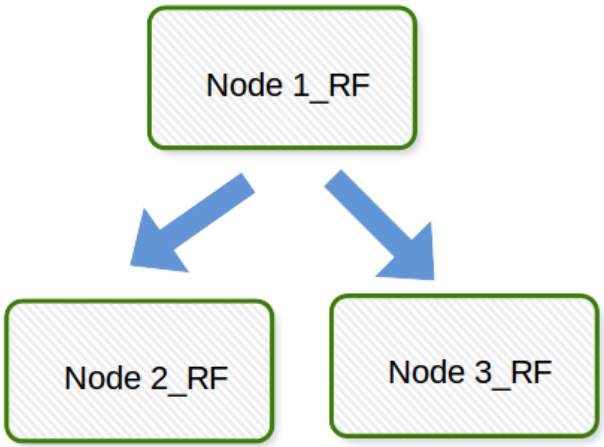
Bagging vs boosting



Random Forest vs Bagging Trees

Random forests--

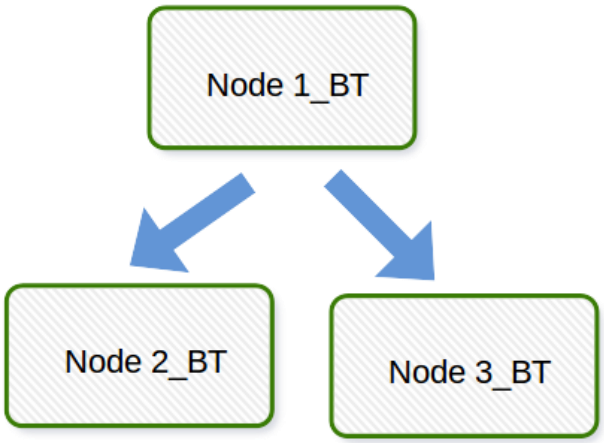
Only m<M features considered
for each node for split



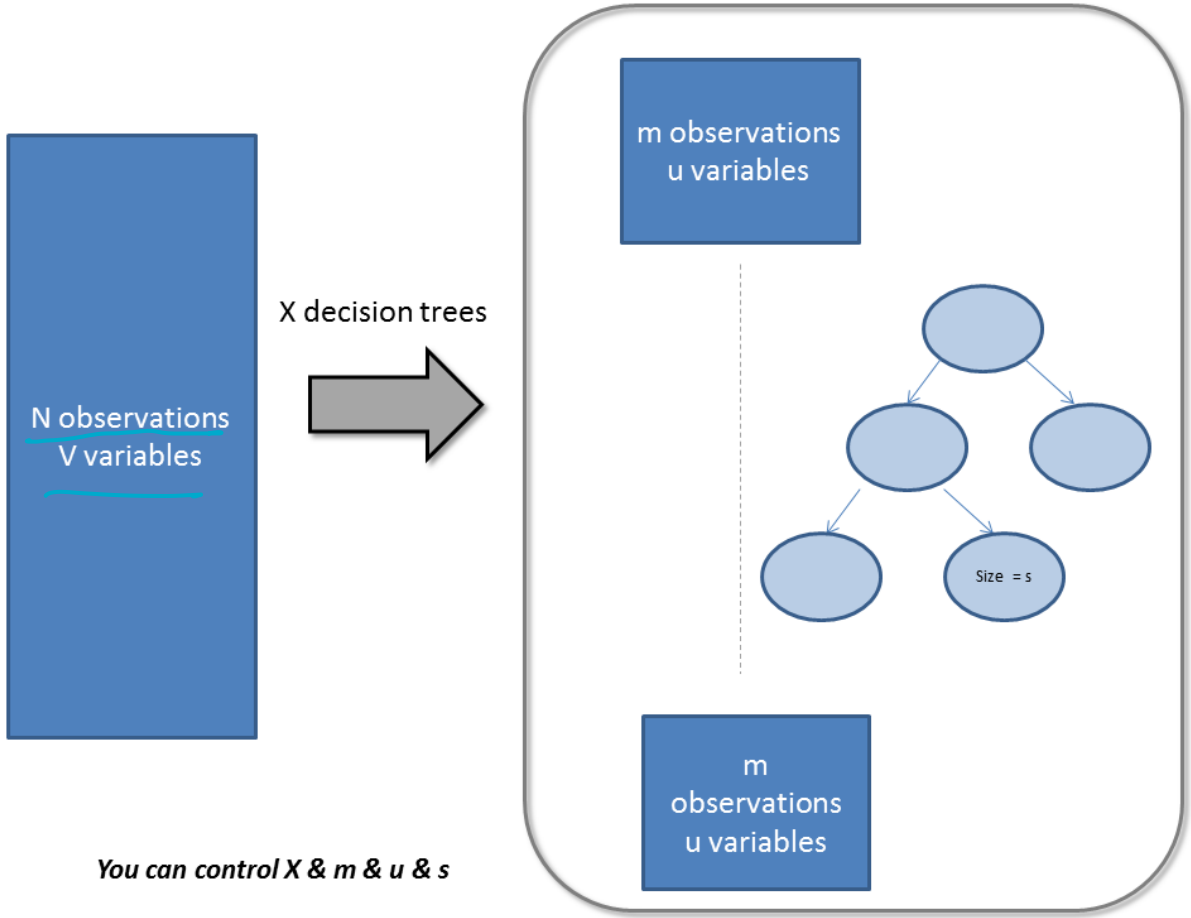
m can be selected via out-of-bag error,
but ***m*** = sqrt(***M***) is a good value to start with

