

# Social Media and Hotel Marketing

Holly Waisanen-Hatipoglu

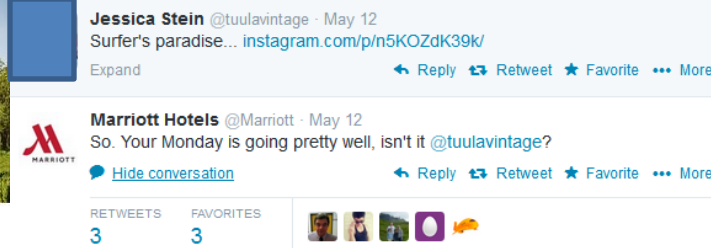
19 May 2014

# Brands are using social media to connect with customers in many ways – example: hotel industry

- Customer service / monitoring



- Building brand engagement



Question: How are different hotel brands engaging on Twitter and what is the customer response?

# Technical Overview – Capturing, scrubbing, and visualizing tweets

- Ran Python script using TwitterAPI library to capture tweets on AWS EC2 Micro instance for 3+ weeks
  - First set up permissions to access Streaming Twitter API
  - Filter selects keywords for a few top brands – Marriott (and Renaissance), Hilton (and HHonors), Starwood (and SPG, W and Westin) , IHG, Hyatt
  - Ended with 418K+ tweets (1.4GB) between Apr 20-May 11
- Scrubbed Twitter output in Python to extract most relevant fields, consolidate file size, and run initial summary metrics
- Exported a pandas dataframe to a csv for use in R and Tableau for further analysis and visualization

**Twitter API processing – if I can do it, you can too**

# Twitter API – so many tweets!

- REST API vs. Streaming
  - REST – based on user request or interaction with an app (e.g. Twitter widget on a blog), focus on simplicity and relevance – not exhaustiveness
  - Streaming – maintains a persistent connection and return everything, most relevant for large scale capture
  - Both require OAuth and application setup, have similar filtering capabilities (for GET, at least), and return similar objects
- Various libraries and packages exist in Python and R to query and process JSON strings, e.g. TwitterR, StreamR, TwitterAPI
- Extensive documentation at Twitter on object structures

A field guide to Twitter Platform objects



<https://dev.twitter.com/docs>

# Twitter API – so much info in each tweet!



```
line.keys()
```

```
[u'contributors',  
 u'truncated',  
 u'text',  
 u'in_reply_to_status_id',  
 u'id',  
 u'favorite_count',  
 u'source',  
 u'retweeted',  
 u'coordinates',  
 u'entities',  
 u'in_reply_to_screen_name',  
 u'id_str',  
 u'retweet_count',  
 u'in_reply_to_user_id',  
 u'favorited',  
 u'user',  
 u'geo',  
 u'in_reply_to_user_id_str',  
 u'possibly_sensitive',  
 u'lang',  
 u'created_at',  
 u'filter_level',  
 u'in_reply_to_status_id_str',  
 u'place']
```

```
line['entities'].keys()
```

```
[u'symbols', u'user_mentions', u'hashtags', u'urls']
```

```
line['user'].keys()
```

```
[u'lang',  
 u'utc_offset',  
 u'statuses_count',  
 u'follow_request_sent',  
 u'friends_count',  
 u'profile_use_background_image',  
 u'contributors_enabled',  
 u'profile_link_color',  
 u'profile_image_url',  
 u'time_zone',  
 u'notifications',  
 u'screen_name',  
 u'favourites_count',  
 u'profile_background_image_url_https',  
 u'profile_background_color',  
 u'id',  
 u'profile_background_image_url',  
 u'description',  
 u'is_translation_enabled',  
 u'default_profile',  
 u'profile_background_tile',  
 u'verified',  
 u'name',  
 u'url',  
 u'profile_image_url_https',  
 u'profile_sidebar_fill_color',  
 u'location',  
 u'is_translator',  
 u'geo_enabled',  
 u'profile_text_color',  
 u'followers_count',  
 u'profile_sidebar_border_color',  
 u'id_str',  
 u'default_profile_image',  
 u'following',  
 u'protected',  
 u'created_at',  
 u'listed_count']
```

# My top GADSDC learning - never underestimate the challenge of data manipulation

- Filtering irrelevant data
  - Paris / Perez, SPG, last names. . .
- Counting retweets
- Text scrubbing
  - Lower, Punctuation/Numbers, Stemming, Stopwords, ...
- Computing sentiment
  - Pseudo-Bayesian method to count instances of positive and negative words from pre-scored dictionaries
- Time / date scrubbing
- Data structures for more advanced analytics
  - Term Document Matrix, TFIDF --> not trivial or quick!

