THE COMPANY

Presented By

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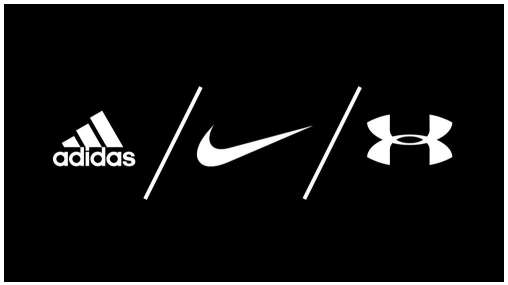
When Do Brands Matter?

Case Study 1

CASE STUDY

1

When Do Brands Matter?



Brands are chosen over others because of…

- Trust/Reputation
- Quality Perception
- Recognition
- Positive Experiences

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Do Brands Matter for Industrial Products?

Brands matter less for:

- Low cost items
- Disposable items

Brands matter more for:

- Higher cost items
- Long-term use items

To Whom…? Customers!

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How Do We Know When Brands Matter?

When consumers pay more for similar items

- Spending more on identical item

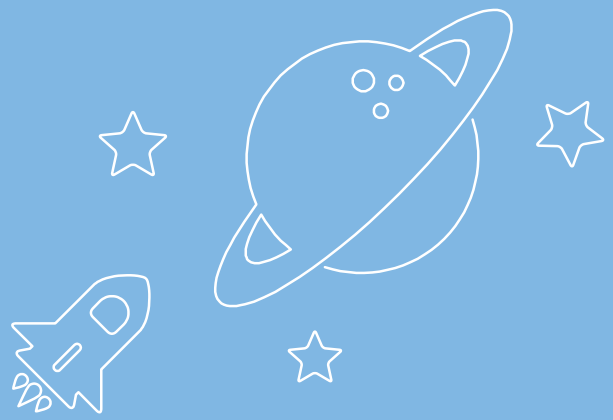
When consumers tell us they matter

- Buying only specific brands
- Indicating decision was based on brand

When and Why Do Brands Matter?

"When it is difficult to determine the quality of a product before purchase and the consequences of poor quality are significant, it makes economic sense for consumers to rely on brand names and the company reputations associated with them. By paying more for a brand-name product in those circumstances, consumers are not acting irrationally. Consumers know that companies with established reputations for consistent high quality have more to lose if they do not perform well—namely, the loss of the ability to continue to charge higher prices."

~ Benjamin Klein
from "Brand Names"
The Library of Economics and Liberty
LINK



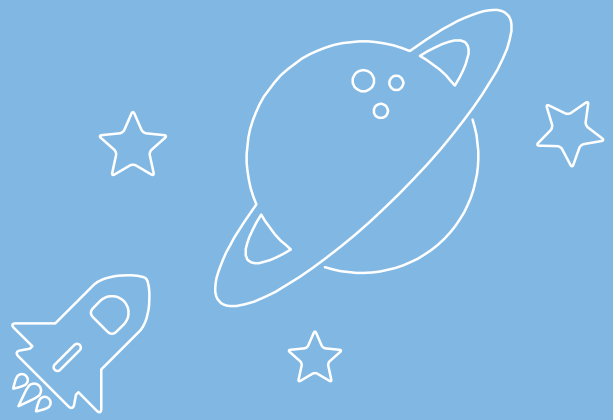
Detecting When Brands Matter

Find The Data:

- Company data
- Web scraping
- 3rd party data
  - Open-source
  - Purchase

Prepare The Data:

- Clean
- Standardize
- Format for use



Detecting When Brands Matter

Analyze The Data:

- Price/Volume Relationship
  - Does purchase volume of a more expensive brand indicate preference?
- Reviews
  - Which brands are consistently rated higher than lower-priced identical products?
  - Sentiment Analysis: Can we find positive/negative sentiment for brands using NLP?
- Customer Profiles
  - Find demographics that show strong brand preferences