Bagging Trees--

All of M features considered
for each node for a split



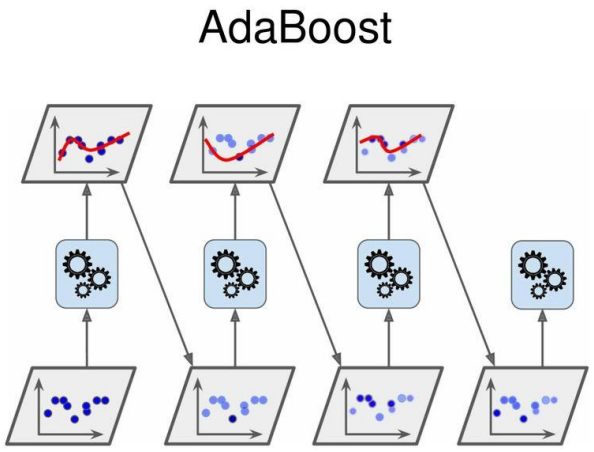
Parameters … play/optimize

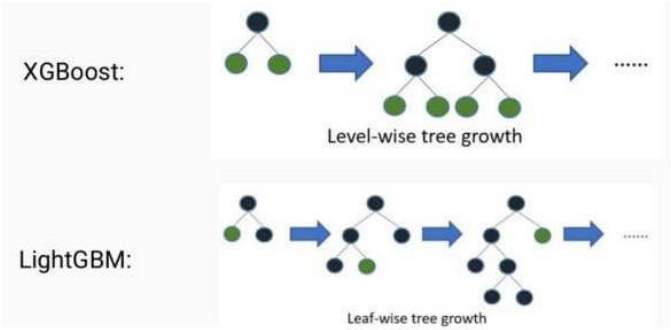


You can control X & m & u & s

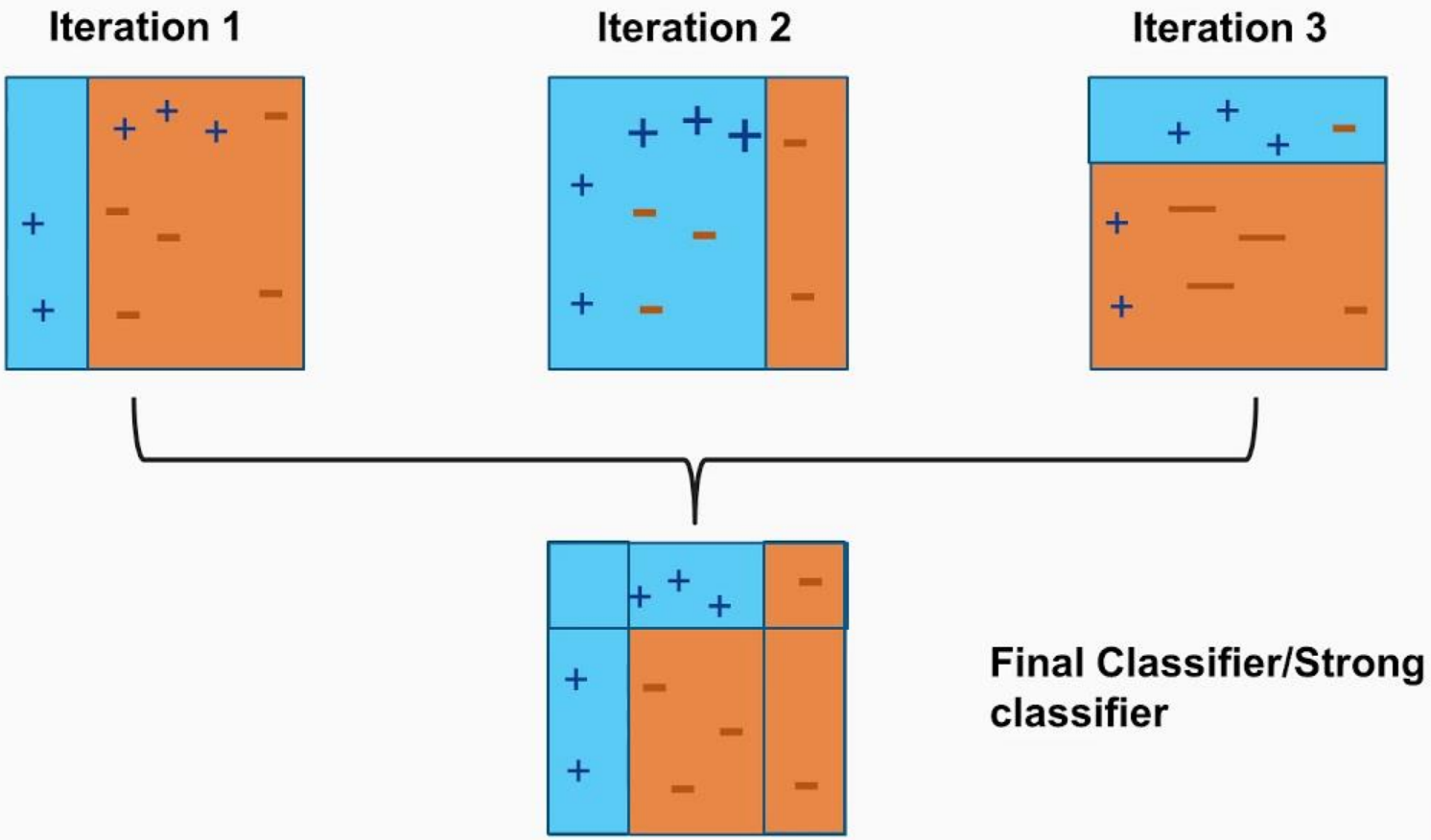
See you soon at

6400



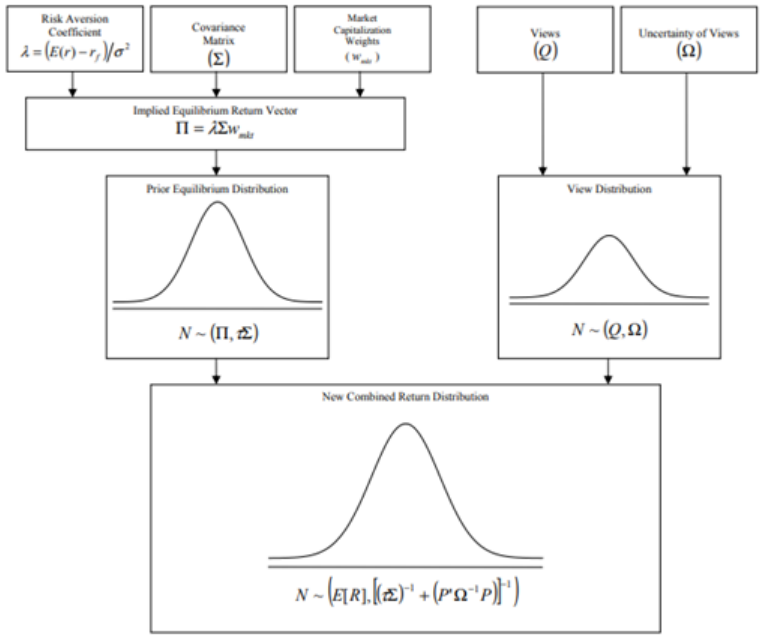


