



# Quantum Computing

- A Web Scraping Project by Michael Tarino



# Background

Basic QM

History of theoretical quantum computing

Real-world developments in past 5-10 years

Major players in the space



# State of Quantum Technology

01

Hardware - Adiabatic (annealing), Gate Model (circuit model)

02

Software - quantum cloud platforms; optimization, machine learning & sampling problems



# Project objective



To find insights that would be helpful for strategic marketing professionals about the state of social media awareness of the quantum computing industry.



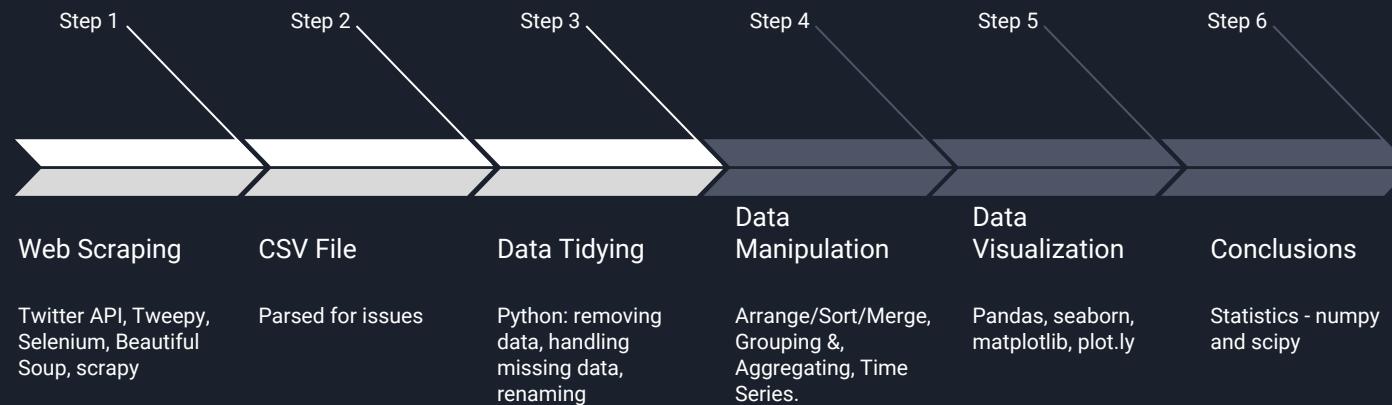
# Target audience

Prospective employers, fellow classmates, & NYC  
Data Science Academy educators





# Project timeline



# Web Scraping

Selenium and Twitter API

- Twitter News Search:  
“Quantum Computing”
- scroll with “while” loop  
and populates dictionary  
with “for” loop
- prints a 115KB CSV file
- raw data is 590 rows by  
11 columns
- I focus on data from  
2012 to 2017

