MACHINE LEARNING FOR INVESTING 101

by INVESTIC

สร้าง AI ทำนายราคาหุ้น

หาหุ้นน่าลงทุน

What is this course about

Name	Tags	Date
Orientation	Live	October 11, 2021
What is ML , model examples	Live	October 11, 2021
Career Path Guide	Live	October 11, 2021
Financial Data, Big Data for Investing	Live	October 11, 2021
Exploratory Data Analysis	Live	October 11, 2021
ทบทวน Python	ทบทวน Coding Video	October 11, 2021
Basic Python	ทบทวน Coding Video	October 11, 2021
Data Wranging - Pandas	ทบทวน Coding Video	October 11, 2021
List Comprehension / Apply, Loop	ทบทวน Coding Video	October 11, 2021
Data Visualized	ทบทวน Coding Video	October 11, 2021
ลองเล่นกับ Financial Data	Coding Video	October 11, 2021
Resample Technique ให้แท่งเทียนถูกต้อง	Coding Video	October 11, 2021
ดึงข้อมูล แล้วจัด Financial Ratios	Coding Video	October 11, 2021
Create Bubble Chart	Workshop	October 13, 2021
EDA workshop	Workshop	October 13, 2021
Interpreting Data - Scatter & Distribution	Live Coding Video	October 15, 2021
Unsupervised Learning	Live Coding Video	October 15, 2021
Hierarchical Clustering	Live Coding Video	October 15, 2021
การตีเส้นระหว่าง Scatter Plot	Coding Video	October 16, 2021
การหาค่า Correlation และ Correlation Matrix	Coding Video	October 16, 2021
Dendogram	Coding Video	October 16, 2021
แบ่งกลุ่มหุ้น	Coding Video	October 16, 2021
หาหุ้นเพื่อนทึ่ง	Workshop	October 20, 2021
Machine Learning Process Part 1	Live	October 22, 2021
Supervised Learning Model	Live	October 22, 2021
Data Cleaning & Transform	Coding Video	October 23, 2021
จัดการ Outlier	Coding Video	October 23, 2021
Label Data	Coding Video	October 23, 2021
Scaling, Standardizing, Normalizing	Coding Video	October 23, 2021
Encoding / One Hot Encoding	Coding Video	October 23, 2021
Train test split / Timeseries Split	Coding Video	October 23, 2021
Optimizer & Compiler	Coding Video	October 23, 2021
Model Evaluation	Coding Video	October 23, 2021
Your First Regression Model	Workshop	October 27, 2021
Machine Learning Process Part 2	Live	October 29, 2021
Why ML Failed	Live	October 29, 2021
Grid Search Model Parameter	Coding Video	October 30, 2021
Backtesting Model	Coding Video	October 30, 2021
Overfit	Coding Video	October 30, 2021
Timeseries Overfit Management	Coding Video	October 30, 2021
Lead/ Lag	Coding Video	October 30, 2021
เทคนิคการทำ Classifier Regression	Special	
เทคนิคการทำ Multiclass Regression	Special	
Principal Component Analysis ลด feature	Special	
Intro to Model อื่นๆ เช่น random forest	Special	

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What is this course about

Week 1

Week 2

Week 3

Color
Red
Red
Yellow
Green
Yellow

Red	Yellow	Green
1	0	0
1	0	0
0	1	0
0	0	1

Week 4

Confusion Matrix

	Actually Positive (1)	Actually Negative (0)
Predicted Positive (1)	True Positives (TPs)	False Positives (FPs)
Predicted Negative (0)	False Negatives (FNs)	True Negatives (TNs)

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Instructor

Vithan (อั้น) Minaphinant

Founder BottomLiner
Founder Investic ML Lab for investment
ex FINNOMENA, KBank, BAY

High experienced in field of Big Data, AI, Quantitative Strategy, Multi-Asset Strategy, Portfolio Management.