Making Recommendations

Case Study 2

CASE STUDY

2

The Raw Data

"order_number"	"l1"	"l2"	"l3"	"sku"	"brand"		
"168266"	"Power Tools"	"Power Saws and Accessories"		"Reciprocating Saw Blades"		"265105"	"2768"
"123986"	"Safety"	"Spill Control Supplies"		"Temporary Leak Repair"		"215839"	"586"
"158978"	"Hardware"	"Door Hardware"	"Thresholds"	"284756"	"1793"		
"449035"	"Electronics, Appliances, and Batteries"		"Batteries"	"Standard Batteries"	"12579"	"1231"	
"781232"	"Motors"	"General Purpose AC Motors"		"General Purpose AC Motors"		"194681"	"2603”
"701116"	"Motors"	"General Purpose AC Motors"		"General Purpose AC Motors"		"310296"	"1068"
"555497"	"Motors"	"Motor Supplies"	"Capacitors"	"306732"	"1068"		
"282317"	"Safety"	"Footwear and Footwear Accessories"		"Insoles"	"148549"	"2696"	
"644437"	"Hand Tools"	"Sockets and Bits"	"Crowfoot Socket Wrenches"		"283869"	"3356"	
"830236"	"Security"	"Two Way Radios and Accessories"		"Handheld Two Way Radios"		"99449"	"2830"
"483827"	"HVAC and Refrigeration"		"Air Filters"	"Pleated Air Filters"	"301809"	"123"	
"595763"	"Cleaning"	"Trash Bags and Liners"		"Trash Bags"	"268122"	"4355"	
"834301"	"Hand Tools"	"Tool Storage and Transfer Tanks"		"Tool Storage Accessories"		"285224"	"4692"
"190274"	"Electrical"	"Raceways"	"Raceways"	"205118"	"2438”		

CASE STUDY

2

Recommendation System Approach

Market Basket Analysis

Use association analysis to find items that are frequently purchased together (frequent itemsets)

Association Rule Mining

Generate rules for frequent itemsets with metrics that can adjusted as desired for specificity

Make Recommendations

Use association rules to recommend other products that are frequently associated. Use popular products to drive sales of others

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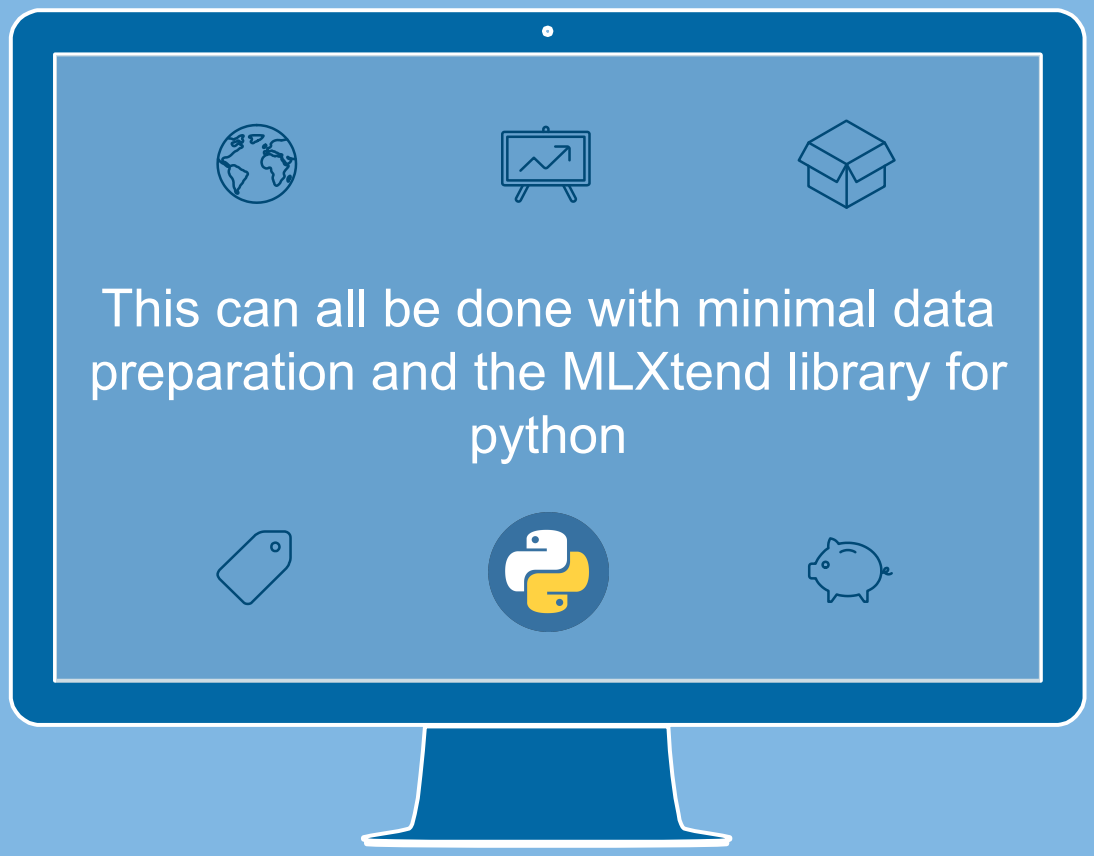
This can all be done with minimal data preparation and the MLXtend library for python

