

Third Progress Report

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Project Background

The goal of J.P. Morgan's AI Research program is to explore and advance cutting-edge research in the fields of AI and Machine Learning to develop solutions that are most impactful to the firm's clients and businesses.

JPMorgan is looking for a way to identify communities of companies, as well as relationships between companies, without having to guess at them by hand. They would like a more rigorous technical approach to figuring out which companies are related in order to guide processes like investment strategy and fraud detection.

New Research Questions

- How well does community detection in corporate environments work as a basis for anticipating future community formation?
- How can we use graphical structures governing relationships between different companies to determine future information about those companies?

Data Advances

- News Article Data

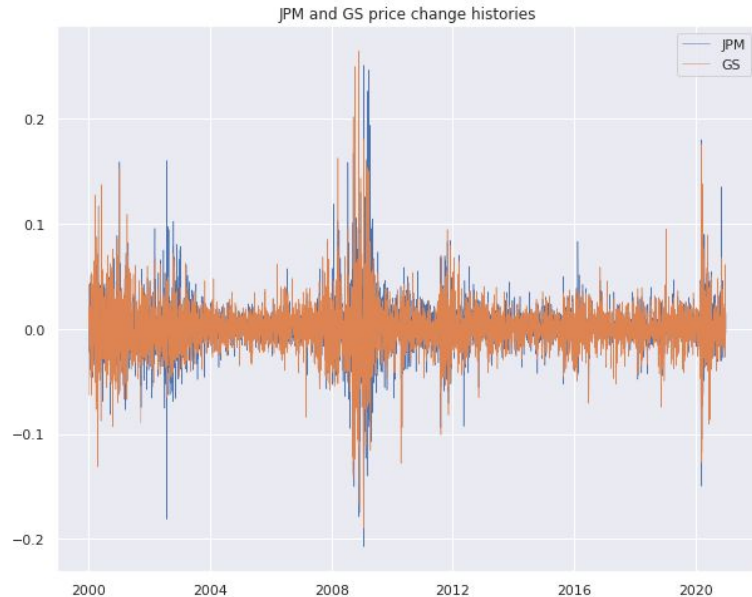
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0	AXP	American Express	Analysts Remain Positive on Starbucks Corporat...	Jan 22, 2016
1	AXP	American Express Company	Analysts Remain Positive on Starbucks Corporat...	Jan 22, 2016
2	AXP	Costco	Analysts Remain Positive on Starbucks Corporat...	Jan 22, 2016
3	AXP	Deutsche Bank	Analysts Remain Positive on Starbucks Corporat...	Jan 22, 2016
4	AXP	MarriottStarwood	Analysts Remain Positive on Starbucks Corporat...	Jan 22, 2016
...
73	USDA	Walmart	How Aldi is beating Walmart in the grocery aisle	Mar 29, 2016
74	USDA	WillardBishop	How Aldi is beating Walmart in the grocery aisle	Mar 29, 2016
75	WMT	Walmart	How Aldi is beating Walmart in the grocery aisle	Mar 29, 2016
76	WMT	WillardBishop	How Aldi is beating Walmart in the grocery aisle	Mar 29, 2016
77	Walmart	WillardBishop	How Aldi is beating Walmart in the grocery aisle	Mar 29, 2016

