BIA-660 Midterm Project

Analytics & Comparison of Apple Products with Twitter

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Questions

Popularity Trends of Apple Products.

- Which Apple mobile OS is more popular? iOS4 ~ iOS7.
- Which version of iPhone is more popular? iPhone 3GS ~ iPhone 5S.
- iPhone 5S vs. iPhone 5C?
- Key words for each product.

Headlines

- Data Collection
- Data Analysis
- Data Visualization

Data Source and Tools

- Data Source:
  Tweets containing keywords(iOS 4, iPhone 5)
- Tools:
  Python, Mysql, Selenium,BeautifulSoup, Matplotlib

Data Collection

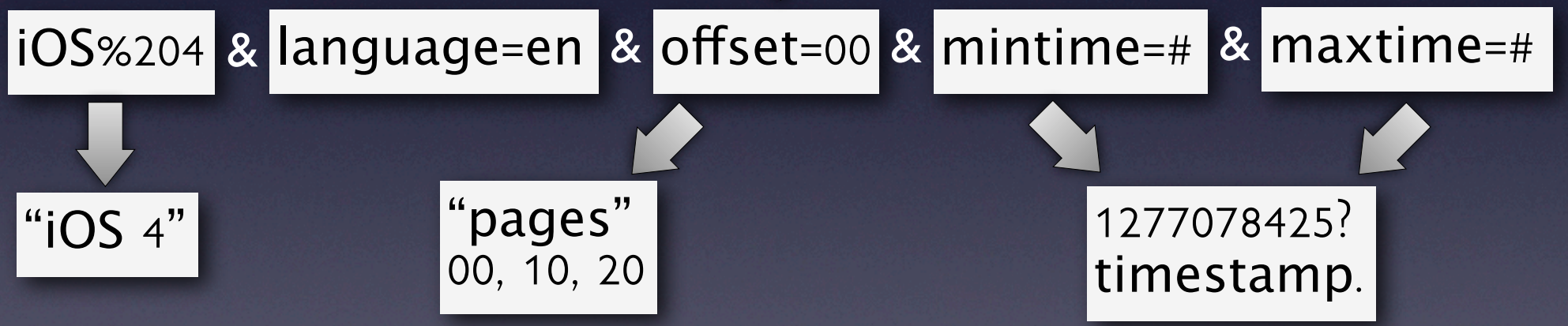
- Why don't we use Twitter API?
- Twitter search URL:

  http://twitter.com/search?q=
- topsy.com/tweets search URL:

Data Collection

- topsy.com/tweets search URL:

http://topsy.com/s?type=tweet&q=iOS%204&language=en&offset=00&mintime=1277078425&maxtime=1308700814



- Another problem, Javascript?

Data Collection

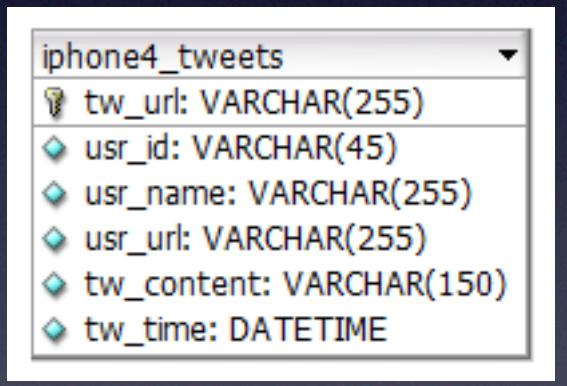
- "Selenium" to the rescue!

HTML Code

```
<div class="media-body">
   <h5 class="media-heading">
      <a href="http://user_id_url">
         Mashable
      </a>
   </h5>
   <div>iOS 4 Has Arrived <!--Content--></div>
   <ul class="inline">
      <li>
      <a class="muted" herf="http://tweet_url">
      </li>
      <li><!--"Reply", "Forward"...--></li>
   </ul>
</div>
```

Selenium
BeautifulSoup

MySQL DB



- More than 2,200 tweets each keyword.

