Capstone Project
Battle of the Neighborhoods – Week 2

IBM Coursera

Data Science Specialization

Introduction

- Covid-19 pandemic has upended economies and affected businesses and workers
- Layoffs and re-locations have been common occurrence
- Re-location to another city poses many challenges to employees
- Where to stay is the first biggest challenge
- Machine learning (ML) algorithms can help identify suitable places to stay

The problem (or opportunity)

John Smith works at ACME Widgets in Southern California

Company has offered him relocation to Austin, Texas

Austin is a vibrant city and fast-growing metropolitan area

Many neighborhoods to choose from

John would like to stay in a neighborhood like his present one – Westpark in Irvine CA

The Solution

- K-Means is a Machine Learning algorithm used for clustering entities based on their features
- The problem is an ideal use case for K-Means
- Publicly available data sets and cloud computing platforms make it affordable or free to apply ML techniques

Feeding data to the machine

Many publicly available databases

Data sources used for the report

City of Austin data portal

Foursquare – location data platform

Nominatim – Open Source geocoding data

Data Summary

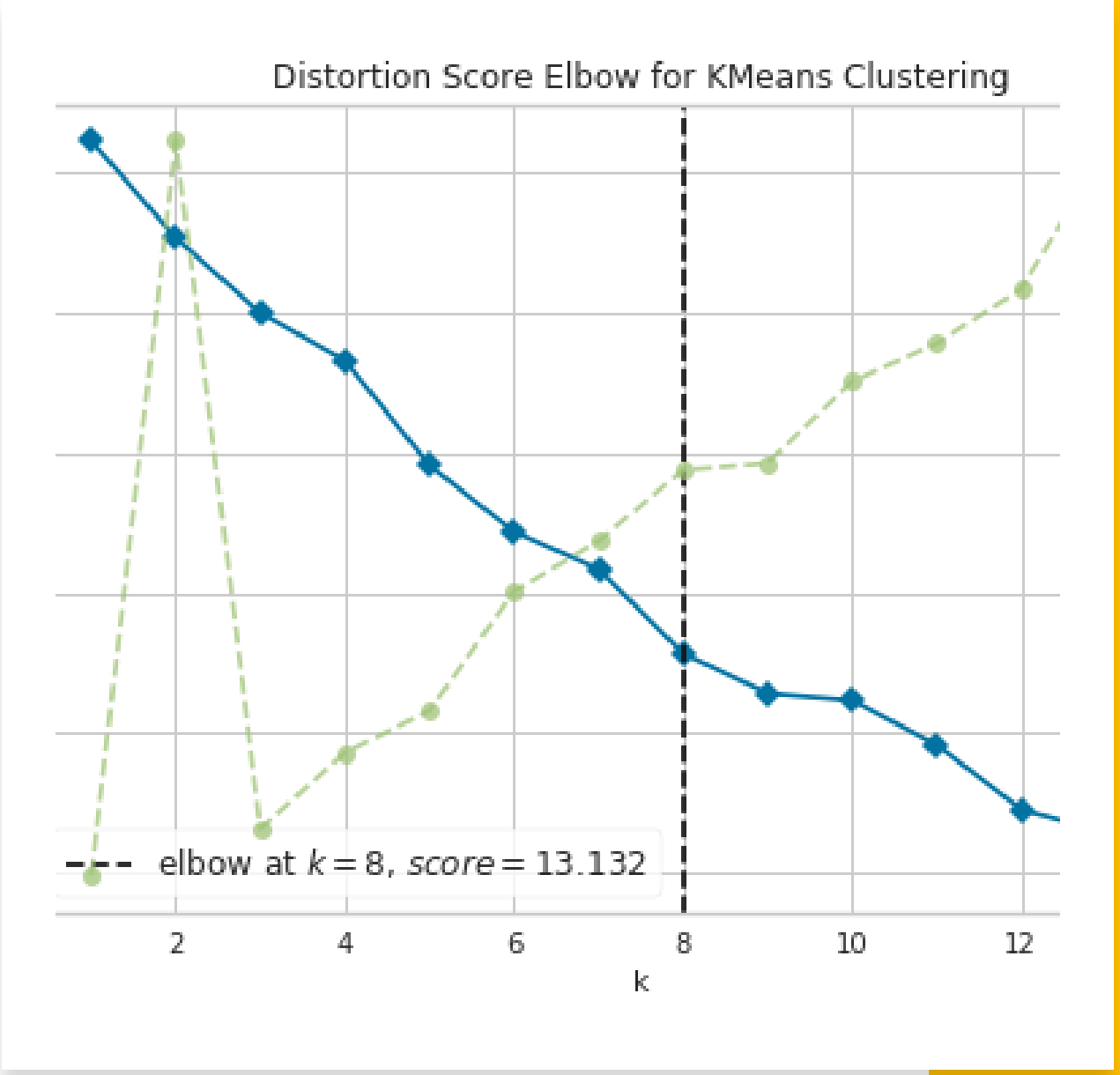
85 NEIGHBORHOODS IN CITY OF AUSTIN

WESTPARK WAS GROUPED WITH AUSTIN NEIGHBORHOODS TO SEE WHICH GROUP OF NEIGHBORHOODS K-MEANS WOULD CLASSIFY IT

1285 VENUES IN TOTAL IN THE NEIGHBORHOODS USED FOR CLASSIFYING AND CLUSTERING SIMILAR NEIGHBORHOODS

Use the elbow

- How many clusters or groups should we divide the neighborhoods in
- The elbow method provides the answer – 8 clusters



The lucky cluster

- The Westpark neighborhood was clustered with the following Austin neighborhoods

	neighborhood	latitude	longitude	cluster labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Co
0	Westpark, Irvine CA	33.691352	-117.808844	6	Playground	Park	Pool	Other Repair Shop	Yoga Studio	Electronics Store	Food Truck	Food Court	Food & Drink Shop	
1	HANCOCK	30.295896	-97.724768	6	Park	Mexican Restaurant	Golf Course	Escape Room	Frame Store	Fountain	Food Truck	Food Court	Food & Drink Shop	
2	WEST OAK HILL	30.238480	-97.889012	6	Playground	Park	Yoga Studio	Empanada Restaurant	Fountain	Food Truck	Food Court	Food & Drink Shop	Flower Shop	
3	OLD WEST AUSTIN	30.296822	-97.754851	6	Shop & Service	Park	Food Truck	Tanning Salon	Yoga Studio	Food Court	Food & Drink Shop	Flower Shop	Field	Fas Rest
4	BARTON HILLS	30.251571	-97.784106	6	Rental Car Location	Playground	Yoga Studio	Electronics Store	Fountain	Food Truck	Food Court	Food & Drink Shop	Flower Shop	
5	UNIVERSITY HILLS	30.317580	-97.673917	6	Arts & Entertainment	Park	Yoga Studio	Empanada Restaurant	Frame Store	Fountain	Food Truck	Food Court	Food & Drink Shop	
6	ROSEWOOD	30.271370	-97.710112	6	Park	Pool Hall	Gym / Fitness Center	Athletics & Sports	Café	Yoga Studio	Escape Room	Fountain	Food Truck	
7	ANDERSON MILL	30.455834	-97.807096	6	Park	Auto Workshop	Pool	Yoga Studio	Fountain	Food Truck	Food Court	Food & Drink Shop	Flower Shop	

Conclusion

The K-Means algorithm identified Austin Neighborhoods similar to Westpark

John should visit these neighborhoods first

Qualitative information is also important

- Opinion of real estate agents in Austin
- Visual impression of the neighborhood

Happy Exploring!