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What is this course about

ตัวเลขทางการเงินที่สำคัญ ณ วันที่ 21/09/21

	30/06/21 **	31/12/20 **	31/12/19 **	31/12/18 **	31/12/17 **
สินทรัพย์ (ล้านบาท)	63,124.57	57,218.93	45,958.29	48,200.69	46,154.16
หนี้สิน (ล้านบาท)	25,398.30	19,611.50	12,951.94	14,259.77	13,680.44
ส่วนผู้ถือหุ้น (ล้านบาท)	37,731.44	37,611.74	33,010.22	33,936.50	32,458.68
ทุนที่เรียกชำระแล้ว (ล้านบาท)	1,247.38	1,247.38	1,247.38	1,247.38	1,247.38
รายได้ (ล้านบาท)	40,042.65	63,826.88	51,838.37	53,708.01	49,840.75
กำไร/ขาดทุน (ล้านบาท)	3,412.16	7,101.64	2,959.96	5,137.03	4,930.98
ผลกำไรต่อสินทรัพย์ (%)*	14.17	14.07	6.31	11.33	14.02
ผลกำไรต่อส่วนผู้ถือหุ้น (%)*	21.41	20.11	8.84	15.47	15.33
อัตรากำไรสุทธิ (%)	8.52	11.13	5.71	9.56	9.89

*ปรับแล้ว

**คำนวณจากข้อมูลทางการเงินรวม

NLP

Buy

Sell

Sentiment

Somewhat Scoring

Allocation

Reality Example – Fundamental Based Model

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Derive series of mini model to Stock Attributes

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Machine Learning

what society thinks I do

what my friends think I do

what my parents think I do

$$\frac{1}{2}\|\mathbf{w}\|^2 - \sum_{i=1}^{l} \alpha_i y_i (\mathbf{x}_i \cdot \mathbf{w} + b) + \sum_{i=1}^{l} \alpha_i$$

$$\alpha_i \geq 0, \forall i$$

$$\mathbf{w} = \sum_{i=1}^{l} \alpha_i y_i \mathbf{x}_i, \sum_{i=1}^{l} \alpha_i y_i = 0$$

$$\nabla \hat{g}(\theta_t) = \frac{1}{n} \sum_{i=1}^{n} \nabla \ell(x_i, y_i; \theta_t) + \nabla r(\theta_t),$$

$$\theta_{t+1} = \theta_t - \eta_t \nabla \ell(x_{i(t)}, y_{i(t)}; \theta_t) - \eta_t \cdot \nabla r(\theta_t)$$

$$\mathbb{E}_{i(t)}[\ell(x_{i(t)}, y_{i(t)}; \theta_t)] = \frac{1}{n} \sum_i \ell(x_i, y_i; \theta_t).$$

what other programmers think I do

what I think I do

```
>>> from scipy import SVM
```

what I really do

Data Type

Snapshot

Time Series

Date	Price
12.00	8
12.01	8.1
12.02	8.2

Non-Numerical

Numerical

Your Asset?

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Stock

Price

Volume

What Else
??????

Stock –

Patterns?

Signal?

What Else ??????

Stock

3M rolling return

Up/Down Volume

What Else ??????

Stock

Peers

SET50, MAI

What Else ??????

Stock

PTT/SET

PTT volume/ SET Volume

What Else ??????

Stock

Financial Statement

ตัวเลขทางการเงินที่สำคัญ					ณ วันที่ 21/09/21
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*ปรับเต็มปี

**คำนวณโดยใช้ข้อมูลจากงบรวม

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Stock

Financial Ratios

ค่าสถิติสำคัญ ณ วันที่	29/12/2560	28/12/2561	30/12/2562	30/12/2563	21/09/2564
ราคาล่าสุด(บาท)	73.25	69.50	53.50	486.00	498.00
มูลค่าหลักทรัพย์ตามราคาตลาด	91,370.70	86,693.02	66,734.92	606,227.46	621,196.04
วันที่ของงบการเงินที่ใช้คำนวณค่าสถิติ	30/09/2560	30/09/2561	30/09/2562	30/09/2563	30/06/2564
P/E (เท่า)	17.80	15.88	18.62	102.70	81.35
P/BV (เท่า)	2.92	2.61	2.03	16.43	16.46
มูลค่าหุ้นทางบัญชีต่อหุ้น (บาท)	25.10	26.59	26.41	29.58	30.25
อัตราส่วนเงินปันผลตอบแทน(%)	4.10	3.17	4.30	0.37	0.66

Stock

2021-09-22 {TIPS: คุณสามารถเรียงข้อมูลในตารางได้โดยกดที่หัวตาราง กดอีกครั้งเพื่อเรียงจากน้อยไปมาก}