Data Analysis

- “Time” matters.
- Retrieve tweet content from database.
- Positive or Negative?
- Special Dictionary.

Pos_words.txt

```
adorable accepted acclaimed
accomplishment achievement active
admire affluent amazing
...
...
wow yummy zeal zealous
```

neg_words.txt

```
abysmal adverse alarming angry annoy
anxious apathy appalling atrocious
awful bad banal barbed belligerent
...
,,,
woeful worthless wound yell yucky
```

Data Analysis

Positive vs. NegativeSample Code:

```
conn=pymysql.connect('127.0.0.1',port,db_user,db_password,db_name)
    str_sql_count='SELECT COUNT(*) FROM '+tbl_name
    str_sql_get= 'SELECT TW_URL, TW_CONTENT FROM '+tble_name'
    cur = conn.cursor()
    cur.execute(str_sql_count)
    (all_count,) = cur.fetchone()
    list_pos = []
    list_neg = []
    cur.execute(str_sql_get)
    for row in cur:
        content = row[1].lower()
        for word in neg_words:
            if word in content:
                list_neg.append(content)
                break
        if word == neg_words[-1]:
            for word in pos_words:
                if word in content:
                    list_pos.append(content)
                    break
    cur.close()
    conn.close()
```

Data Analysis

- Word Count
- collections.Counter
- list of tuples: [(str_word, int_count), ...,]

Data Visualization

positive/negative:

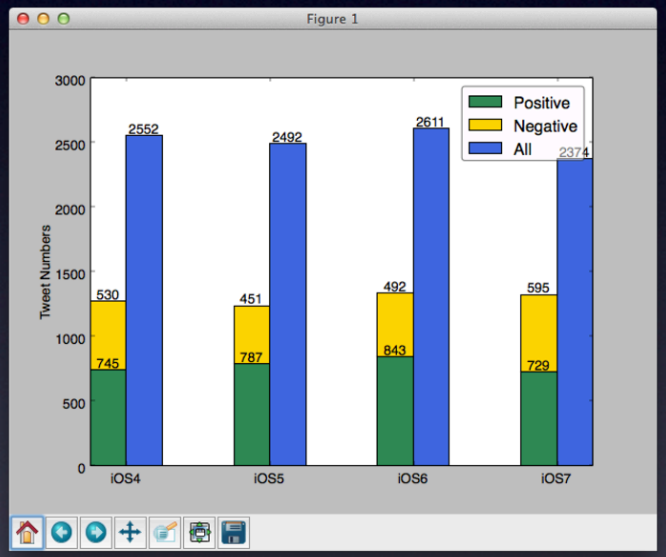
```
iPhone 3GS
Positive:  1048 / 3091   33.90489 %
Negative:  554 / 3091    17.92300 %
Positive/Negative:       1.89170
====================================
iPhone 4:
Positive:  707 / 3027    23.35646 %
Negative:  571 / 3027    18.86356 %
Positive/Negative:       1.23818
====================================
iPhone 4S:
Positive:  688 / 2758    24.94561 %
Negative:  554 / 2758    20.08702 %
Positive/Negative:       1.24188
====================================
iPhone 5:
Positive:  633 / 2492    25.40128 %
Negative:  552 / 2492    22.15088 %
Positive/Negative:       1.14674
====================================
iPhone 5S:
Positive:  615 / 2225    27.64045 %
Negative:  422 / 2225    18.96629 %
Positive/Negative:       1.45735
```

```
iOS 4:
Positive:  745 / 2552    29.19279 %
Negative:  530 / 2552    20.76803 %
Positive vs. Negative:   1.40566
====================================
iOS 5:
Positive:  787 / 2491    31.59374 %
Negative:  451 / 2491    18.10518 %
Positive vs. Negative:   1.74501
====================================
iOS 6:
Positive:  843 / 2611    32.28648 %
Negative:  492 / 2611    18.84336 %
Positive vs. Negative:   1.71341
====================================
iOS 7:
Positive:  729 / 2374    30.70767 %
Negative:  595 / 2374    25.06318 %
Positive vs. Negative:   1.22521
```