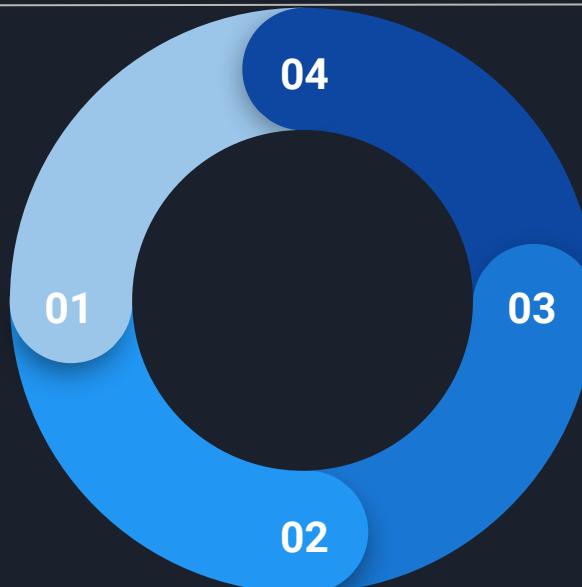




# Data

Data tidying

Data  
Manipulation

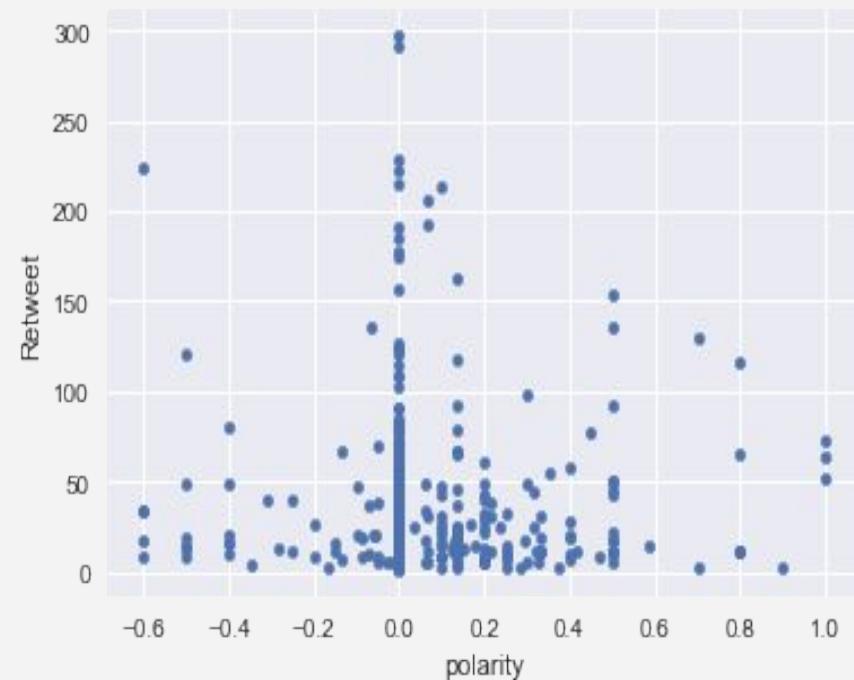


Conclusions

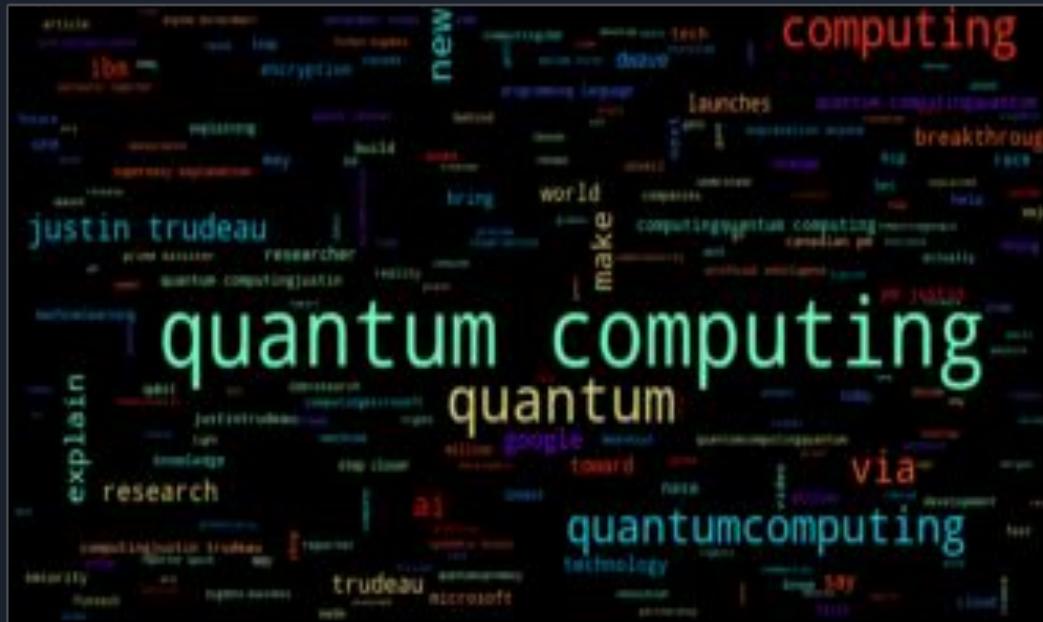
Data  
Visualization &  
NLP

# Tweet Content - Sentiment Analysis

	Content	polarity
499	brilliant folks ibmresearch brought us another...	0.900000
397	delightful see prime minister justintrudeau ex...	0.583333
519	win google vs ibm quantum computing race mt vl...	0.800000
416	proud technology company country whose pm just...	0.800000
396	add knowledge quantum computing justin trudeau...	0.700000