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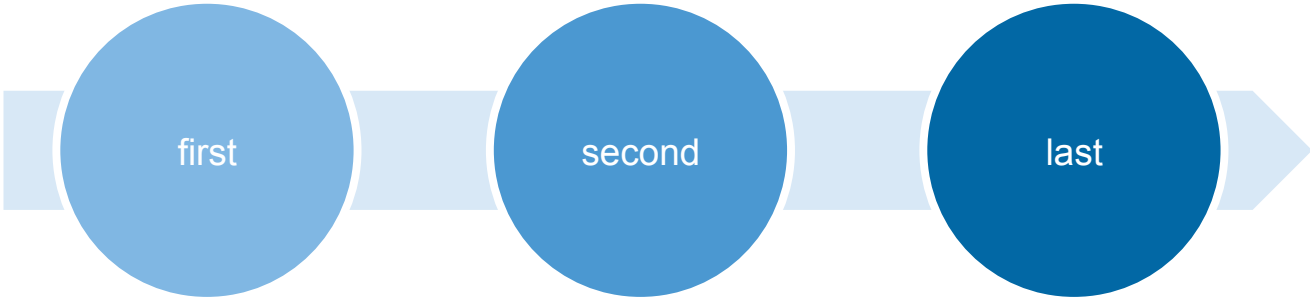
Recommendation System Implementation



Data Prep

- Group by order number
- Predict L3 Category
- One-hot encode

Assoc. Rules

- Apriori algorithm
- Find frequent itemsets
- Generate Association rules

Get Recs.

- Filter associations
- Support
- Lift
- Confidence

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Outcome

Key Terms

- **Support:** Relative frequency items are in the same transactions.
- **Lift:** Ratio of the observed support to what is expected if the association was random
  Greater than 1 = “interesting” association
- **Confidence:** Reliability measure for the association rules.

Recommendation Parameters

- Support >= 1
- Lift >= 6
- Confidence >= 80%

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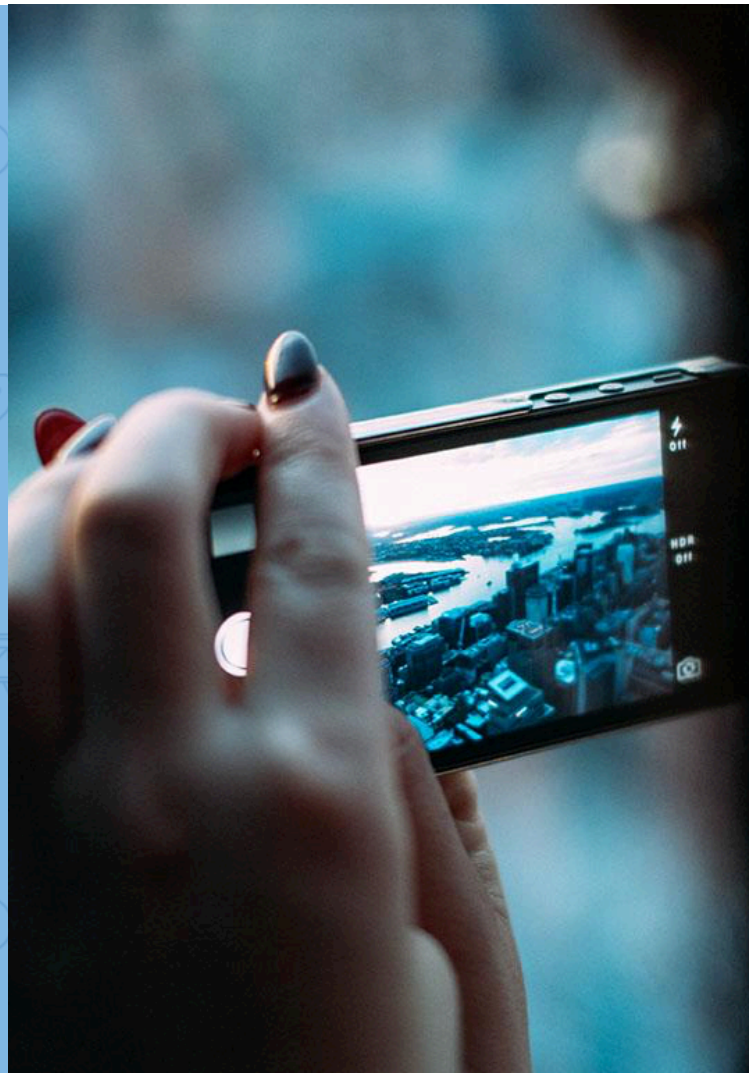
Recommendations Generated