84760 rows × 4 columns

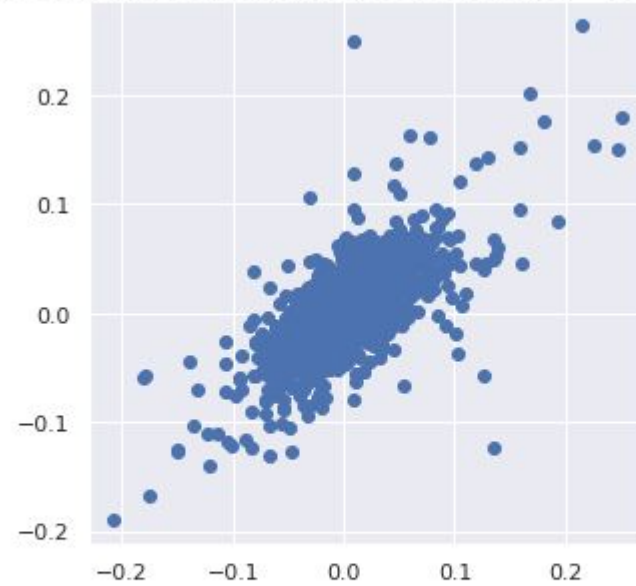
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108	Fortune	37
287	The Motley Fool	33
304	TheStreet	32
224	Quartz	29
161	MarketWatch	27
218	Profit Confidential	22
277	The Guardian	21
48	Business Wire	20
107	Forbes	19
56	CNBC	18
233	Reuters	16
183	Nasdaq	15
330	Wall Street Journal	15
252	Smarter Analyst	13
313	USA Today	12
44	Business - Insider	12
199	PCMag	11
102	FierceBiotech	11
281	The Indian Express	11
180	NPR	11