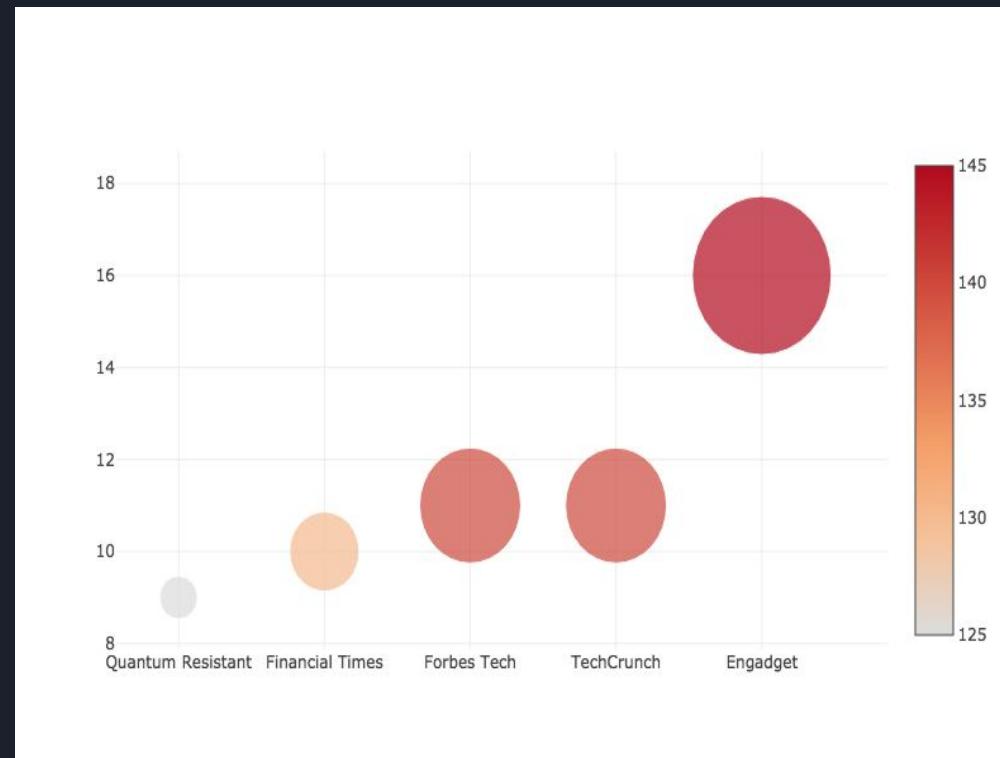
# Word Count - Word Cloud & List



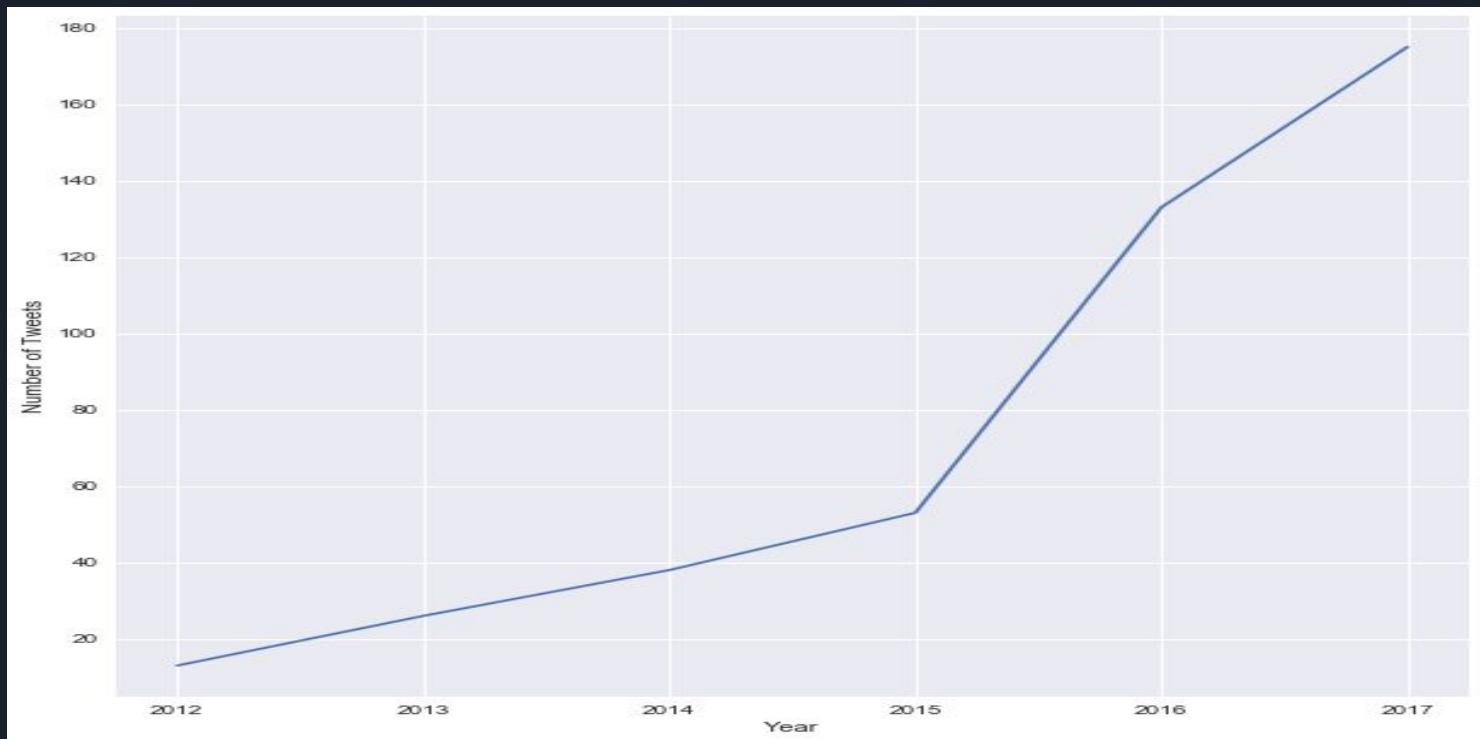
Count	
287	quantum
215	computing
42	ibm
39	trudeau
37	justin
35	google
21	new
21	microsoft
20	pm
14	canadian
13	make
12	intel
12	dwave
11	explains
11	cloud
10	race
10	ai
10	breakthrough
10	researchers
10	launches