Name	No.	Links	Sign	Last	Chg%	Volume	Value (k)	MCap (M)	P/E	P/BV	D/E	DPS	EPS	ROA%	ROE%	NPM%	Yield%	FFloat%	[illegible]	[illegible]	[illegible]	PEG
Average				19.12	+1.39	21,707,660.86	108,517.96	24,382.34	62.22	0.37	-0.05	0.09	1.55	3.81	3.35	-17.94	0.47	38.75		432.11	426.54	-0.34
2S	1	i		6.35	+1.60	1,348,900	8,443	3,175	4.38	1.47		0.20	1.45				3.54					
3K-BAT	2	i		69.75	+1.09	100	7	5,468	49.35	2.55		0.25	1.41	-3.08	5.28	3.29	0.36	2.10				
7UP	3	i		1.49	-1.32	79,465,300	116,971	7,663	37.38	3.02			0.04									
A	4	i		4.98	0.00	1,800	9	4,880	51.29	1.41		0.03	0.1				0.60					
A5	5	i | 1 | 3	SPNC	1.5	0.00	0	0	1,685		3.41	1.74		0.05	12.37	19.82	21.63		20.60				
AAV	6	i		2.76	+2.22	21,389,300	58,270	13,386		1.24			0									
ABICO	7	i		5.6	0.00	44,100	244	1,369	32.03	1.40			0.17				0.08					
ABM	8	i		1.5	+2.74	883,700	1,291	450	43.94	1.34			0.04									
ACAP	9	i	CNP	1.88	-8.74	8,921,700	17,071	595		2.81			0									
ACC	10	i		1.04	+2.97	7,907,100	7,967	1,397		2.61			0									
ACE	11	i		3.92	+1.55	56,215,400	220,066	39,890	29.56	3.28		0.02	0.14				1.22					
ACG	12	i		2.72	0.00	297,700	800	1,632	49.01	2.46		0.04	0.05				1.47					
ADB	13	i		2.06	0.00	8,421,100	17,123	1,360	12.18	2.04		0.05	0.17				2.67					
ADD	14	i		24.5	0.00	872,400	21,347	3,920	43.33	7.18		0.18	0.57									
ADVANC	15	i		193	+2.12	7,406,800	1,415,927	573,968	21.36	7.44		3.45	9.2				3.59					
AEONTS	16	i		202	+1.25	788,400	158,339	50,500	11.55	2.74		2.65	17.24				2.23					
AF	17	i		1.05	-3.67	2,821,000	2,967	1,680	34.25	3.12			0.03				2.00					
AFC	18	i		11.9	0.00	1,500	18	542	13.35	0.46			0.9									
AGE	19	i		2.94	-1.34	7,635,600	22,158	2,843	9.76	1.53		0.10	0.31				3.40					
AH	20	i		21.2	+0.47	790,100	16,648	7,523	6.75	0.91		0.47	3.13				0.64					
AHC	21	i		16.5	0.00	43,500	716	2,474	26.69	1.52		0.25	0.61				1.52					
AI	22	i		2.1	+0.96	7,946,300	16,265	5,880	9.79	2.28		0.07	0.22				7.14					

Stock

AAPL Value Grade D

	Sector Relative Grade	AAPL	Sector Median	% Diff. to Sector	AAPL 5Y Avg.	% Diff. to 5Y Avg.
P/E Non-GAAP (TTM)	C	28.07	24.21	15.96%	21.98	27.72%
P/E Non-GAAP (FWD)	C+	25.73	24.17	6.48%	20.22	27.23%
P/E GAAP (TTM)	B-	28.08	32.40	-13.34%	21.82	28.71%
P/E GAAP (FWD)	B-	25.73	28.60	-10.03%	20.23	27.23%
PEG GAAP (TTM)	C+	0.51	0.50	1.88%	NM	NM
PEG Non-GAAP (FWD)	B-	1.70	1.75	-3.07%	1.84	-7.53%
EV / Sales (TTM)	C-	6.64	4.36	52.40%	4.11	61.55%
EV / Sales (FWD)	C-	6.29	3.96	59.08%	3.90	61.48%
EV / EBITDA (TTM)	C+	20.77	18.02	15.26%	13.71	51.54%
EV / EBITDA (FWD)	C	19.28	15.81	21.92%	13.01	48.19%
EV / EBIT (TTM)	B-	23.06	24.92	-7.46%	15.94	44.65%
EV / EBIT (FWD)	C+	21.17	19.67	7.66%	15.11	40.15%
Price / Sales (TTM)	C-	6.96	4.23	64.34%	4.70	48.14%
Price / Sales (FWD)	C-	6.48	3.98	62.68%	4.35	48.97%
Price / Book (TTM)	F	36.94	4.54	713.09%	14.20	160.13%
Price / Book (FWD)	D-	38.17	6.33	503.31%	16.65	129.31%
Price / Cash Flow (TTM)	C+	22.71	21.51	5.56%	15.87	43.08%
Price / Cash Flow (FWD)	C+	22.41	21.93	2.19%	15.71	42.66%
Dividend Yield (TTM)	D+	0.59%	1.30%	-54.48%	1.65%	-64.12%

