

A modern, bright apartment interior with large windows overlooking a city skyline. The room features a light-colored sofa, a low coffee table, and a dining area with a wooden table and chairs. The windows provide a clear view of a cityscape under a bright sky.

# **Clustering New York Rental Listings**

Dexter Sealy  
METIS, March 3, 2017

# Objective

What can we learn from performing cluster analysis on NYC rental listings?

- Can we personalize the search experience by surfacing interesting / related listings?
- **RentHop** aggregates rental listings for New York, Boston, Chicago, and other large cities
- Kaggle data set contains 50,000 New York listings created April through June 2016
- 2.9 million words (24K unique)



# Tools and Approach





# Data Cleaning

Loft like 12 ft **CeilingsOversized**,  
energy efficient windowsGranite &  
Porcelain gourmet KitchenPolished  
chrome fixtures throughoutMinutes  
from **A,C,2,3,4,5,J,Z,R** Trains!Minutes  
from Wall St, Seaport, Stone St<br  
><br />Elevator / 24 Hr  
DoormanFitness CenterGreat Roofdeck  
for summerShoot Pool in Tenant's  
LoungeImmaculately restored Lobby<br  
><br />To schedule a viewing please  
call or text Justin @ **498-701-6489** or  
email at [kagglemanager@renthop.com](mailto:kagglemanager@renthop.com)<br  
><br /><p><a website\_redacted

Loft like 12 ft Ceilings Oversized  
energy efficient windows Granite  
Porcelain gourmet Kitchen Polished  
chrome fixtures throughout Minutes  
from ALine CLine two three four five  
JLine ZLine RLine Trains Minutes  
from Wall St Seaport Stone St  
Elevator 24 Hr Doorman Fitness  
Center Great Roofdeck for summer  
Shoot Pool in Tenant's Lounge  
Immaculately restored Lobby To  
schedule a viewing please call or  
text Justin @ or email at  
[kagglemanager@renthop.com](mailto:kagglemanager@renthop.com)



# Tools and Approach



A modern rooftop terrace with wooden furniture and a large arched planter. The terrace is furnished with several wooden lounge chairs and tables, some with white cushions. A large, dark, arched planter is visible in the background, containing various green plants. The terrace is bordered by a low brick wall, and a large white sphere is visible on the left. The background shows a cityscape with various buildings.

# Demonstration



# Conclusion

- Cluster analysis is effective
- Listings can be grouped in non-traditional ways

# Future Work

- Include traditional data such as price, size and location
- Visualize algorithms side-by-side
- Build recommender