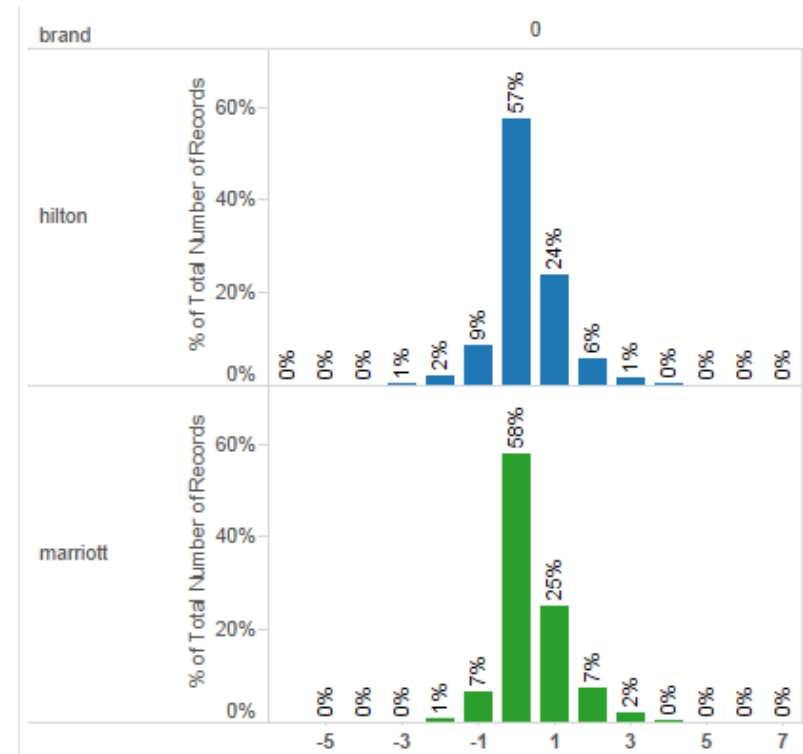
# Top level engagement - which brands have the most volume and most positive sentiment?

Hilton has the most tweets, retweets and unique users in current tweet set

brand (group)	# of tweets	# of unique users	Retweets
hilton	82,075	52,869	18,412
marriott	54,768	31,992	10,881
starwood	33,932	21,203	8,832
hyatt, ihg, mixed and 2 more	18,362	11,576	2,625
Grand Total	189,137	111,323	40,750

Question: Is this representative of hotel related tweets or is there more scrubbing to be done?

Marriott has subtly more positive sentiment



Sentiment = # pos words - # neg words

# Users - Who is actually doing all this tweeting?

Travel aggregators tweet the most –  
but entertainment related tweeters  
suggest more cleaning to do!

user	brand		
	hilton	marriott	starwood
hotelscenes	987	448	10
vegas_visits	794	570	
hotelsyes		1,268	
travelpointers	482	303	117
dreamytravels		205	229
washingtonpist		382	
warshingtonpost		351	
hiltonhotelfans	271		
ehadshorosos	248		
ehadsmusic	248		
ehadstech	248		
alyson9082		234	
cgjase	85	93	43
propertiesreal	36	121	19
topratedhotels	38	125	7
travelair283	87	58	22
ehadsfood	163		
ehadsbeauty	162		
ehadsgossip	162		

Hotel brand tweeters show mix of  
corporate and property-level  
tweeters (and more cleanup needed)

user	brand	
	marriott	hilton
marriott	123	
marriottintl	66	
marriottuk	59	
atlmarriottmarq	44	
keywestmarriott	29	
detroitmarriott	25	
marriottpov	23	
lbmarriott	21	
napamarriott	21	
pmarriott	21	
marriottcareers	19	
marriottcolasc	15	
jwmarriottlv	14	
marriottresorts	14	
marriottmanila	13	
riyadhmarriott	13	
hiltonhotelfans		271
hiltonhotels		88
hiltonworldwide		86
hiltonhelp		70
hiltonhhonors		53
bevhillonjobs		40
hiltoncadets		40
laura_v_hilton		33
daphneyhilton		31
hiltonharwell_		29
hiltonmea		28
hiltonpattaya		28
hiltongrandvac		26
hilton_college		25
hiltonnairobi		25
hiltonsmythe		25
hilton_clwbeach		23
hiltonanatole		23
hiltonheadsc		23



