

InnSpect

Chang Zhang
Insight 2019 C



Groupon is ambitious in travel market

PARTNERSHIPS / ACQUISITIONS

Groupon Teams With DerbySoft To Boost Its Travel Business

Groupon Acquires HotelTonight Competitor Blink To Get In On The Last Minute Hotel Booking App Action

Steve O'Hear @sohear 7:45 am EDT • September 9, 2013

 Comment



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Groupon Acquires Presence AI to Enhance Booking Experience

AI-powered messaging tool enables merchants to drive bookings, engage with customers, cut calls and save time

Important Feature Missing from Groupon Hotel Page



G Park West Hotel: 4-Star Hotel | x +
C groupon.com/deals/ga-bk-park-west-hotel-1

Park West Hotel - New York, NY

2.8 ★★★☆☆ 121 ratings



Getaways Report

Fine Print & Details

Highlights

What You Get

Important Feature Missing from Groupon Hotel Page



Room?
Location?
Service?
Food?
...

Park West Hotel - New York, NY
2.8 ★★★★☆ 121 rating

Getaways Report Fine Print & Details

Highlights What You Get

Aspect based hotel ratings

4.5 Excellent
 663 reviews

 Location
 Cleanliness
 Service
 Value

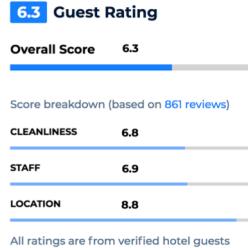
 Certificate of Excellence

 GreenLeaders Silver level

TripAdvisor



Expedia

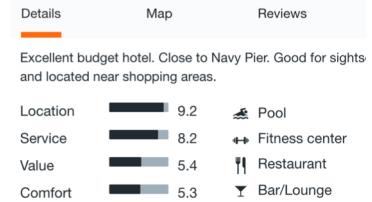


Priceline



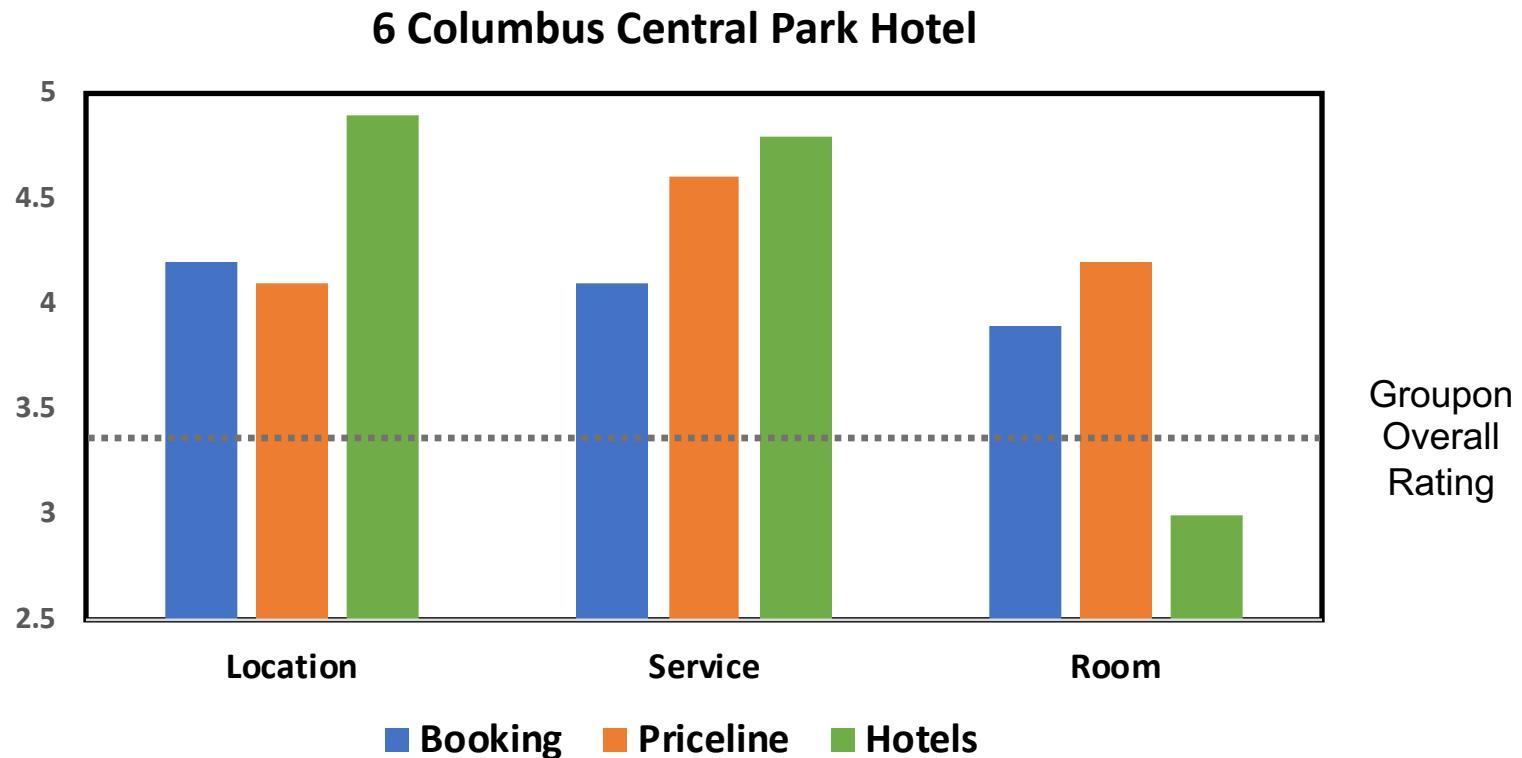
 98% Recommended

Ctrip



Kayak

- Can Groupon just adapt aspect based hotel ratings from other websites?



InnSpect can generate aspect-based hotel ratings from reviews

