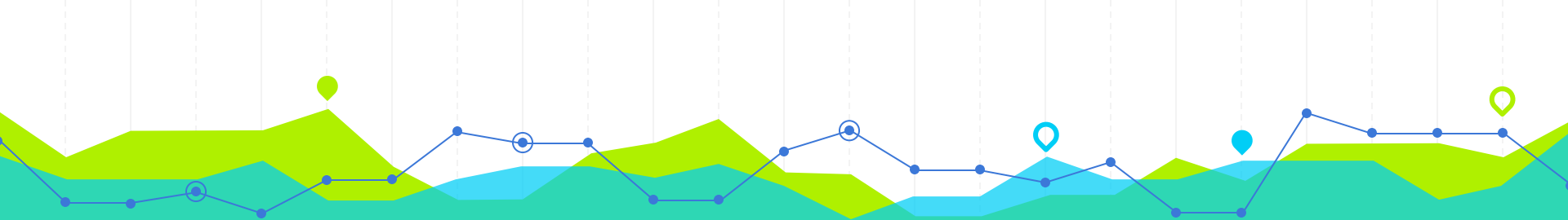


RECOMMENDATION SYSTEM

Garage Gym Reviews



\$1,500,000,000

Growth in home gym equipment sales (2021)

Background

THE CONSUMER DILEMMA

- Much of the equipment purchased online
- Equipment is usually large & heavy
- Returns can be extremely costly

GARAGE GYM REVIEWS (GGR)

- In depth blogs about gym equipment



Introduction

GOAL

- Suggest reviews of related products
- Increase time spent on website and satisfaction of consumer

SOLUTION

- Construct a content based recommendation system
 - Topic modeling (Non-Negative Matrix Factorization)



Background

DATA

- Garage Gym Review
 - Scraped 432 product reviews
- Average length: 1,600 words

CLEANING

- 19,000 terms → 6,000 terms
 - Stop words
 - Term frequency removal:
 - Over 60% (~260 docs)
 - Under 1% (~4 docs)

Topic Modeling

MODEL OUTPUT

- Corpus broken into 10 topics

Example:

Topic	Top Terms
1	Shoe, Nike, Metcon, Heel, Nano, Reebok
3	Bike, Air, Echo, Assault, Schwinn, Monitor
4	Dumbbell, Adjustable, Handle, Powerblock, Pound

Topic Modeling

MODEL OUTPUT

- Corpus broken into 10 topics

Example:

Topic	Top Terms	Top Document
1	Shoe, Nike, Metcon, Heel, Nano, Reebok	7 Best CrossFit Shoes of 2021
3	Bike, Air, Echo, Assault, Schwinn, Monitor	The Best Air Bike for 2021
4	Dumbbell, Adjustable, Handle, Powerblock, Pound	Best Adjustable Dumbbell for Home Gyms

Topic Modeling

MODEL OUTPUT

- Corpus broken into 10 topics

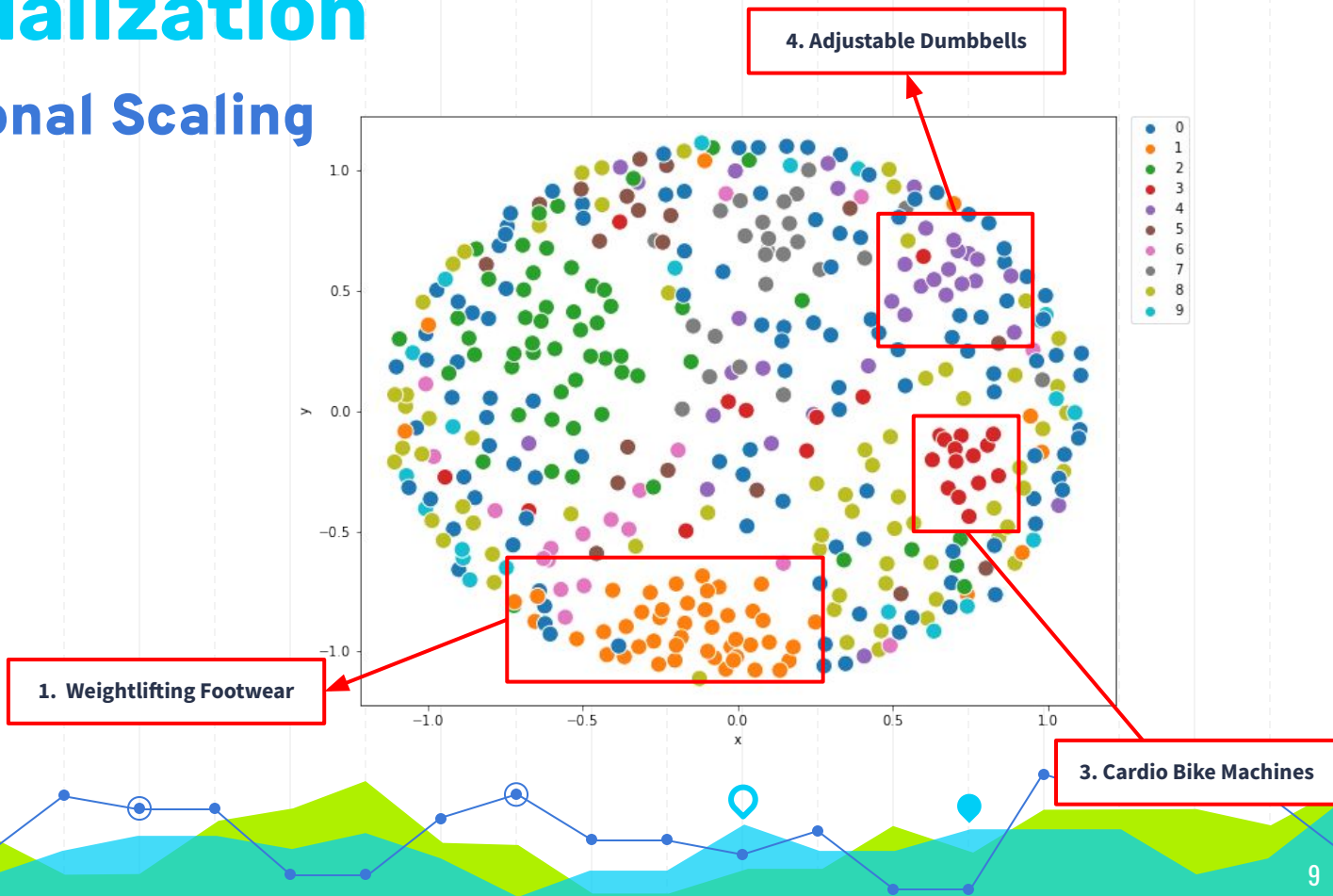
Example:

Topic	Top Terms	Top Document	Predicted Topic
1	Shoe, Nike, Metcon, Heel, Nano, Reebok	7 Best CrossFit Shoes of 2021	Weightlifting Footwear
3	Bike, Air, Echo, Assault, Schwinn, Monitor	The Best Air Bike for 2021	Cardio Bike Machines
4	Dumbbell, Adjustable, Handle, Powerblock, Pound	Best Adjustable Dumbbell for Home Gyms	Adjustable Dumbbells

Topic Visualization

Multidimensional Scaling

Topic	Predicted Topic
1	Weightlifting Footwear
3	Cardio Bike Machines
4	Adjustable Dumbbells



Recommendation System

INPUT:

Document Number (6)

OUTPUT:

You just read: Rogue US MIL Spec Bumper Plates Review (2021)

You might like:

Document Number	Title	URL
30	FringeSport Bumper Plates Review	https://www.garagegymreviews.com/fringesport-bumper-plates-in-depth-review
289	Vulcan Strength Alpha Bumper Plates Review (2021)	https://www.garagegymreviews.com/vulcan-strength-alpha-bumper-plates-review
209	The Best Bumper Plates for 2021	https://www.garagegymreviews.com/best-bumper-plates-guide



FUTURE WORK

- Create a Streamlit app
- Recommendations based on keyword input
- Automate tag creation for new reviews

THANKS!

Any questions?



Appendix

Topic 0:

HOLE, UPRIGHT, ATTACHMENT, PULL, TITAN, SORINEX, MONSTER, BAND, HANDLE, UP, SLED, GAUGE, SAFETY, STAND, MACHINE

Topic 1:

SHOE, NIKE, METCON, HEEL, NANO, REEBOK, ROMALEOS, WEIGHTLIFTING, FOOT, TOE, OUTSOLE, UPPER, MIDSOLE, ADIDAS, STABILITY

Topic 2:

OHIO, KNURL, SHAFT, SLEEVE, KNURLING, BUSHING, TENSILE, STAINLESS, PSI, CERAKOTE, ZINC, POWERLIFTING, OLYMPIC, FINISH, SPIN

Topic 3:

BIKE, AIR, ECHO, ASSAULT, SCHWINN, SEAT, MONITOR, AIRDYNE, PEDAL, FAN, XEBEX, CALORIE, RESISTANCE, CONSOLE, CONCEPT

Topic 4:

DUMBBELL, ADJUSTABLE, HANDLE, POWERBLOCK, POWERBLOCKS, BOWFLEX, POUND, IRONMASTER, IRONMASTERS, KETTLEBELL, HEX, SELECTTECH, LB, DB, MUSCLE

Topic 5:

BELT, PIONEER, LEATHER, DOMINION, BUCKLE, SBD, PRONG, LEVER, RHINO, WEIGHTLIFTING, BRUTE, PLY, TROLLEY, CUT, PLATFORM

Topic 6:

BUMPER, FRINGESPORT, RUBBER, BOUNCE, URETHANE, ALPHA, COMPETITION, REP, VIRGIN, 10, POUND, DUROMETER, CRUMB, IRON, INSERT