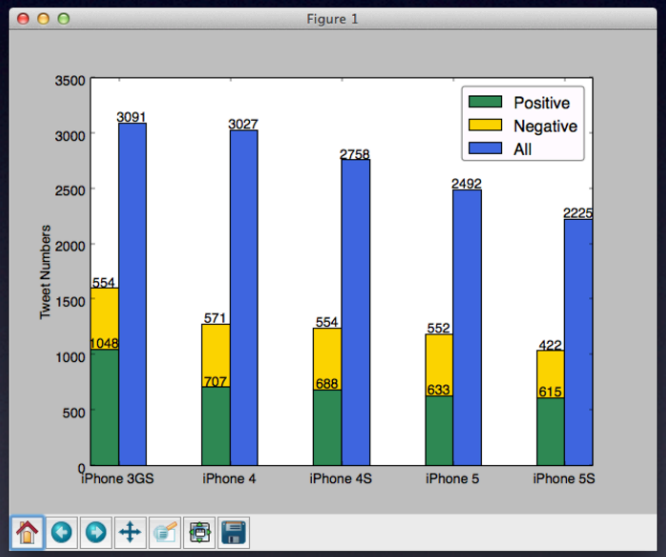
```
iPhone 5S Only:
Positive:  565 / 2207    25.60036 %
Negative:  478 / 2207    21.65836 %
Positive vs. Negative:   1.18201
====================================
iPhone 5C Only:
Positive:  619 / 2234    25.29096 %
Negative:  352 / 2234    15.75649 %
Positive vs. Negative:   1.75852
```

