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https://towardsdatascience.com/identify-top-topics-using-word-cloud-9c54bc84d911

Identify Top Topics using Word Cloud

Photo by AbsolutVision on Unsplash

I was recently working with textual data when I discovered Word Clouds. I was really fascinated by how they could reveal so much information just through an image and how easily they could be created through a library. Thus, I decided to work on a quick project to understand them.

Word clouds or tag clouds *are graphical representations of word frequency that give greater prominence to words that appear more frequently in a source text. — BetterEvaluation*

Basically, Word Clouds display a set of words in the form of a cloud. The more frequent a word appears in the text, the bigger it will become. Thus, by simply looking at the cloud, you can identify the big words and hence the top topics.

Numerous Areas of Word Cloud Usage

I identified that word clouds can actually be used in many areas. Some of them are:

1. **Top topics on Social Media:** If we could read and get text of posts/tweets that users are sending out, we can extract the top words out of them and they could be used in the trending section to classify and organise posts/tweets under respective sections.
2. **Trending News Topics:** If we can analyse the text or headings of various news articles, we can extract the top words out of them and identify what are the most trending news topics around a city, country or the whole world.
3. **Navigation systems for Websites:** Whenever you visit a website that is driven by categories or tags, a word cloud can actually be created and the users can directly jump to any topic while knowing the relevance of the topic across the community.

Project — Detecting top news topics

I worked on a project, where I took the dataset of news articles from here and created a word cloud from the headlines of the news articles. The complete code is present as a Jupyter notebook in the Word Cloud repository.

Import libraries

While working with importing libraries, I identified that I did not have the package `wordcloud`. Jupyter provides an easy way to execute command line commands inside the notebook itself. Just use `!` before the command and it'll work like it is in a command line. I am using it to get the `wordcloud` package.

```
!pip install wordcloud
```

I now have all the libraries that I need so I import all of them.

We get the libraries `numpy`, `pandas`, `matplotlib`, `collections` to use Counter and `wordcloud` to create our Word Cloud.

Working with dataset

To begin with, I first import the dataset file into a pandas DataFrame. Note that the encoding of this file for proper reading is `latin-1`. Then, I output the column names to identify which one matches with the headings.

We can see that there are 6 columns: author, date, headlines, read_more, text and ctext. However, in this project I will be working with headlines. So, I convert all the headlines to lower case

using `lower()` method and combine them into a variable `all_headlines`.

Word Cloud

Now, we're ready to create our Word Cloud. After doing one round of analysis, I identified one of the top words being `will`. However, it does not provide any useful information on the topic. Thus, I included it in the set of stopwords so that it is not considered while identifying the top words from the headings.

I then call the `WordCloud` method using these stopwords, keep the background of the output image as `white` and set maximum words to be `1000`. The image is saved as `wordcloud`.

I use `rcParams` to define the size of the figure and set the `axis` as `off`. I then use `imshow` to display the image and `show` to show it.

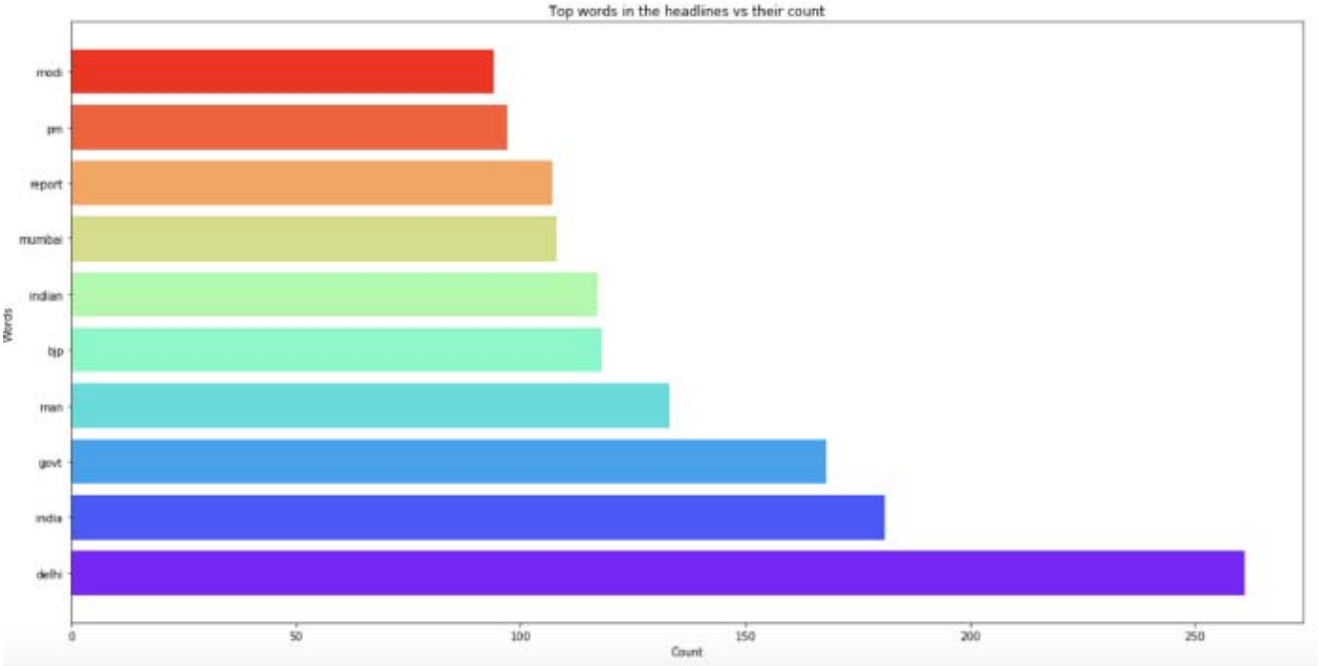
Word Cloud

From the image, we can clearly see the top two topics as `India` and `Delhi`. One can clearly see how useful a word cloud is to identify the top words in a collection of text.

We can even verify the top words using the bar charts.

I first get `filtered_words` by splitting all words from the combined headings while avoiding the stopwords. Then, I used `Counter` to count the frequency of each word. I then extract the top 10 words and their count.

Next, I plot the data and label the axis and define a title for the chart. I used `barh` to display a horizontal bar chart.



Bar Chart of top 10 most frequent words

This also is in alignment with the results from the Word Cloud. Moreover, as `Delhi` has a higher count, it is bolder and bigger than `India` in the Word Cloud.

Conclusion

In this article, I discussed about what Word Clouds are, their potential application areas and a project that I worked on to understand them.