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Stock

AAPL Profitability Grade A+

	Sector Relative Grade	AAPL	Sector Median	% Diff. to Sector	AAPL 5Y Avg.	% Diff. to 5Y Avg.
Gross Profit Margin (TTM)	C-	**41.01%**	49.04%	-16.39%	38.47%	6.58%
EBIT Margin (TTM)	A+	**28.79%**	8.69%	231.46%	26.05%	10.51%
EBITDA Margin (TTM)	A	**31.96%**	14.68%	117.72%	30.36%	5.25%
Net Income Margin (TTM)	A	**25.00%**	6.20%	302.99%	21.65%	15.47%
Levered FCF Margin (TTM)	A-	**23.22%**	12.41%	87.08%	18.64%	24.61%
Return on Common Equity (TTM)	A+	**127.12%**	8.29%	1,433.52%	55.23%	130.17%
Return on Total Capital (TTM)	A+	**31.69%**	4.80%	560.20%	19.51%	62.41%
Return on Total Assets (TTM)	A+	**26.32%**	3.57%	636.20%	16.40%	60.50%
CAPEX / Sales (TTM)	B-	**2.78%**	2.30%	20.77%	4.44%	-37.47%
Asset Turnover Ratio (TTM)	A	**1.07%**	0.65%	64.34%	0.76%	41.01%
Cash From Operations (TTM)	A+	**104.41B**	113.37M	91,997.77%	74.50B	40.16%
Net Income Per Employee (TTM)	A+	**590.49K**	12.27K	4,711.13%	428.46K	37.82%

Stock

Financial Ratios

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Stock

SET Index Trading Summary {TIPS:กดที่นี่ เพื่อแสดงข้อมูลย้อนหลัง}			
วันที่	กองทุนและโบรกเกอร์	ต่างชาติ	รายย่อย
2021-09-21	+872.74	+684.34	-1557.07
2021-09-20	-5583.47	-277.42	+5860.89
2021-09-17	+530.23	-889.41	+359.18
2021-09-16	-47.34	+1372.76	-1325.42
2021-09-15	+1063.54	-667.14	-396.40

ชื่อย่อสัญญา	เดือนที่สิ้นสุดสัญญา	ปริมาณ	สถานะคงค้าง
SET50 Index Futures | ข้อ		2 ก.ย. 2564	TFEX Thail
SET50 Index Futures			
S50U21	ก.ย. 64	140,234	298,255
S50V21	ต.ค. 64	73	174
S50X21	พ.ย. 64	12	141
S50Z21	ธ.ค. 64	57,406	81,085
S50H22	มี.ค. 65	6,310	16,311
S50M22	มิ.ย. 65	1,653	9,670
รวม SET50 Index Futures		205,688	405,636

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Gold

ชื่อย่อสัญญา	เดือนที่สิ้นสุดสัญญา	เปิด	สูง	ต่ำ	เสนอซื้อ	เสนอขาย	ล่าสุด	เปลี่ยนแปลง (%เปลี่ยนแปลง)	ปริมาณ	สถานะคงค้าง
Precious Metal Futures | ข้อมูลอ้างอิง							วันที่ซื้อขาย: 22 ก.ย. 2564		TFEX Thailand Metal Mark	
GF10 Futures										
GF10V21	ต.ค. 64	28,060	28,310	28,050	28,260	28,280	28,270	+220 (+0.78%)	2,854	6,568
GF10Z21	ธ.ค. 64	28,090	28,350	28,080	28,260	28,300	28,300	+220 (+0.78%)	2,800	7,173
GF10G22	ก.พ. 65	28,120	28,380	28,120	28,280	28,350	28,330	+220 (+0.78%)	781	3,182
รวม GF10 Futures									**6,435**	**16,923**

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Gold

TRADER COMMITMENT

CFTC Gold speculative net positions

Release Date	Time	Actual
Sep 10, 2021	15:30	206.0K
Sep 03, 2021	15:30	216.6K
Aug 27, 2021	15:30	210.7K
Aug 20, 2021	15:30	191.5K

Source: Absolute Strategy Research, CFTC as of July 30, 2020

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Gold

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Gold

Source: First Majestic Silver Corp.