(Sample Best/Worst)

Antecedents (Items)	Consequents (Recommendations)	Support	Confidence	Lift
Lock Nuts, Hex Nuts, Lock Washers	Flat Washers	0.013127	0.923201	7.892349
Trash Bags, Disposable Gloves, Toilet Paper	Paper Towels, Rolls	0.010004	0.822864	12.547244
Lock Nuts, Flat Washers, Hex Nuts, Lock Washers	Hex Head Cap Screws	0.011447	0.872019	8.676589
Flat Washers	Pipe Sealant Tape, Lock Washers	0.010042	0.085847	6.956559
Cut-Resistant Gloves	Standard Batteries, Cut-Resistant Sleeves	0.010767	0.086561	6.180698
Flat Washers	Hex Nuts, Black Pipe	0.010996	0.094007	6.888870

CASE STUDY

2



Notebook & Code:

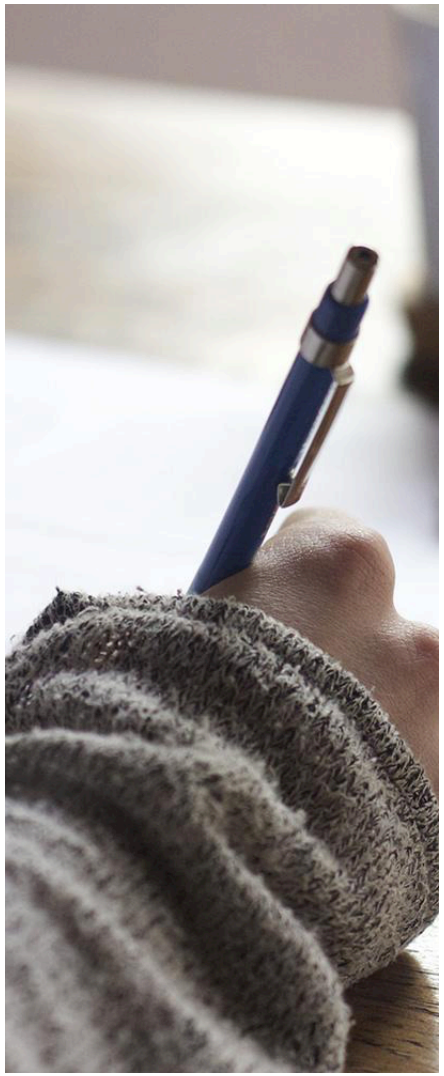
https://github.com/dditucci/E-Commerce-Recommendations/blob/master/E-Commerce%20Recommendation%20Notebook.ipynb

CASE STUDY

2

Improvements

- Automate pipeline
- Automate formatting of data for new orders
- Use more varied data for better recs
- Increase strictness of parameters
- Periodically retrain model
- Explore more complex association mining methods



THANKS!

Any questions?

You can find me at

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- www.github.com/dditucci