"Stay here!"

Reviewed September 24, 2019

After reading a few bad reviews I chose to take a chance on the Wellington. I was so glad I didn't! Queen Suite. I was blown away by the size. The bathroom was spacious and looked to be newly renovated. This is the best bathroom I've ever experienced at a hotel. The ... [more](#)



Passport160170

"Very Pleased"

Reviewed September 23, 2019

Being the 1st time in NYC , I felt a huge responsibility to make sure our family was close to everything we needed for Mon Tues NYFW yet not in the middle of complete hustle bustle on our 3 leisure days. We were greeted promptly and even though we were 3 hours early the front desk immedi... [more](#)

"Wonderful experience"

Reviewed September 13, 2019

Everything about this hotel was great. From art to towels. To staff. Room price, location, check-out, cleanliness, friendliness, room standards, location. I couldn't say a bad word about the Wellington. I have stayed in many 4 and 5 star hotels in my time. Even though this is a 3 Star ... [more](#)

774mag

"Great place to stay"

Reviewed September 22, 2019

Great location to explore New York. Room was clean comfortable and the bed as huge. Staff were all helpful and pleasant. Air con was efficient. Room was well services with option not to have bed linen / towels changed showing environmental awareness and we would stay again.

Liz B

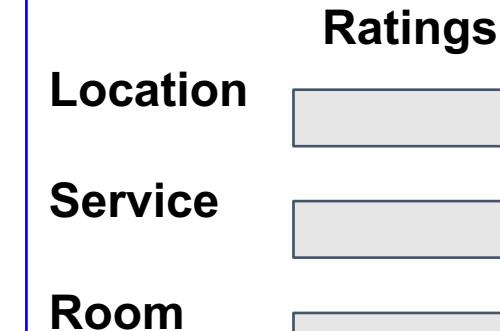
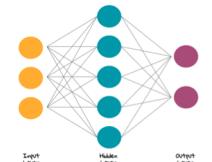
Groupon reviews

"Overnight trip"