Gold

WHO HOLDS HOW MUCH GOLD

Up to February 2018

Country	Tonnes	% of forex reserves
US	8,133.5	75.0
Germany	3,372.2	70.3
IMF	2,814.0	-
Italy	2,451.8	67.8
France	2,436.0	63.4
Russia	1,890.8	17.6
China	1,842.6	2.4
Switzerland	1,040.0	5.4
Japan	765.2	2.6
Netherlands	612.5	67.2
Turkey #	595.5	10.4
India *	558.1	5.6
ECB	504.8	27.6
Taiwan	423.6	3.8
Portugal	382.5	60.4

Out of which 364 tonnes Turkey's commercial bank's holding is with its central bank; * as of March '18; Compiled by BS Research Bureau

Source: World Gold Council

HALF-A-TRILLION MARK

Source: RBI
Compiled by *BS* Research Bureau

FX

THE TRAJECTORY
India's forex reserves ($ bn)
493
418
500
460
420
380
Jan 31,'18
Jun 11,'20
Indian rupee spot (₹)
(Inverted scale)
63.60
75.80
60
64
68
72
76
80
Jan 31,'18
Jun 11,'20

10-YEAR G-Sec
Yield in %
6.55
6.51
6.55
6.54
6.52
6.51
6.49
Dec 27
2019
Dec 30

Net monthly flows (% of AUM) for all SRI/ESG Equity and Bond Funds, 2020-YTD
8
6
4
2
0
-2
-4
-6
1/1/2020
2/1/2020
3/1/2020
4/1/2020
5/1/2020
6/1/2020
7/1/2020
8/1/2020
9/1/2020
10/1/2020
11/1/2020
12/1/2020
1/1/2021
2/1/2021
SRI/ESG Equity Funds
SRI/ESG Bond Funds

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Any !! Ex Crypto

PMI

Time	Cur.	Imp.	Event	Actual	Forecast	Previous
			Monday, September 27, 2021			
01:30	USD	★★☆	Investing.com Gold Index	53.7%		59.5%
01:30	USD	★★☆	Investing.com S&P 500 Index	61.1%		44.9%
08:00	USD	★☆☆	Chicago Fed President Evans Speaks			
08:30	USD	★★★	Core Durable Goods Orders (MoM) (Aug)	0.2%	0.5%	0.8%
08:30	USD	★★☆	Durable Goods Orders (MoM) (Aug)	1.8%	0.7%	0.5%
08:30	USD	★☆☆	Durables Excluding Defense (MoM) (Aug)	2.4%		-0.5%
08:30	USD	★☆☆	Goods Orders Non Defense Ex Air (MoM) (Aug)	0.5%	0.4%	0.3%
09:00	USD	★★☆	FOMC Member Williams Speaks			
10:30	USD	★☆☆	Dallas Fed Mfg Business Index (Sep)	4.6		9.0
11:30	USD	★☆☆	2-Year Note Auction	0.310%		0.242%
11:30	USD	★☆☆	6-Month Bill Auction	0.050%		0.045%
12:00	USD	★★☆	FOMC Member Williams Speaks			
12:50	USD	★★☆	FOMC Member Brainard Speaks			
13:00	USD	★☆☆	3-Month Bill Auction	0.035%		0.035%
13:00	USD	★☆☆	5-Year Note Auction	0.990%		0.831%

INVESTIC

Any !! Ex Crypto

Sources: NBER, Federal Reserve and Standard & Poor's. Data through March 7, 2016.

INVESTIC

Crypto's FED

skew.
BTCUSD vs Tether Market Cap ($ mln)
10,000
7,500
5,000
2,500
0
Tether Market Cap ($ mln)
$20,000
$15,000
$10,000
$5,000
$0
BTCUSD
1-Jan-2016
1-Jan-2017
1-Jan-2018
1-Jan-2019
1-Jan-2020
BTCUSD ($)
Tether Market Cap ($ mln)

Crypto !!

SLP & AXS

Something more advance?

Big Data??