Boosting

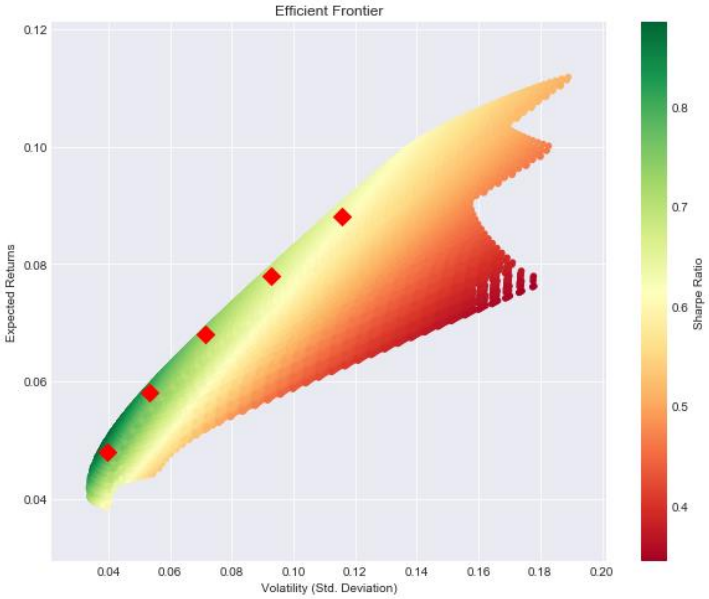


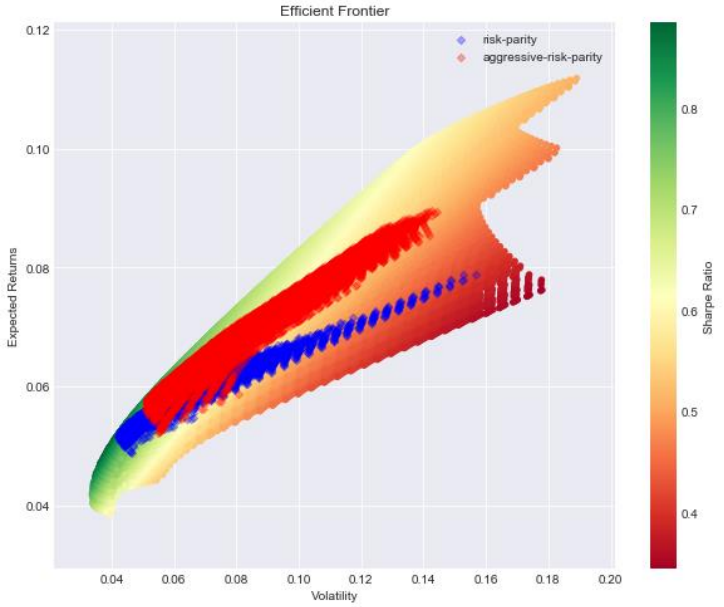
Packt›

See you soon at



Low Risk , High Return