Reviewed September 22, 2019

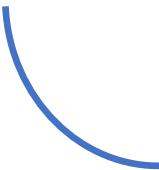
Park Café could be a little less pricey (2 pieces of French toast and 4 pcs of bacon- shouldn't come to close to \$15 BEFORE TIP!!). Room was AWESOME (we were told, as we were checking in, that we got upgraded from a standard dbl bed to a suite- FOR FREE!!!) THAT was a surprise!! We had to... [more](#)

poohnpurple1976



Aspect based sentiment analysis

- **Grand Hotel is close to everything! The lady at the front desk was very friendly and helpful. But my room was small and had unpleasant smell.**



Step 1: Aspect identification

Location

Service

- Grand Hotel is close to everything! The lady at the front desk was very friendly and helpful. But my room was small and had unpleasant smell.

Room

Step 1: Aspect identification

Location

Service

- Grand Hotel is close to everything! The lady at the front desk was very friendly and helpful. But my room was small and had unpleasant smell.

Room

TripAdvisor Hotel
Review Dataset
(240k reviews)

Tokenize by
sentence + text
cleaning

LDA topic
clustering

~ 90 % accuracy
(bootstrap
method)

Step 2: Sentiment analysis

Location:



Service:



- Grand Hotel is close to everything! The lady at the front desk was very friendly and helpful. But my room was small and had unpleasant smell.

Room:



Step 2: Sentiment analysis

Location:



Service:



- Grand Hotel is close to everything! The lady at the front desk was very friendly and helpful. But my room was small and had unpleasant smell.

Room:



TripAdvisor Dataset (240k reviews with ratings on 6 aspects)

Label reviews for each aspect based on aspect rating (4,5 -> pos; 1,2 -> neg)

Word2Vec for word embedding

Train Bi-LSTM-RNN model for each aspect

~ 80 % accuracy
~ 0.8 F1 score

Demo: Input InnSpect

an aspect-based hotel review analysis platform

Please enter Groupon hotel link below:

url: e.g. <https://www.groupon.com/deals/ga-bk-royal-regency-hotel-11>

Go Inspect!



Demo: Output

Service:

Service rating:

17.3% of the reviewers mentioned service. 63.4% of them spoke highly of it.

Customer service was professional and courteous.

The staff's attitude and service was mediocre at best.

Room:

Room rating:

42.1% of the reviewers mentioned room. 58.3% of them spoke highly of it.

It was two standard beds

The carpets are beyond disgusting and the customer service was also horrible as well.

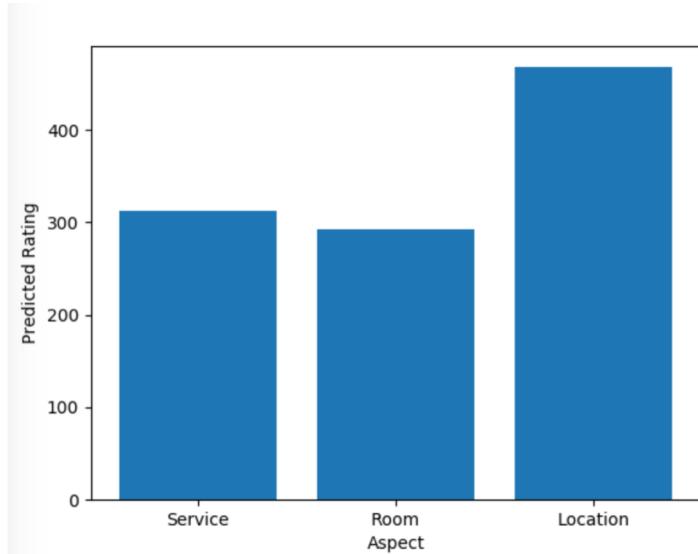
Location:

Location rating:

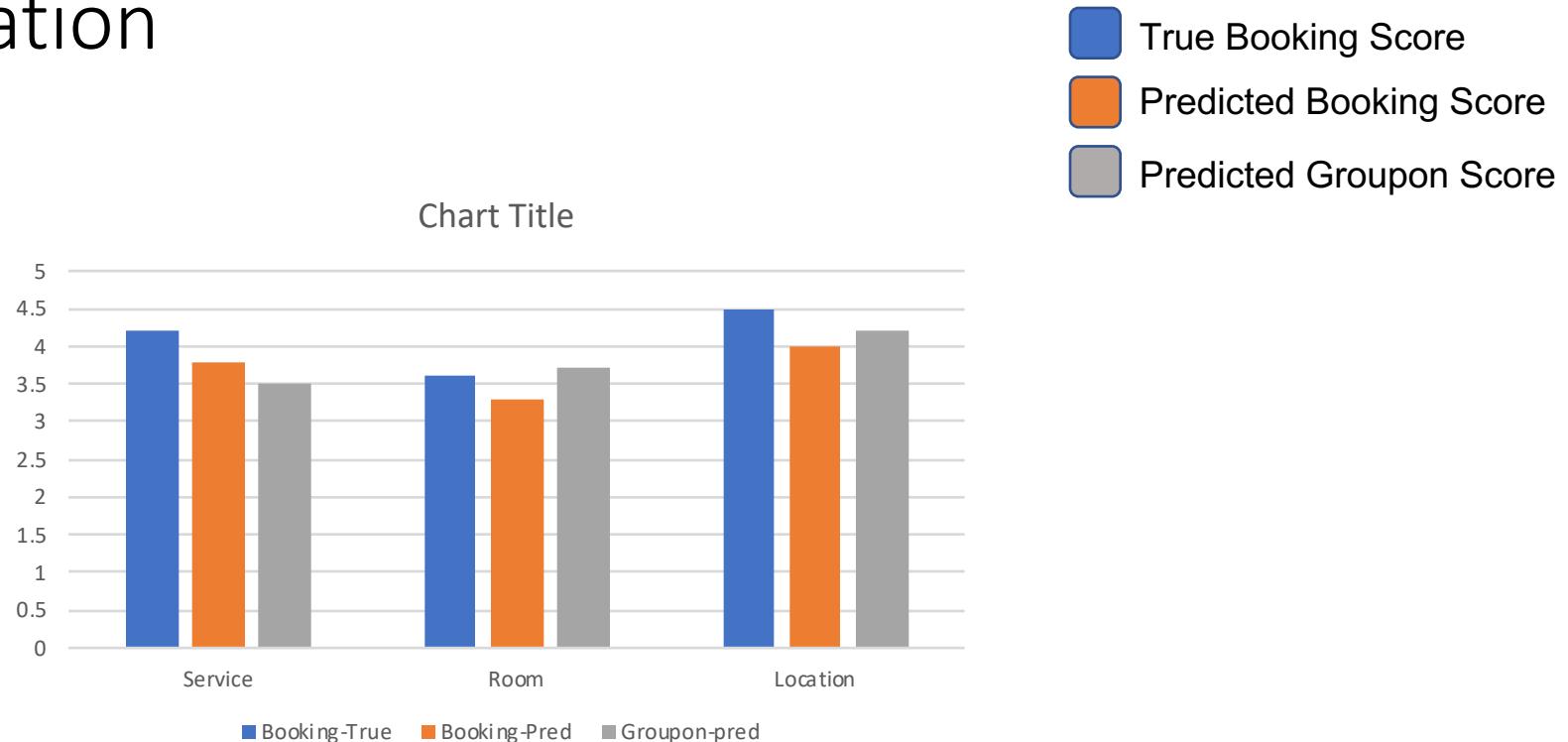
10.1% of the reviewers mentioned loc. 93.8% of them spoke highly of it.

the bed was comfortable, the room was relatively inexpensive, and the location was very convenient.

No relevant comments found.



Evaluation



About Chang Zhang:



University of Minnesota
PhD, Computational Materials Science



Data Science Consultant



Software Development Intern