

What does the twitter tell us about iPhone7?

Study Case 1 @ DS501 Fall2016

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1. Motivation

First of all, the day we chose the topic was getting closed to the Apple's 2016 special event—iPhone7 release day. And it seems that people were all interested in the new iPhone no matter whether they already have an iPhone or not yet. Although a lot of media and stock analysts betted against the new product before the iPhone7 release, it has been an undeniable fact that people pay attention to this event widely.

In addition, just as the table below shows, Apple phone is still one of the bestselling smartphones in the market. Therefore, we decided to analyze people's viewpoint about iPhone7 in twitter.

Top Five Smartphone Vendors, Shipments, Market Share, and Year-Over-Year Growth, Q2 2016 Preliminary Data (Units in Millions)					
Vendor	2Q16 Shipment Volumes	2Q16 Market Share	2Q15 Shipment Volumes	2Q15 Market Share	Year-Over-Year Change
Samsung	77.0	22.4%	73.0	21.3%	5.5%
Apple	40.4	11.8%	47.5	13.9%	-15.0%
Huawei	32.1	9.4%	29.6	8.6%	8.4%
OPPO	22.6	6.6%	9.6	2.8%	136.6%
vivo	16.4	4.8%	9.1	2.7%	80.2%
Others	154.8	45.1%	173.6	50.7%	-10.8%
Total	343.3	100.0%	342.4	100.0%	0.3%
Source: IDC Worldwide Quarterly Mobile Phone Tracker, July 28, 2016					

2. Data collection

We started our data collection on Sept 16, 2016 at 9: 00 am eastern time, which is the time that east coast people start to get their new iPhones, and the collection lasted for 3 hours. The specific timetable is shown below.

Sept 16, 09:00-10:00 EST: 24000

Sept 16, 10:00-11:00 EST: 21135

Sept 16, 11:00-12:00 EST: 22301

Total number of Tweets: 67436

3. Data analysis

In our analyzing process, we use a couple of important Python modules, including matplotlib, PrettyTable and Natural Language Toolkits (NLTK), which is a suite of libraries and programs for symbolic and statistical natural language processing (NLP) for English written in the Python programming language.

Our data analysis steps are as follows:

- 1) We first selected those tweets written in English and tokenized each single tweet to a collection of words with the help of NLTK sentence tokenizer.
- 2) After removing the stop words, punctuations, as well as several non-sense words such as "http", we are able to count the top words appeared in the tweets we collected.
- 3) We are also able to analyze the emotions of every single tweet, and to figure out people's attitudes towards iPhone 7.
- 4) To well rationalize the data in emotional analysis, we picked up four sets of words related to headphone, jet black, waterproof and camera, and run the emotional analysis of each topics. We hope that we can have a sense of public's opinions on iPhone's details and new techniques.

a) The table of the top 30 words with their counts

'7', 22146	'new', 3094	'phone', 1164	'one', 1015	'm', 854	'6s', 777
'RT', 12890	'don't', 2325	'headphone', 1121	'case', 914	'day', 822	'Black', 776
'Apple', 4431	'today', 1298	'amp', 1119	'BlakeGray', 882	'via', 813	'rage', 768
'plus', 3362	'got', 1293	'jack', 1089	'already', 878	'buy', 808	'New', 748
'get', 3320	'go', 1217	'come', 1080	'bed', 875	'us', 801	'people', 736

b) The most popular tweets in our collection of tweets

retweeted number: 58118

tweet text: RT @youtoofunny: iPhone 7 <http://t.co/LMB7UrhLHx>

retweeted number: 39074

tweet text: RT @lemonade: apple: the iPhone 7 is fireproof, waterproof & flies us: but better chargers & group facetime? apple: <https://t.co/qGoMRCGO...>

retweeted number: 16874

tweet text: RT @ShaydaWayda: \$170 for iPhone 7 earphones? them hoes better be good, everytime I hear a gunshot in a song I better be ducking and checking...