Bitcoin Search
Bitcoin Price
BTC/USD
Google Search Results Scale
20000
15000
10000
5000
0
100
80
60
40
20
0
Jul
Oct
Jan
2017
Apr
Jul
Oct
Jan
2018
Apr
BottomLine

Big Data??

INVESTIC

Big Data??

–

GT

INVESTIC

Your DATA??

Data Source

OHLC + V

- Yahoo finance
- Google Finance
- Blahblahblah !!

Economics

- Koyfin
- Investing
- Quandl
- Trading Economics
- Tradingview

Exploratory Data Analysis

What you see

AOT Search (right)
AOT Price
AOT Price
AOT Search
70
65
60
55
50
100
90
80
70
60
50
40
30
Jul
Aug
Sep
Oct
Nov
Dec
Jan
2018
Feb
Mar
Apr
May
Jun
Jul

Well Reported Graph

Exploratory Data Analysis

GOALS of EDA

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2
Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	1
Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	4
Merc 240D	24.4	4	146.7	62	3.69	3.190	20.00	1	0	4	2
Merc 230	22.8	4	140.8	95	3.92	3.150	22.90	1	0	4	2
Merc 280	19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4
Merc 280C	17.8	6	167.6	123	3.92	3.440	18.90	1	0	4	4
Merc 450SE	16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	3
Merc 450SL	17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	3
Merc 450SLC	15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	3
Cadillac Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	4
Lincoln Continental	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	4
Chrysler Imperial	14.7	8	440.0	230	3.23	5.345	17.42	0	0	3	4

Exploratory Data Analysis

New client tier share

Tier	# of Accounts	% Accounts	Revenue ($M)	% Revenue
A+	19	2%	$3.9	21%
A	77	7%	$4.7	25%
B	338	31%	$6.0	32%
C	425	39%	$2.8	15%
D	24	2%	$0.4	2%
All other	205	19%	$0.9	5%
TOTAL	1,088	100%	$18.7	100%

New client tier share

TIER	ACCOUNTS		REVENUE	
	#	% OF TOT	$M	% OF TOT
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New client tier share

New client tier share

New client tier share

New client tier share

New client tier share

New client tier share

INVESTIC

Reality …

Source: https://alastairrushworth.github.io/exploring_eda/EDA.html

80% of Data Science Failures are just because not asking the right questions early enough

Data vs Graph

Data is just a story
<u>told</u> in numbers.

Data vs Graph

Much wow

Data vs Graph

–

Transition

Going from Dashboards to Storytelling

Data vs Graph

What's the story your data is trying to deliver?

Who will you present your results to?

The whole purpose of using data visualization is to make data communication more efficient.

How big is your data?

What is your data type?

Data vs Graph

How do the different elements of your data relate to each other?

Is your data a time-series — data that changes over time?

Is your data order based on some factor — time, size, type

Analysis

CHART TYPES IN A NUTSHELL

HISTOGRAM/ STACKED COLUMN OR BAR CHART

Chart used by analysts who understand the power of segmentation and the sadness that comes from aggregation data.

DONUT AND PIE CHART

Extremely useful when creating a well designed document that is intended to people that will not read the data. But should't be used if the elements are too many (i.e. more than 15), because it won't be useful anymore.

FUNNEL CHART

It is used to visualize the progressive reduction of data as it passes from one phase to another. Very useful if used to represent stages in a sales process and show the amount of potential revenue for each stage.

AREA and STACKED AREA CHART

Use a stacked area chart for multiple data series with part-to-whole relationships or for cumulative series of value. But personally, I always try to avoid this type of chart

LINE CHART

A line chart is often used to visualize a trend in data over intervals of time. If you have continuous data that you would like to represent through a chart then a line chart is a good option.

TREEMAP CHART

Treemapping is a data visualization technique that is used to display hierarchical data using nested rectangles.The treemap chart displays categories by color and proximity and can easily show lots of data which would be difficult with other chart types.