Topic 7:

BENCH, PAD, FLAT, ADJUSTABLE, FAT, UTILITY, REP, FB, THOMPSON, FOOT, 5000, AB, GAUGE, HEIGHT, VINYL

Topic 8:

TREADMILL, MACHINE, IFIT, RUNNING, TRUEFORM, NORDICTRACK, ELLIPTICAL, APP, RUNNER, TRAINER, ROWER, STRIDE, PROGRAMMING, CARDIO, SMART

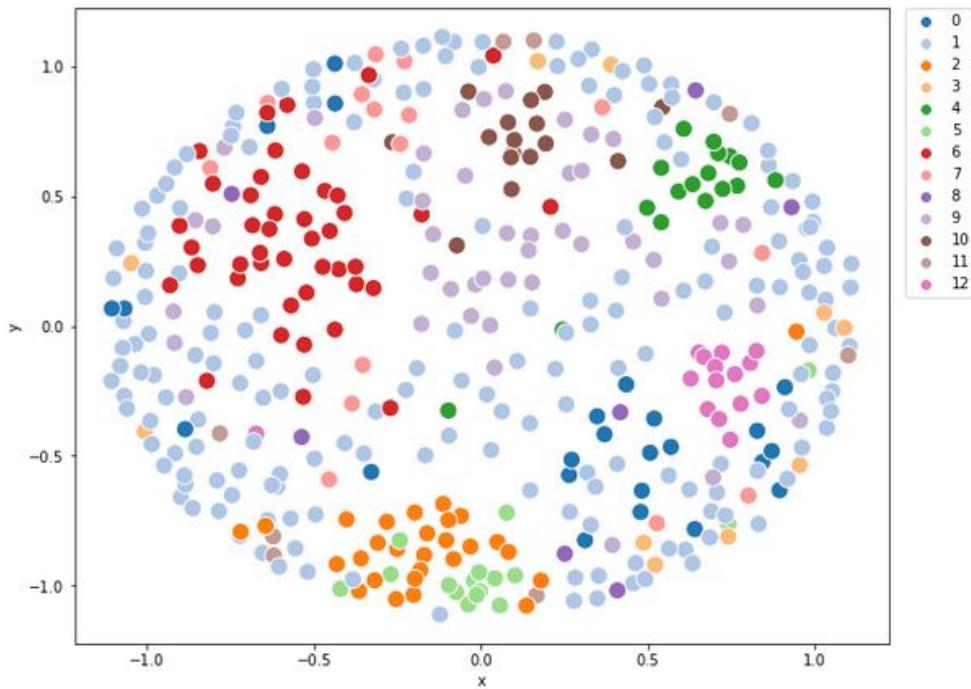
Topic 9:

VEST, CARRIER, WEIGHTED, HYPER, VELCRO, HYPERWEAR, EZ, SLED, POCKET, TACTICAL, KENSUI, CORDURA, ROPE, INVEST, STRAP



Appendix

K-Means Clustering, $k=13$



Appendix

Cluster-Topic Matrix

	Topic_0	Topic_1	Topic_2	Topic_3	Topic_4	Topic_5	Topic_6	Topic_7	Topic_8	Topic_9
cluster										
0	0.003213	0.004803	0.002757	0.026274	0.010235	0.012756	0.001029	0.002342	0.277340	0.001083
1	0.052727	0.013375	0.020322	0.016173	0.021657	0.007603	0.037131	0.010192	0.038980	0.011333
2	0.007224	0.291276	0.005295	0.006279	0.002602	0.006278	0.004273	0.003687	0.011876	0.009401
3	0.020358	0.010461	0.002431	0.005388	0.005925	0.005541	0.005513	0.010098	0.002095	0.397801
4	0.010738	0.003591	0.016073	0.000467	0.402295	0.002114	0.020658	0.006674	0.008132	0.003564
5	0.005955	0.300399	0.006359	0.009663	0.000196	0.004508	0.006411	0.001751	0.003269	0.004609
6	0.006892	0.007614	0.292056	0.008963	0.004947	0.007741	0.009193	0.004592	0.008615	0.006245
7	0.031760	0.004188	0.003004	0.000550	0.007049	0.322750	0.004656	0.001705	0.011946	0.002272
8	0.058208	0.020438	0.009612	0.014208	0.025773	0.012576	0.008918	0.001329	0.051447	0.005814
9	0.145591	0.007544	0.027570	0.023620	0.018519	0.008606	0.015918	0.051613	0.011317	0.007483
10	0.018942	0.004665	0.009260	0.004659	0.011849	0.006667	0.022741	0.308852	0.006922	0.003771
11	0.057555	0.027280	0.008497	0.001783	0.008440	0.001439	0.010669	0.000618	0.016340	0.001277
12	0.001577	0.002325	0.000729	0.410759	0.005141	0.014595	0.001828	0.002973	0.038981	0.003328