retweeted number: `9247

tweet text: RT @pranavsapra: iPhone 6S - Great camera
iPhone 7 - 2 Cameras
iPhone 7S - 2 Great cameras
iPhone 8 - 3 Cameras
iPhone 8S - 3 Great cameras...

retweeted number: 8534

tweet text: RT @TooDopeWithHope: Won't believe it till them rich white people on YouTube buy one and do a test <https://t.co/GLwvKlfsfN>

retweeted_number: 8252 tweet text: RT @brgEXTRASjk: iPhone 7 official video by apple <https://t.co/3dnOufm2pH>

retweeted_number: 7899 tweet text: RT @BillRatchet: if the iPhone 7 doesn't come with U2's album I will Not be purchasing it

retweeted_number: 7344

tweet text: RT @iTwitlawak: You want iPhone 7 I want 7 days of holiday every week We are not the same.

retweeted_number: 7300

tweet text: RT @dugaylance: iPhone 7: No headphone jack.
iPhone 8: No home button.
iPhone 9: Wireless charging, no charging port.
Soon the iPhone will...

retweeted_number: 7148

tweet text: RT @paleyfatso: -Hi can i have iPhone 7 plus 256 GB?
-Sure sir, card or cash?
-Kidney

c) The most popular Tweet Entities in our collection of tweets

Top 10 Hashtags	Hashtags #	Top 10 User_mentions	User_mentions #
iPhone7	3655	imtaiki	1879
iPhone7TH	1309	khajochi	1280
stockmarket	831	SqueezeReport	743
APPLE	754	YouTube	406
invest	743	chaochao_peep	397
Coffee4Hospice	743	BrianRoemmele	388
Coffee	743	HawkersCo	289
chartattack	743	LUHANLAND	270
differentisbetter	743	ohmydeer0420	249
Hawkers38HiPhone7	341	Apple5x1	208

d) Getting "All" friends and "All" followers of a popular user in twitter

We chose a popular twitter user named "lemonade", whose tweet got the second retweeted number as shown in part 2.c. She has total 239 friends, total 6093 followers. She just has 183 mutual friends and only 5 mutual followers. Therefore, we plot 20 out of the mutual

friends and the only 5 mutual followers.

The 20 mutual friends

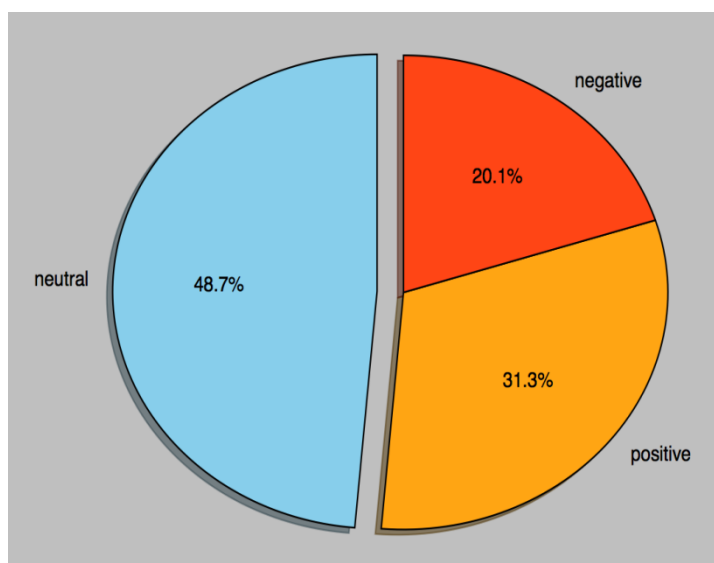
Index	Friend_ID	Friend_name	Index	Friend_ID	Friend_name
1	286431876	TheBeyHiveTeam	16	40542633	thuglyfe
2	3343590497	krystalschrist	17	1033556185	fentycunti
3	1217760914	ManPhatties	18	783598064	MADBLACKTHOT
4	714807331	chrisdeleonn	19	561837494	SHARONShaie
5	908150251	britneyvibes	20	3032103930	beyupdate
6	52156378	selenas	21	3241679456	fentydeco
7	701737694	popstylebey	22	2735447973	coralesque
8	2492048386	alexernst7	23	2663611406	digitaldad
9	2783323392	kuntyewest	24	169536317	dvrrixll
10	803063040	BADDIEWILL	25	418363187	maycesus
11	2361817963	thelifeofpablo	26	56783491	nickjonas
12	2562412738	hxrriygoz	27	2732074569	sophiaaaamariee
13	2727537393	fvckbas	28	2474565805	sameimpala
14	613756987	byetyler	29	2343828372	perryxfenty
15	176895122	BeyonceWeb	30	4889412185	ericam_22

