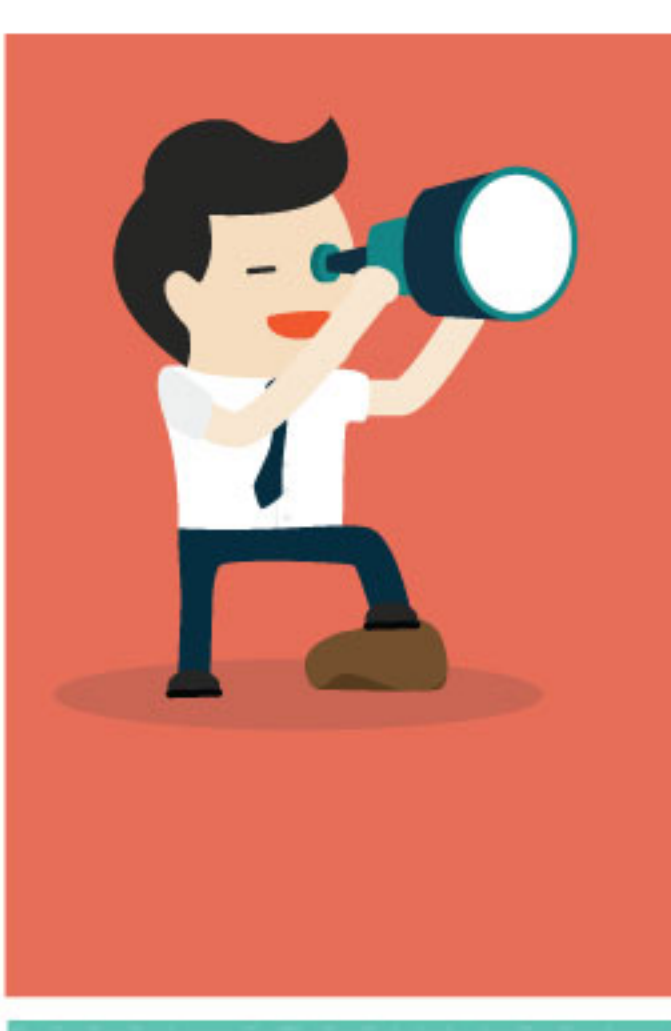
Effective Text Data Cleaning using Python

Benefits of mining Twitter for a brand?

- You can do sentimental analysis to discover customer's sentiment for a brand
- You can measure brand popularity using the actively engaged tweeters
- It is used to identify the pain points of customers i.e. customer relationship management
- It is widely used for predictions and forecasting

The Business Problem



Let's say, we want to find the features of an Apple iPhone which are most popular amongst the fans on Twitter.

What to do next?

We've extracted all the tweets related to consumer opinions of iPhone. Here's a sample tweet on which we'll perform data cleaning

TWEET

"I luv my <3 iphone & you're awsm apple. DisplayIsAwesome, sooo happppppy :) http://www.apple.com"

Steps for Data Cleaning

STEP 01 Escaping HTML characters

Code

```
import HTMLParser
html_parser = HTMLParser.HTMLParser()
tweet = html_parser.unescape(original_tweet)
```

Output

» "I luv my ‹3 iphone & you're awsm apple. Display Is Awesome, sooo happppppy http://www.apple.com"

STEP 02 Decoding data

Code

```
tweet = original_tweet.decode("utf8").encode('ascii','ignore')
```

Output

» "I luv my ‹3 iphone & you're awsm apple. DisplayIsAwesome, sooo happppppy :) http://www.apple.com"

STEP 03 Apostrophe Lookup

Code

```
APPOSTOPHES = {"'s" : " is", "'re" : " are", ...} ## Need a huge dictionary
words = tweet.split()
reformed = [APPOSTOPHES[word] if word in APPOSTOPHES else word for word in words]
reformed = " ".join(reformed)
```

Outcome

» "I luv my ‹3 iphone & you are awsm apple. DisplayIsAwesome, sooo happppppy :) http://www.apple.com"

STEP 04 Removal of Stop-Words

When data analysis needs to be data driven at the word level, the commonly occurring words (stop-words) should be removed. One can either create a long list of stop-words or one can use predefined language specific libraries.

STEP 05 Removal of Punctuations

All the punctuation marks according to the priorities should be dealt with. For example: ".", ",", "?" are important punctuations that should be retained while others need to be removed.

STEP 06 Removal of Expressions

Textual data (usually speech transcripts) may contain human expressions like [laughing], [Crying], [Audience paused]. These expressions are usually non relevant to content of the speech and hence need to be removed.

STEP 07 Split Attached Words

Code

```
cleaned = " ".join(re.findall('[A-Z][^A-Z]*', original_tweet))
```

Outcome

» "I luv my ‹3 iphone & you are awsm apple. Display Is Awesome, sooo happppppy :) http://www.apple.com"

STEP 08 Slangs lookup

Code

```
tweet = _slang_loopup(tweet)
```

Outcome

» "I love my ‹3 iphone & you are awesome apple. Display Is Awesome, sooo happppppy :) http://www.apple.com"

STEP 09 Standardizing word

Code

```
tweet = ''.join(''.join(s)[:2] for _, s in itertools.groupby(tweet))
```

Outcome

» "I love my ‹3 iphone & you are awesome apple. Display Is Awesome, so happy :) http://www.apple.com"

STEP 10 Removal of URLs

URLs and hyperlinks in text data like comments, reviews, and tweets should be removed.

Final cleaned tweet:

» "I love my iphone & you are awesome apple. Display Is Awesome, so happy!" , ‹3 , :)

Advanced Data Cleaning

Grammar checking

Grammar checking is majorly learning based, huge amount of proper text data is learned and models are created. Many online tools are available for grammar correction purposes.

Spelling correction

In natural language, misspelled errors are encountered. One can use algorithms like the Levenshtein Distances, Dictionary Lookup etc. other modules and packages to fix these errors.

Your Next Steps...

Now that the data (tweet) is cleaned, you are ready to practice and learn the following techniques (in no order) of Text Mining-

1. Framework to build a niche dictionary for text mining
   http://bit.ly/1eetMw6
2. Step by Step guide to extract insights from free text
   http://bit.ly/1JjslYe
3. 2014 FIFA World Cup Prediction using Twitter Mining
   http://bit.ly/1kLeYSk
4. Text Mining Hack using Google API
   http://bit.ly/1LDPF6c

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