# Author Count

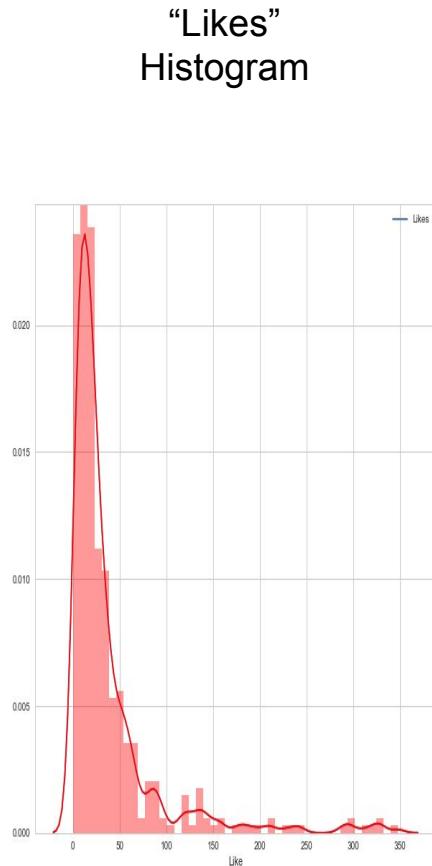
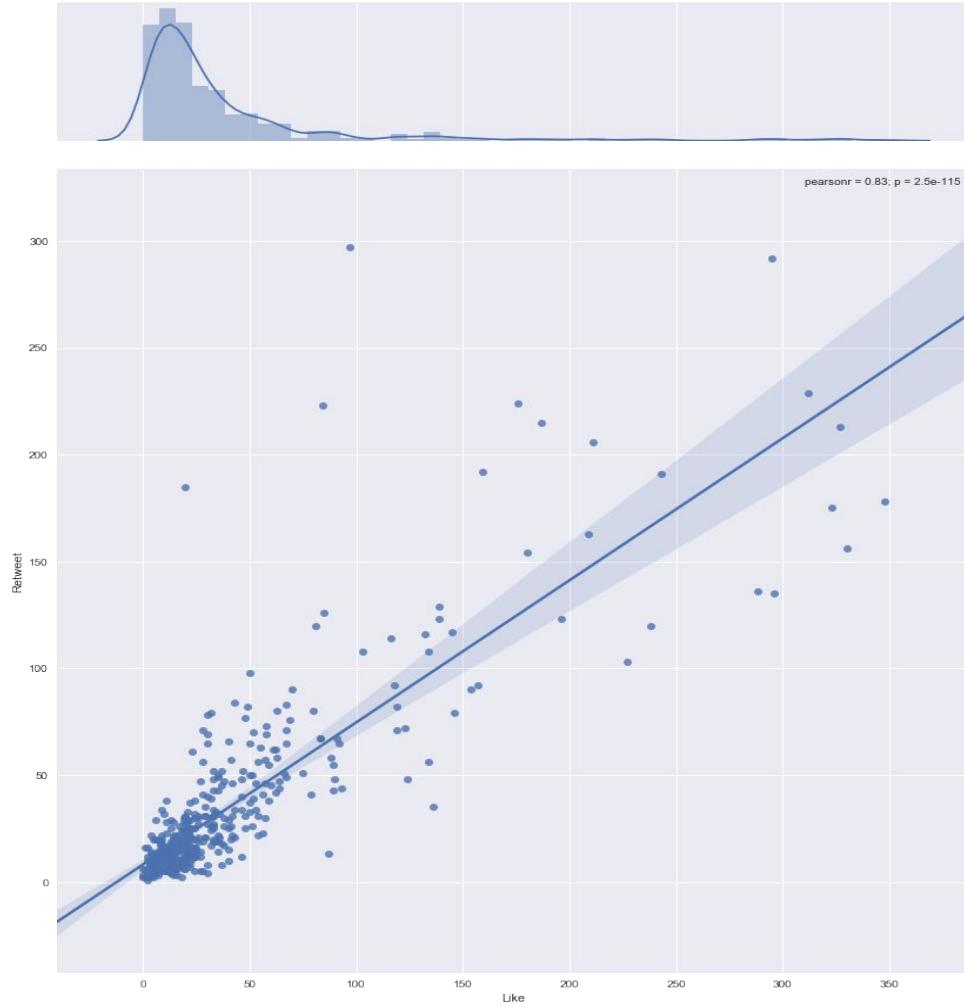
Count	Author
16	Engadget\nVerified account\n
11	TechCrunch\nVerified account\n
11	Forbes Tech\nVerified account\n
10	Financial Times\nVerified account\n
9	Quantum Resistant\n
9	The Economist\nVerified account\n
8	WIRED UK\nVerified account\n
7	Bloomberg\nVerified account\n
7	Forbes\nVerified account\n
7	WIRED\nVerified account\n