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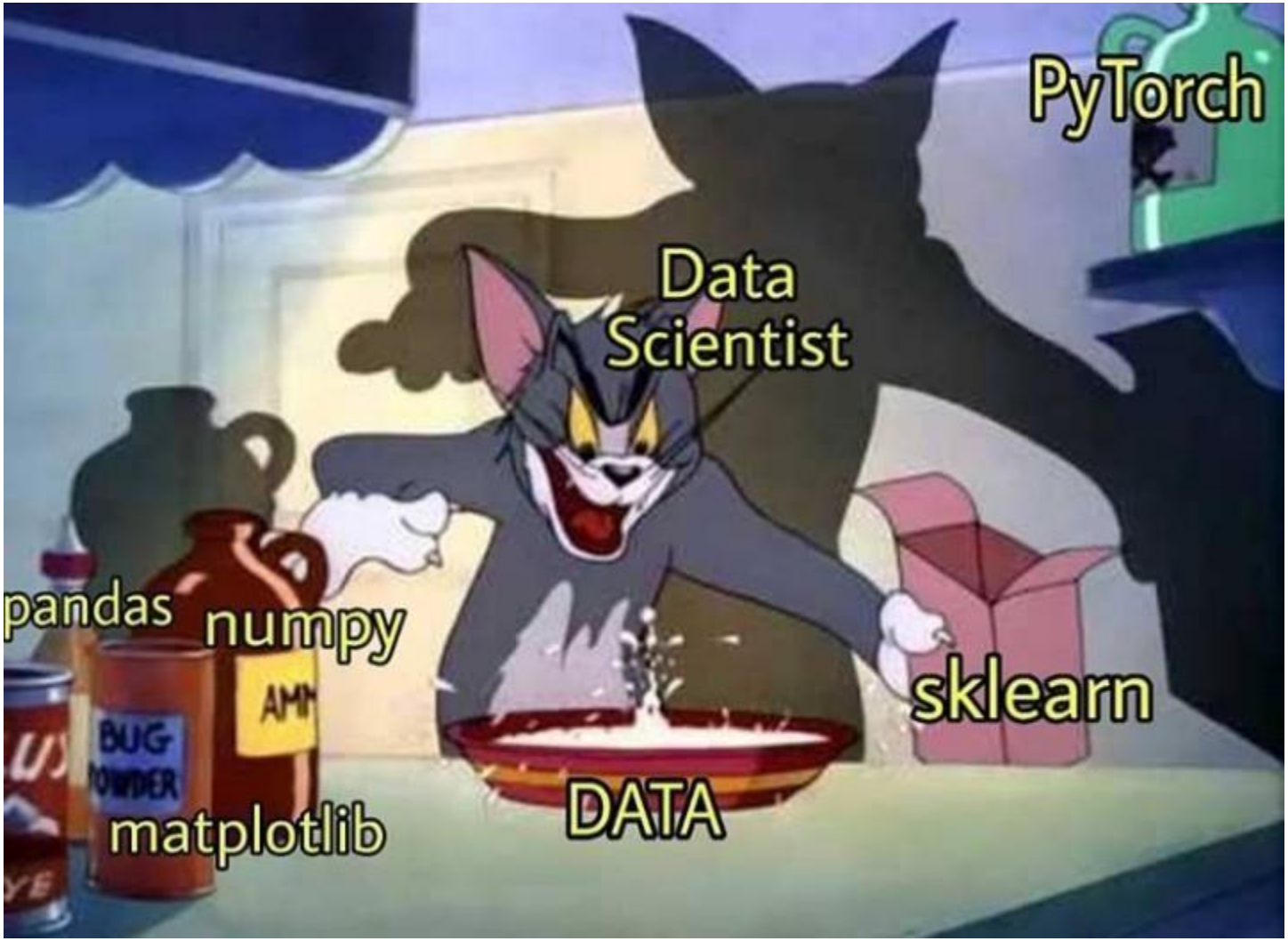
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