The 5 mutual followers

Index	Follower_ID	Follower_name
1	3588869487	standardbey
2	2851378404	Louis_Boo2468
3	755584516446642000	sluttyyonce
4	1287867684	divabybeyonce
5	755080172638965000	beyonceyonce7

4. Business questions

a) Hints for Apple Inc.'s stock price



The emotional analysis using NLTK on the topic of iPhone 7 is illustrated by image above. In this image, 31.3% of the tweets we collected are positive towards iPhone7, whereas about 20.1% are negative. In other words, although there are a number of negative reports about iPhone 7 before the release date, the data we collected from twitter shows that iPhone seems to be appreciated by a large numbers of customers.

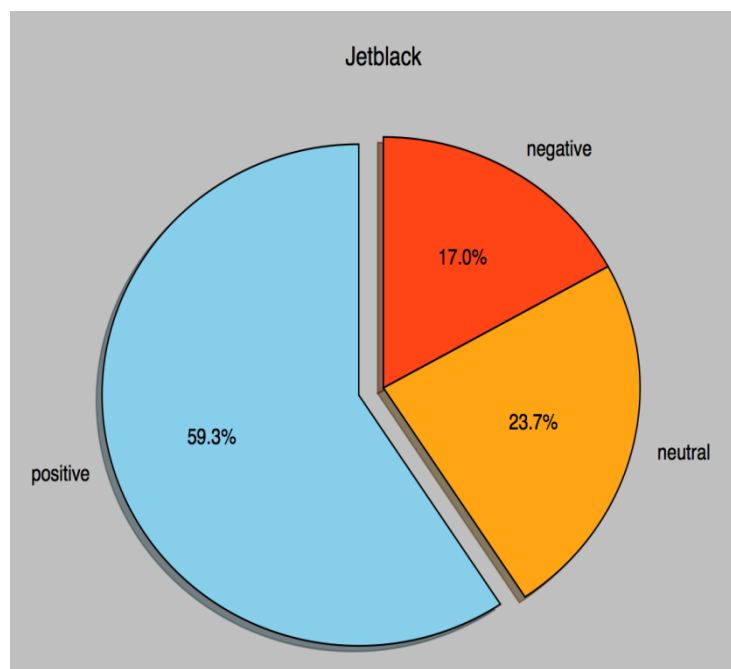
There are a numbers of investing companies using data from social webs to predict stock price trends. They are able to analyze people's emotion about economic situation and the details of companies to tell the stock price will go up or down.

Our NLTK analyzing result is consistent with the Apple Inc.'s stock price trend. Figure 3 is the comparison between stock price of Apple Inc.'s (the blue line) and the Nasdaq Composite index (the yellow line). We found that from Sep 12th to Sep 15th, the Nasdaq index just rose 2%, but the Apple's stock price boomed up almost 12%.