New Data Sources

- Stock Price Correlations

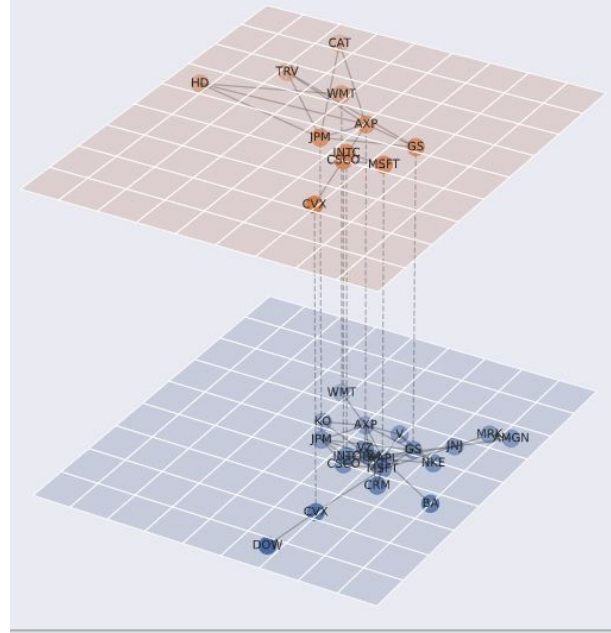


Price Change Scatterplot between JPM and GS. Correlation = 0.7210612597193522



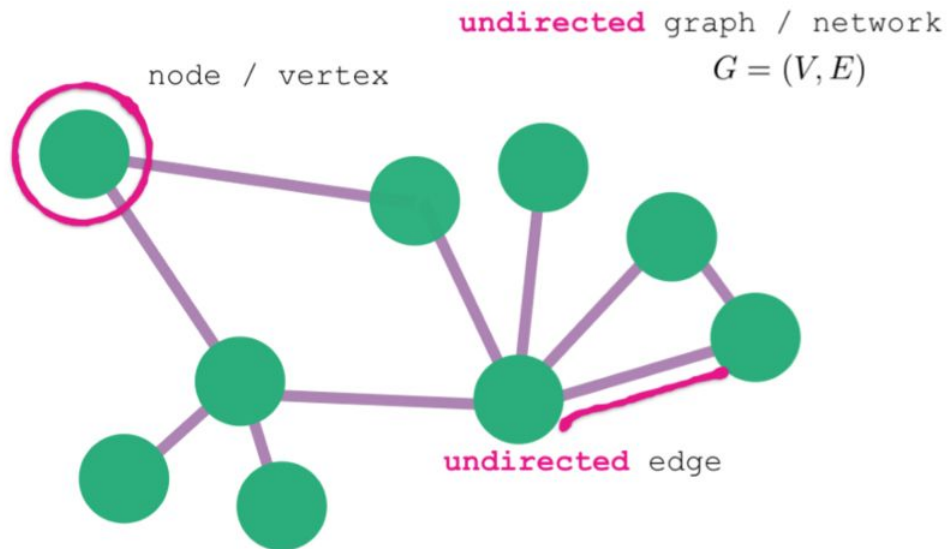
Graphical Methods

- Multiplex Graph Creation



Prediction Methods

- Node Attribute Prediction



- News Article Co-Mentions Between Companies



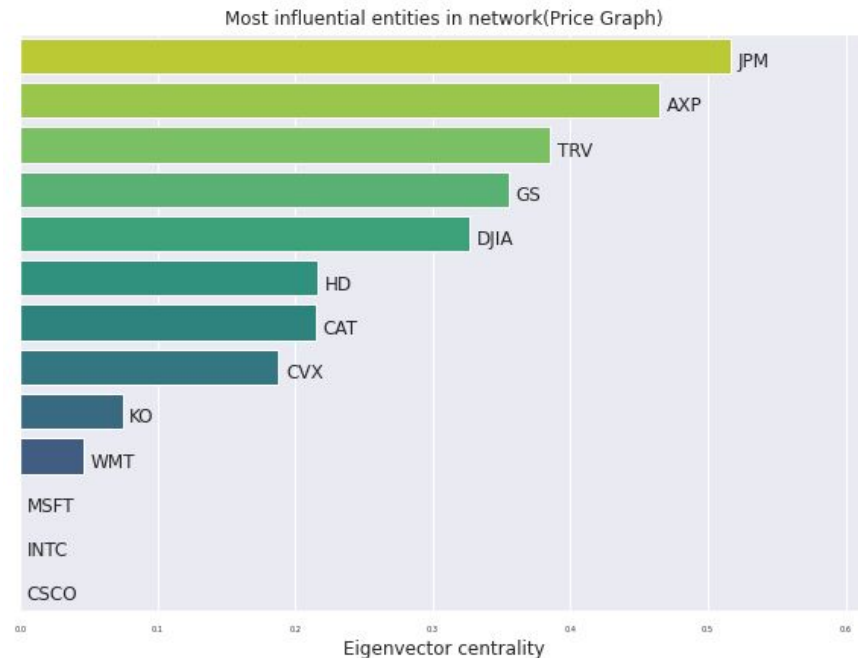
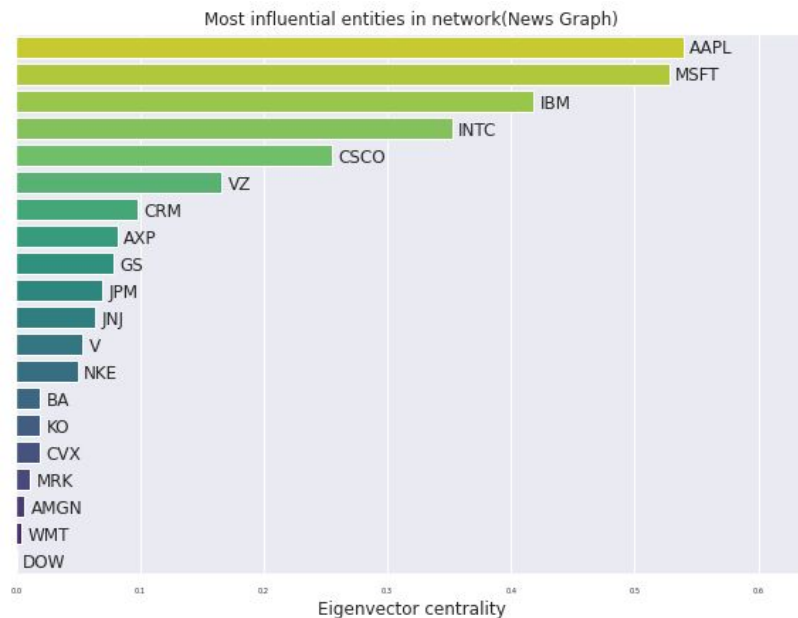
Graphical Structure Results

- Community Detection in News Article Graph



Graphical Analysis Results

- Node Centrality Analysis



Discussion

- Results are beginning to come together
- Paper submission deadline for JP Morgan pushed back about a month to the end of May
- Node Attribute Prediction is our final technical task before we wrap up our findings and focus on presentation