Data Visualization

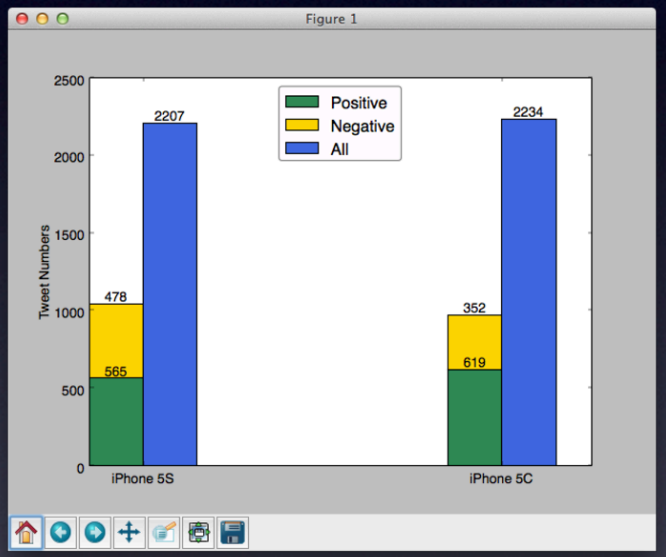
Matplotlib - bar charts



iOS 4/5/6/7



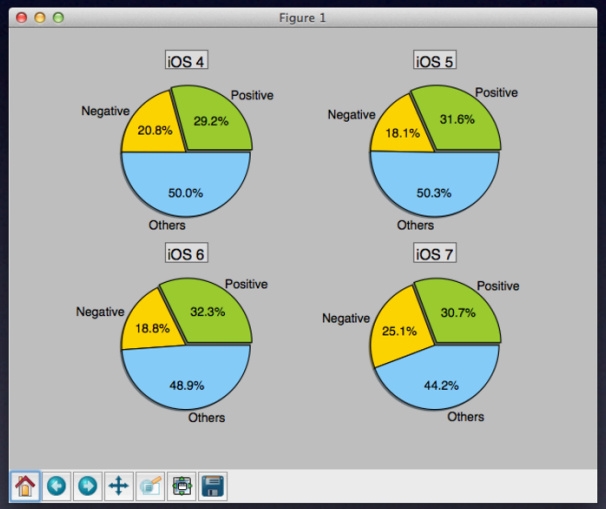
iPhone 3GS/4/4S/5/5S



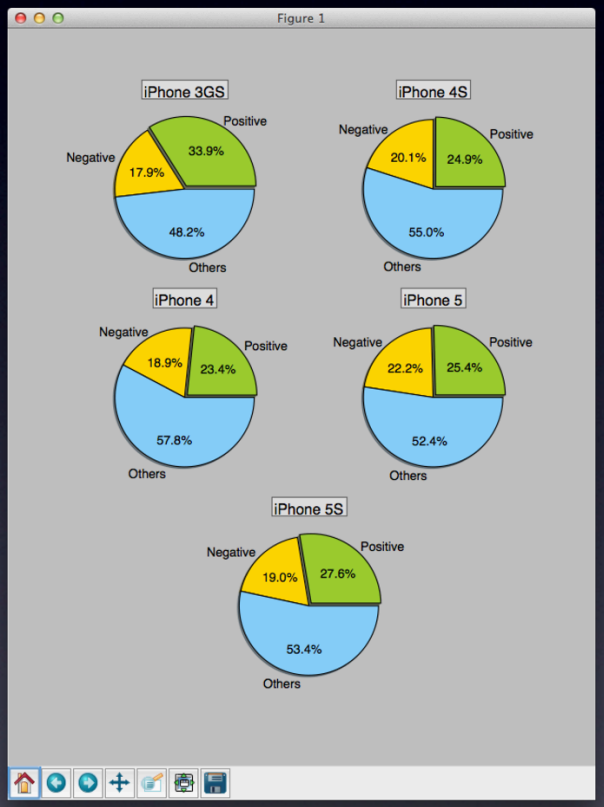
iPhone 5S/5C

Data Visualization

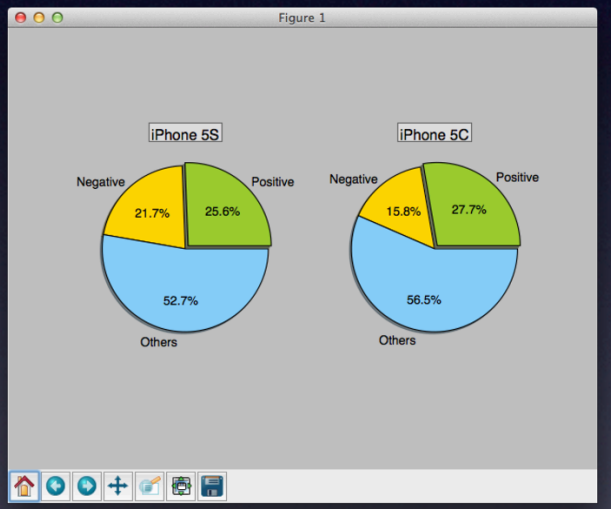
Matplotlib - pie charts



iOS 4/5/6/7



iPhone 3GS/4/4S/5/5S



iPhone 5S/5C

Data Visualization

Keywords about iOS

iOS 4:	multitasking, jailbreak, facebook, 3g
iOS 5:	wp7, windows, jailbreak, mango, android, leak, icloud
iOS 6:	maps, siri
iOS 7:	battery

Data Visualization

Keywords about iPhone

iPhone 3GS:	squarespace, att, win, 3g, faster, twitition, reasonable
iPhone 4:	att, best, case shipping
iPhone 4S:	siri, samsung, wp7
iPhone 5S:	gold(211), fingerprint(144)
iPhone 5C:	plastic(137), cheap(102)

Conclusions

Q&A
Thank you!