# Content –What’s being retweeted? Which hashtags are catching on?

Retweets driven by beautiful pictures, inspirational quotes, twitter sweepstakes, and news items (some unrelated)

text	# of retweets
RT @AllyBrooke: Nothin' better than a great night of jazz! Thanks @WHotels ..	916
RT @foxtramedia: DoubleTree by Hilton Hotel Tarrytown <a href="http://t.co/aZcyYGp..">http://t.co/aZcyYGp..</a>	568
RT @foxtramedia: The Westin Resort <a href="http://t.co/JVCMUIZ3SV">http://t.co/JVCMUIZ3SV</a> #Hotel #Travel	494
RT @Thegooglefactz: Best places to go for free WiFi; Mcdonalds Apple Stor..	394
RT @Inspire_Us: Success seems to be connected to action. Successful peop..	392
RT @Thegooglefactz: Need some free WiFi? The best places to go are Panera..	355
RT @OkeyBakassi_: Pounded yam -N8000 Soup- N6000 Wait! This Transcop ..	343
RT @OK_Magazine WIN @GodzillaMovieUK premiere tickets and overnight M..	278
Success seems to be connected to action. Successful people keep moving. T..	256
RT @DMVFollowers: The largest hotel in Washington D.C. opened up last we..	239
RT @Colts: T.Y. Hilton on Reggie Wayne's return in 2014: "He's going to sho..	227
RT @weRengland: COMPETITION: Win two VIP tickets to the Marriott London..	211
RT @obyzezek: Will YOU come join US today @3pm at the Unity Fountain op..	205
Null	186
RT @anilkapurk: #DamaadGate Why Robber Vadra given SPG security while t..	162
RT @washingtonpost: Marriott just opened a \$520M hotel with 1 175 rooms in..	156
RT @obyzezek: Men who wish to join women's #BringBackOurGirls march to..	152
RT @MarkLeibovich: Media ethics panel at WHCD at Washington Hilton. 30 ..	125

Top hashtags are brand names, “job(s)”, travel words, and some promo tags

Hashtag	hilton	marriott	starwood
hilton	4,690	1	
marriott		3,900	
job	985	2,002	159
travel	1,168	702	733
hotel	1,170	526	678
jobs	943	1,187	136
gossip	1,532		
spg			1,086
westin			1,108
asicsrugbyrewards			
travelbrilliantly		1,057	
holidayinn			
hyattplace		1	
bringbackourgirls	611		
vegas	413	278	35
hotels	214	161	111
traffic	2	2	518
vacation	240	199	62


# Deep dive on #TravelBrilliantly

- Travel Brilliantly is Marriott's current rebranding campaign
- Biggest volume of tweets using #TravelBrilliantly come from Marriott and paid affiliates – but how can we dig into the tail to identify meaningful value for individual customers?

user (group)	Number of Records	Retweets
nestnestnest	42	17
marriott	37	142
atlmariottmarq	34	21
kenectit	34	0
marriottuk	20	44
mtgsimagined	17	9
hotelsyes	16	0
worldjourneys75	15	0
bookingcatch	14	0
01582242424, 05singingidiot..	853	356
Grand Total	1,082	589

Retweeted 66 times


Marriott Hotels @Marriott · May 17  
 "Travel far enough, you meet yourself." - David Mitchell #TravelBrilliantly  
[#TravelQuote pic.twitter.com/iGooF7rN4H](#)



**tamara stephenson** @nestnestnest · Apr 30  
 Looking forward to @KenectIT: #Network & #Kenectit with #SMBO #Atlanta #TravelBrilliantly event at the @marriott [fburly.com/49-ZdkpVhwJ](https://fburly.com/49-ZdkpVhwJ)  
 from New York, NY  
[Expand](#)

**Julie S** @raisecuriosity · May 12  
 Reason 18 we want to visit #Bangkok. #SandOrCity #TravelBrilliantly  
[@Marriott Hotels pinterest.com/pin/2620532720...](https://pinterest.com/pin/2620532720...)  
[View details](#)

Marriott Hotels @Marriott · 1h  
 #TravelBrilliantly to #SKits like @withhearts • @bethanymarco. Learn how:  
[travel-brilliant.ly/SandCity](#) #SandOrCity pic.twitter.com/7u2BCu4Q



RETWEETS 15 FAVORITES 6

Reply Retweet Favorite More

# Learnings and Next Steps

- Social media processing is no joke – whole papers can and have been written on scrubbing Twitter data
- Think carefully about streaming vs batch processing and data structures for scalable text analysis

Next steps – that script is still running...

- More sophisticated sentiment analysis
- Clustering – detect types of tweets or users
- Network analysis – who is influential
- Extend streaming capabilities and add search terms, develop cadence around EC2 micro usage