# Questions?

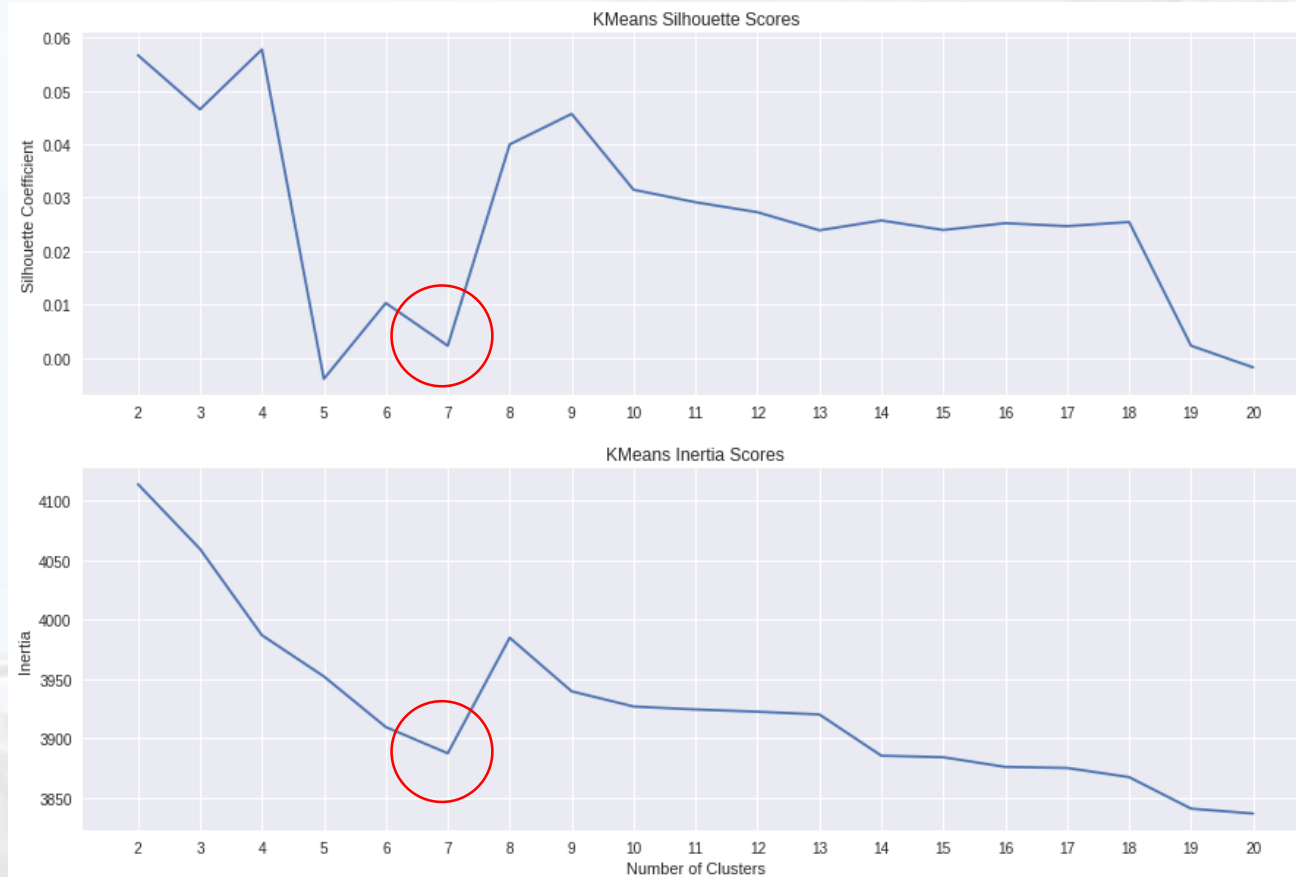
Dexter Sealy

METIS, March 3, 2017

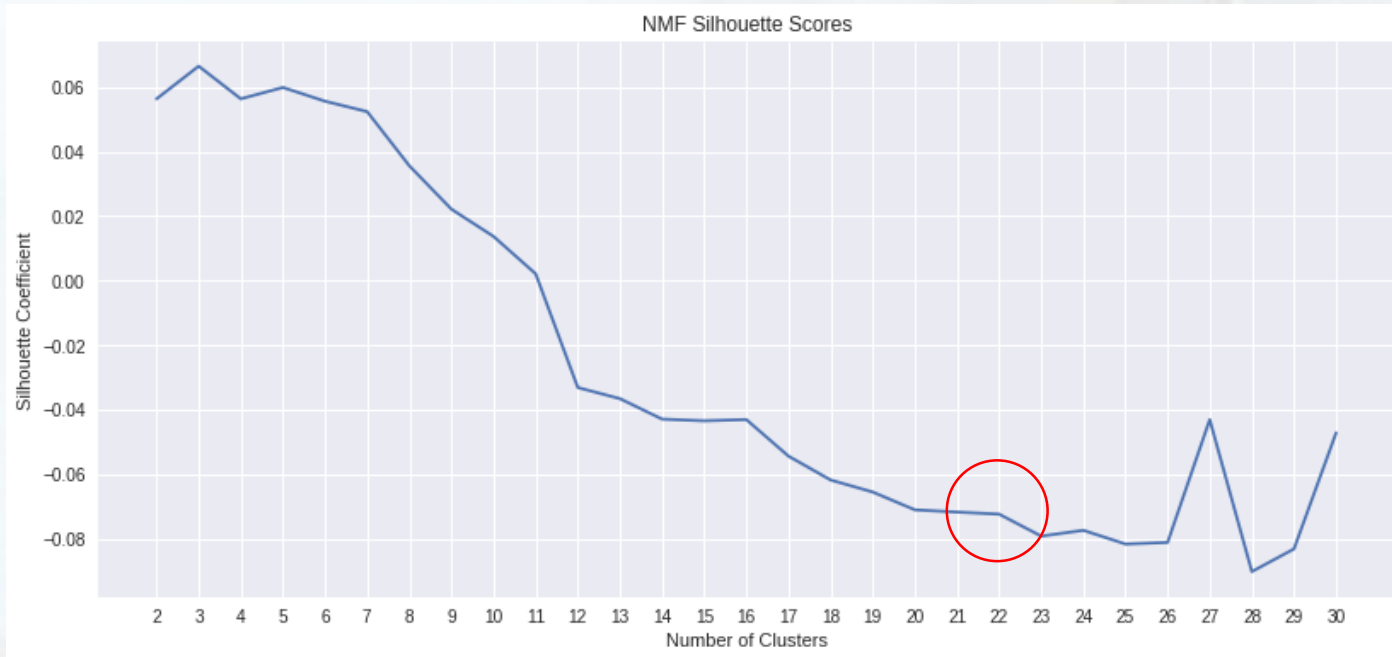
[www.linkedin.com/in/dextersealy](http://www.linkedin.com/in/dextersealy) ▪ [github.com/dextersealy](https://github.com/dextersealy)



# KMeans Scores



# NMF Scores





# Ward Scores