b) The hints for iPhone7 marketing

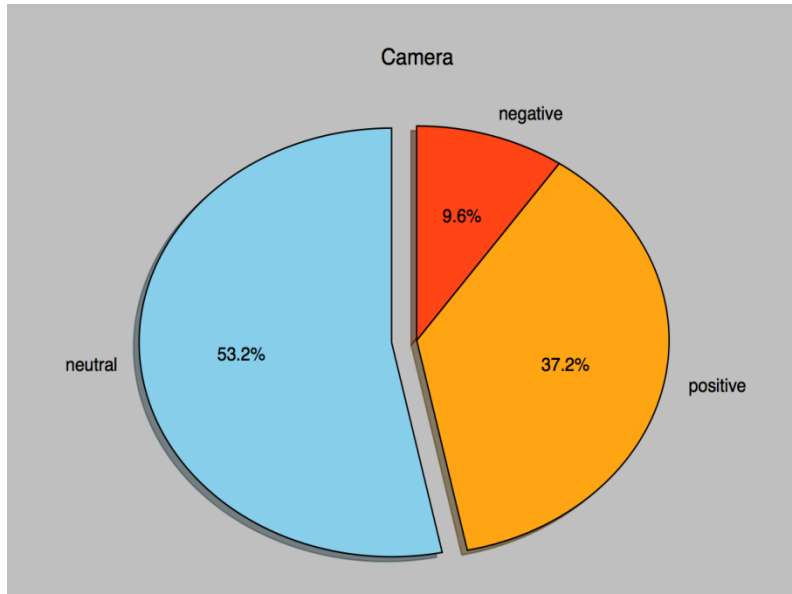
i. New color: Jet black



Interestingly, black is the only color word in the top 30 words. People pay more attention to this color other than golden or silvery. We found that more people are positive about jet black

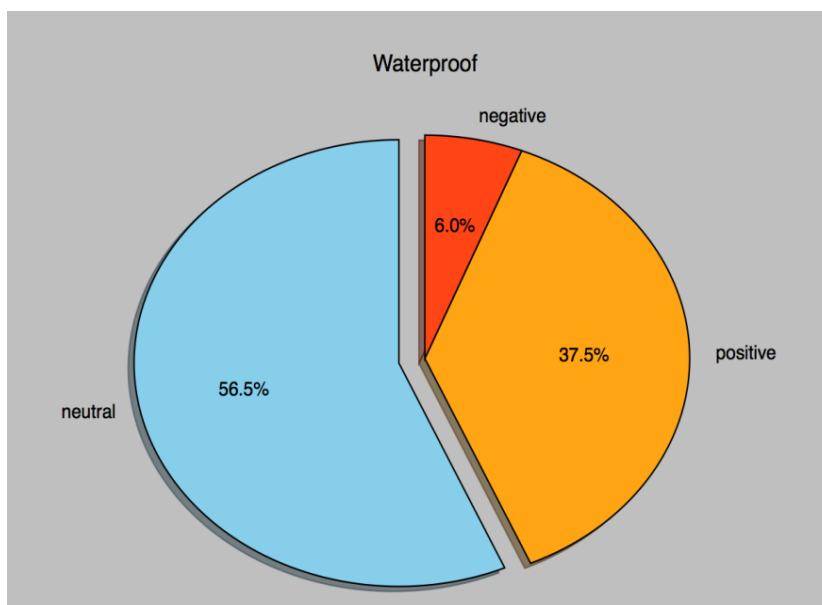
color (positive 37.2% VS negative 9.6%). People preferred jet black color iPhone7 other than golden or silvery ones. In the future, Apple may produce more jet black iPhone7 and choose this color more often in its advertisement.

ii. Better camera



"Camera" is one of the popular words in the tweets we collected. The analysis of key words related to camera suggests that much more people are positive about this improvement of iPhone7/7plus (37.2% VS 9.5%). Camera is an advantage of iPhone7. Sellers can market this point of iPhone7.

iii. Waterproof function



The search of key words related to "waterproof" tell us that 37.5% people feel positive to iPhone7's waterproof function and only 6.0% people feel negative to this function. This suggests that waterproof can be an important feature that attracts people to purchase. In the future, the

iPhone7 sellers might be able to use the term ‘waterproof’ as a highlighted selling point.

iv. No earphone jack

In the top 30 words, ‘earphone’ and ‘jack’ is also listed. The analysis about earphone topic showed that the negative attitude is about 42.6%, which is much higher than the 25.1% positive proportion. This clearly indicates that more people complain about the modification on earphone jack rather than like it. In the future, the apple may give a deeper investigation on this modification, which will help to decide if they need to keep or cancel this feature in the later iPhone generations.