INVESTIC

Analysis

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INVESTIC

What you see in tutorial

Analysis

Annual Recurring Revenue (ARR)
by Annual Cohort through January 31, 2019
FY 2019
FY 2018
FY 2017
FY 2016
FY 2015
FY 2015
FY 2016
FY 2017
FY 2018
FY 2019
2017
2016

Analysis

Growth+Profit vs. EV/Sales
APP ECONOMY INSIGHTS
Growth+Profit > 40%
20% - 40%
< 20%
EV to Sales ratio
Growth+Profit %
40
30
20
10
0
-40%
-20%
0%
20%
40%
60%
OKTA
TEAM
MDB
VEEV
TWLO
AYX
TTD
PAYC
WDAY
NOW
APPN
SQ
ADBE
ZEN
DOCU
QTWO
HUBS
NEWR
FIVN
CRM
APPN
ZUO
SPLK
WIX
YEXT
DATA
UPWK
BOX
TWOU
BZUN

Reporting

When to use:

1. When you show relative proportions and percentages of a whole dataset.
2. Best used with small datasets — also applies to donut charts.
3. When comparing the effect of ONE factor on different categories.
4. If you have up to 6 categories.
5. When your data is nominal and not ordinal.

When to avoid:

1. If you have a big dataset.
2. If you want to make a precise or absolute comparison between values.

Source: https://towardsdatascience.com/

Data vs Graph

Source: https://towardsdatascience.com/

Reporting

When to use:

1.To show correlation and clustering in big datasets.

2.If your dataset contains points that have a pair of values.

3.If the order of points in the dataset is not essential.

When to avoid:

1.If you have a small dataset.

2.If the values in your dataset are not correlated.

Source: https://towardsdatascience.com/

Reporting

When to use:

1.If you have a continuous dataset that changes over time.
2.If your dataset is too big for a bar chart.
3.If you want to display multiple series for the same timeline.
4.If you want to visualize trends instead of exact values.

When to avoid:

1.Line charts work better with bigger datasets, so, if you have a small one, use a bar chart instead.

Source: https://towardsdatascience.com/

Analysis

When to use:

1.If you want to show part-to-whole relations.

2.If you want to portray the volume of your data and not just the relation to time.

When to avoid:

1.It can't be used with discrete data.

Source: https://towardsdatascience.com/

Analysis

US music sales by format (inflation-adjusted)

IN BILLIONS (USD)

SOURCE: Recording Industry Association of America

INVESTIC

Analysis

INVESTIC

Analysis

Multiple Histograms with Matplotlib
data1
data2
Count
Data
0
20
40
60
80
100
120
140
160
20
40
60
80
100
120

Analysis

When to use:

1.To show correlation and clustering in big datasets.

2.If your dataset contains points that have a pair of values.

3.If the order of points in the dataset is not essential.

When to avoid:

1.If you have a small dataset.

2.If the values in your dataset are not correlated.

Source: https://towardsdatascience.com/

What you see in tutorial

Analysis

When to use:

1.If you want to compare independent values.

2.If you want to show distribution or relation.

When to avoid:

1.If you have a small dataset.

Source: https://towardsdatascience.com/

Analysis

ACTUAL & DEVIATION | TRUE RANGE | VOLATILITY RATIO | DEVIATION IMPACT

- **EUR/USD** TR vs Deviation Ratio Scatter Plot Chart

Analysis

Growth+Profit vs. EV/Sales
APP ECONOMY INSIGHTS
Growth+Profit > 40%
20% - 40%
< 20%
EV to Sales ratio
Growth+Profit %
40
30
20
10
0
-40%
-20%
0%
20%
40%
60%
OKTA
TEAM
MDB
ESTC
VEEV
TWLO
AYX
TTD
PAYC
NOW
WDAY
APPF
SQ
ADBE
ZEN
DOCU
QTWO
HUBS
BL
NEWR
FIVN
WIX
CRM
APPN
ZUO
SPLK
YEXT
AAXN
DATA
UPWK
DBX
BOX
TWOU
ZUN