# Tweet Count over the years



## Joint Plot of “Retweets” by “Likes”

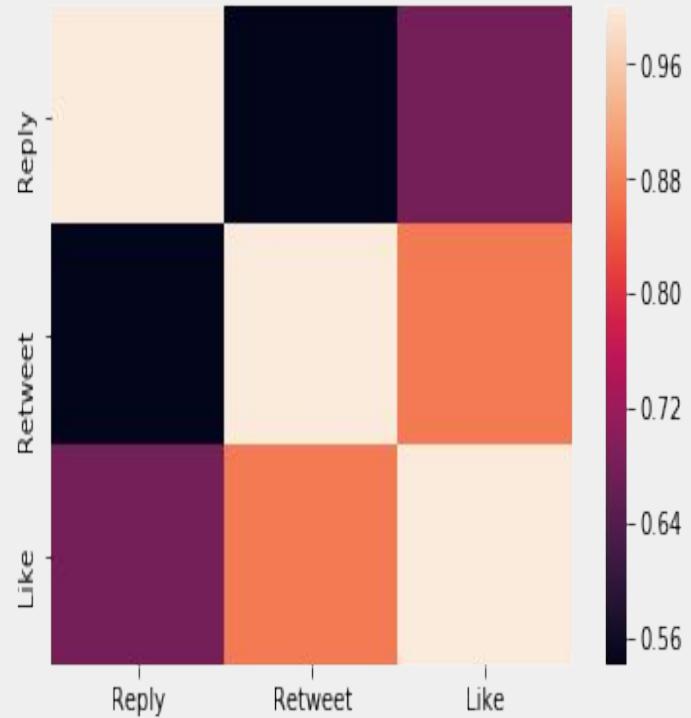


“Likes”  
Histogram

# Statistics and Correlations

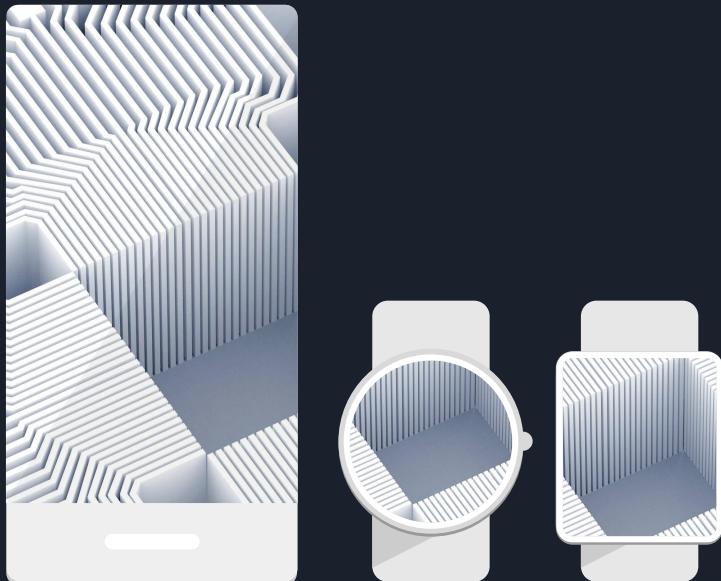
```
df.describe()[1:]
```

	Reply	Retweet	Like
mean	2.145763	31.323729	38.106780
std	5.040997	45.258232	58.172717
min	0.000000	0.000000	0.000000
25%	0.000000	8.000000	9.000000
50%	1.000000	17.000000	21.000000
75%	2.000000	34.000000	41.000000
max	68.000000	409.000000	608.000000





## Spotlight on QML



## Future Applications

Machine Learning algorithms for financial services, big pharma, & logistical problem-solving are among the major applications of quantum technology so keep these developments in mind as you continue your data science journey.

Thank you!

“Anyone who is not shocked by  
quantum theory has not understood it.”

- Niels Bohr

