

# Inspector Royale

## Recommendation Monkey

Sponser: Bill.com  
Mentor: Stuart Ogawa



Derek Garcia  
Project Lead



Noa Kim  
Scribe  
Database



Carson Coley  
Front-End



Jonas Zhang  
Statistics



Joe Zhuang  
Back-End

# Problem We are Solving

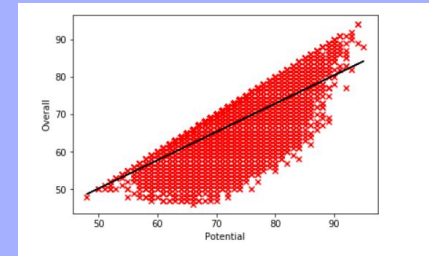
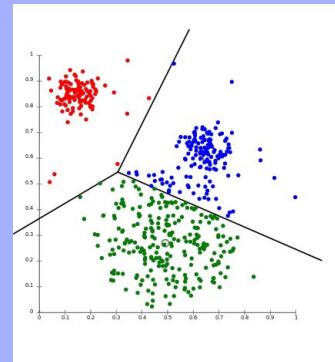
- Is it worth investing and putting resources into a specific industry?
- Big data and data science driven business recommendations
- Research, experiments, analysis using 4.1M Bill.com financial transactions from 2015 to 2019, amounting to \$16 Billion
- Goal: present industry specific business recommendations with explainability using data engineering, advanced mathematics and statistical expressions along with data visualizations

# Methods



- Statistical Methods
- K-Means Clustering
  - Measuring similarity via distance
- Regression Analysis
  - Statistical model to get a relationship of graph points

	SenderIndustry	AnonyOrg	ReceiverID	ProcessDate	TransactionAmount	BusinessSize
1	Hulkarrier	Hulk	Aquaman	2018-04-06	546	Large
2	Fortress of Solitude	Quicksilver	Superman	2017-11-16	9	Large
3	Fortress of Solitude	Groot	Atom	2017-07-07	185	Small
4	Hulkarrier	Scarlet Witch	Swamp Thing	2018-07-25	607	Large
5	Titanic Tower	Black Widow	Starfire	2019-04-18	552	Large
6	Titanic Tower	Daredevil	Nightwing	2018-10-07	424	Large
7	Hall of Justice	Hawkeye	Flashman	2015-06-15	858	Small
8	Sanctum Sanctorum	Starlord	John Constantine	2019-03-04	478	Large
9	Metropolis	Antman	Flash	2018-07-30	866	Large
10	Waldwower	Starlord	Cross Lantem	2019-10-21	482	Large
11	Metropolis	Daredevil	Cyborg	2016-07-27	562	Large
12	Avengers Tower	Storm	Beastboy	2017-09-08	395	Small
13	Gotham	Scarlet Witch	Aquaman	2017-03-30	76	Small
14	Booster Building	Iron Man	Dr. Manhattan	2018-06-07	603	Large
15	Sanctum Sanctorum	Hulk	Flash	2019-12-03	849	Large
16	Avengers Tower	War Machine	Aquaman	2016-06-12	308	Small
17	Sakaar	Rocket Raccoon	Starfire	2016-05-16	202	Large
18	Xmen School for Gifted Youngsters	Groot	Superman	2017-01-12	566	Small
19	Xmen School for Gifted Youngsters	Captain America	Cyborg	2015-05-29	301	Small
20	Asulobis	Thor	Nightwing	2016-06-08	712	Large
21	Batcave	Quicksilver	Starfire	2018-10-24	445	Large
22	Hulkarrier	Daredevil	Nightwing	2018-03-01	786	Large
23	Atlantis	Captain America	Starfire	2016-04-15	87	Large
24	Fortress of Solitude	Shawn CN	John Constantine	2018-10-30	172	Large



# Recommendations

- Info/Tech Services Industry: did not expect a bump in volume; expected professional services to drop off after Thanksgiving to year end as opposed to following typical Holiday spending
  - Recommend targeting Info/Tech companies at the end of year
- Pursue companies with both high transaction velocity and acceleration
- Industry Recommendations
  - Administrative and Support, Waste Management, and Remediation Services
  - Real Estate and Rental and Leasing
  - Professional, Scientific, and Technical Services

# Next Steps

- Goal: 6 to 7 business recommendations
- Goal: 6 to 7 total methods applied to data
- More sophisticated visualization
- Compare and Contrast various statistical methods applied to the data