Heatmap | Outliers | Performers | Overview

Updated 07-Jun-2018 10:31 AM Refresh

MIN — MAX

USDCAD and 29 more

Currency	Spot	3M Annualized Net Carry (Value)	3M Annualized Net Carry (Net Change)	3M Net Carry / Implied Vol (Value)	3M Implied Vol (Value)	3M Realized Vol	1W Implied Vol / Realized Vol	3M Risk Reversal skew	1M Risk Reversal skew / Implied Vol (%)	1M Total Return
USDCAD	1.30	-0.80	-0.04	-0.11	7.53	7.70	1.08	0.47	4.17	-0.50
USDJPY	109.96	-2.55	-0.02	-0.35	7.28	6.70	1.62	-1.07	-11.68	-1.10
GBPUSD	1.35	-1.72	0.02	-0.22	7.84	6.74	2.02	-0.40	-2.10	-1.20
NZDUSD	0.70	-0.05	-0.02	-0.01	8.27	8.22	1.94	-0.59	-5.03	0.20
AUDUSD	0.77	-0.22	0.01	-0.03	7.78	8.46	0.94	-0.64	-5.90	2.00
EURCHF	1.16	-0.40	0.00	-0.07	5.60	5.20	1.18	-0.79	-10.11	2.90
EURGBP	0.88	1.11	0.07	0.16	6.78	5.93	1.06	0.07	-0.58	0.30
EURNOK	9.50	1.41	-0.01	0.21	6.67	6.24	1.58	0.59	8.36	1.30
EURNZD	1.68	2.80	0.04	0.36	7.67	5.83	2.09	0.23	3.20	1.80
EURSEK	10.24	-0.07	-0.01	-0.01	6.85	6.90	1.32	0.40	5.58	2.40
USDCNY	6.39	N/A	N/A	N/A	4.10	N/P	N/A	0.38	7.14	-0.40
USDIDR	13870.00	5.36	-2.06	0.84	6.39	4.65	1.40	1.88	24.79	2.40

TOTAL RETURN 1 MONTH (07-MAY-2018 - 06-JUN-2018)

OUTLIERS

FB buy or sell? Analyst Recommendation function

INVESTIC

A Must –

```
sns.FacetGrid(iris, hue="species", size=5).map(plt.scatter, "sepal_length", "sepal_width").add_legend()
```

```
<seaborn.axisgrid.FacetGrid at 0x1c9cae24fc8>
```

Outlier check

```
sns.boxplot(x="species", y="petal_length", data=iris)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x1c9caeca6c8>
```

Outlier check

```
sns.FacetGrid(iris, hue="species", size=6).map(sns.kdeplot, "petal_length").add_legend()
```

```
<seaborn.axisgrid.FacetGrid at 0x1c9cc447c48>
```

Pair Plot – one line command to rule them all –

```
sns.pairplot(iris, hue="species", size=3, diag_kind="kde")
```

Careers Guide: Quantitative Parts

Port Mgmt

FB: group

Robo Advisor

High Frequency Trading

Algorithmic Trading, Derivatives, Alternative Data

Smart Beta
Factor Investing
Plugin hybrid
Market Neutral

Traditional Allocation

H — Coding Skill — L

S — Holding Period — L

H — Number of Actions — L

What Python CAN

Exchange	FOREX
Symbol	AUDJPY
Interval	15 Min
Pattern	Falling Wedge
Identified Time	01-30 12:30
Length	28 Candles
Direction	▲
Trend Change	Continuation
Quality	
Initial Trend	
Uniformity	
Clarity	
Breakout	
Forecast Price	81.39

Price Movement | Volatility Analysis

What Python CANNOT … or very hard for now

Path

Stock
Bonds
Commodity
FX
Technical Analysis
Fundamental Analysis
Sentiment Analysis
Alternative Data
Modeling
Arbitrage
Derivatives
Economic Indicator
Modern Portfolio Theory
Asset Allocation
Backtesting
Risk Management
Hedging
1
2
3
Homo Trader
Digital Asset
Crypto

You can switch

IC (Quant Strategist)
Multi-Asset
Wealth Management

Fintech
Startup

Data Scientist

Quant Strategist
Multi Asset
Robo-Advisor

Fund Manager

Blogger
Single Stock mostly ..
Alternative Data

KBank PRIVATE BANKING

KASIKORNTHAI
บริการทุกระดับประทับใจ

FINNOMENA

BOTTOMLINER Academy

BOTTOMLINER
ลงทุนหุ้น กองทุน ต่างประเทศ

INVESTIC

So which is which???

MF

IC (Quant Strategist)
Multi-Asset
Wealth Management

Fintech
Startup

Data Scientist

Quant Strategist
Multi Asset
Robo-Advisor

Fund Manager

Single Stock

Blogger
Single Stock mostly ..
Alternative Data

KBANK PRIVATE BANKING

KASIKORNTHAI

Traditional Allocation

FINNOMENA

Smart Beta
Factor Investing
Plugin hybrid
Market Neutral

Algorithmic Trading, Derivatives, Alternative Data

BOTTOMLINER Academy

BOTTOMLINER
ลงทุนหุ้น กองทุน ต่างประเทศ

Smart Beta
Factor Investing
Plugin hybrid
Market Neutral

INVESTIC

INVESTIC