

Assignment 3 Report

Professor Nelson

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2/23/17

Part 1

1.1 Getting the raw data

Using the 1,000 URIs from assignment two, I got the html of each link using the urllib2 library. Originally, the problem was that I could only get the program to output the data into one file. The program would read the URIs line by line, but it would write into one file, and keep overwriting each time it read a new line. I had to search how to get the output to write to a separate file each time it iterated through the loop. Using the enumerate function, I could write a new file each time and format it so each iteration number became part of the file's title (Stack Exchange 2015). This made it easy to organize and debug the data.

```

1  import urllib2
2  import sys
3  import re
4
5
6  def getHtml(uri):
7      resp = urllib2.urlopen(uri)
8      html = resp.read()
9      return html
10
11 if __name__ == "__main__":
12
13     with open('links.txt', 'r') as input:
14         for index, line in enumerate(input):
15             with open('uri_raw{}.txt'.format(index), 'w') as output:
16                 raw = getHtml(line)
17                 output.write(raw)
18                 output.close()
19

```

1.2 Processing Html

To remove a lot of the unwanted html elements, I used the lynx command. Lynx got rid of most of the html markup and processed the raw files so that they can be easier to navigate through in the later portions of this assignment. An example output of a raw and processed document is as follows.

```

Command Prompt
Microsoft Windows [Version 10.0.14393]
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C:\Users\kicka>cd Documents\cs432\assignment3\part1
C:\Users\kicka\Documents\cs432\assignment3\part1>lynx -dump -force_html uri_raw661.txt > uri_raw661.processed.txt

```

The image shows two Notepad++ windows side-by-side. The left window, titled 'uri_raw661.txt', displays raw HTML code with various meta tags, scripts, and a title. The right window, titled 'uri_raw661.processed.txt', shows the same content transformed into a structured JSON-like format. The transformation process involves parsing the HTML and extracting key information into a hierarchical structure.

```

uri_raw661.txt
1 <!doctype html>
2 <!--[if IE 8]> <html class="no-js ie8" lang="en"> <![endif]-->
3 <!--[if IE 9]> <html class="no-js ie9" lang="en"> <![endif]-->
4 <!--[if (gt IE 9)|(!gt IEMobile 7)]><!-->
5 <html class="no-js" lang="en" xmlns:og="http://opengraphprotocol.org/schema/"
6 <!--<![endif]-->
7 <head profile="http://a9.com/~spec/opensearch/1.1/"
8 <script>
9 window['optimizely'] = window['optimizely'] || [];
10 if (typeof adageUser != "undefined") {
11 window['optimizely'].push(["customTag", "membership_tier", adageUser
12 }
13 </script>
14
15 <script src="//cdn.optimizely.com/js/925388773.js"></script>
16
17 <meta charset="utf-8" /><script type="text/javascript">(window.NREUM
18
19 <title>We Tried to Spend a $5 Million Super Bowl Budget on Facebook
20
21 <meta name="HandheldFriendly" content="True" />
22 <meta name="MobileOptimized" content="320" />
23 <meta name="viewport" content="width=device-width, target-densitydpi
24 <meta property="fb:pages" content="194053120879" />
25 <!-- For Windows 8 -->
26 <meta name="application-name" content="Advertising Age"/>
27 <meta name="msapplication-TileColor" content="#000000"/>
28 <meta name="msapplication-TileImage" content="assets/ico/win8-120.pn
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31 <!-- For iPad 3 -->
32 <link rel="apple-touch-icon-precomposed" sizes="144x144" href="/asse
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2.2 Fetching the files with “Hightower”

To get the files that contained the term “Hightower” at least once, I used the grep command.

```
atria:~/cs432/assignment3> cd part1
atria:~/cs432/assignment3/part1> grep hightower *processed.txt
uri_raw152.processed.txt: 191. http://www.patriots.com/video/2017/02/14/what-wil
l-patriots-do-jimmy-garoppolo-and-donta-hightower-offseason
```

This returned about thirty files or so.

2.3 Calculating Tf-Idf

Ten of the files that grep returned were randomly chosen to be used for calculating the Tf-Idf numbers. First, I need to get the term frequency for each file. Since there are only ten files, I manually opened each link then used the find tool (Ctrl-f on windows) to search for how many times “Hightower” appeared on the web page. Total word count was returned with the “wc -w” command. With the number of times the query term appeared divided by the total word count, I received the term frequency.

Next, I had to calculate the IDF of the term “Hightower”. To do this, I got the info from www.worldwidewebsize.com. This website calculated approximately 48.7 billion webpages within the google corpus. The number of results in google that came up when I searched “Hightower” was 9.56 million. By dividing the size of the google corpus, dividing it by the number of google results, and taking the log base 2 of that answer, there was an IDF of 12.3146. To get the TF-IDF I manually multiplied the term frequency of ever document with the inverse document frequency and stuck it in Table 1.

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Table 1. TF-IDF Table in decreasing order

TF-IDF	TF	IDF	URI
0.6601	0.0536	12.3146	https://twitter.com/zeus30hightower
0.2303	0.0187	12.3146	http://patriotswire.usatoday.com/2017/02/22/patriots-uncharacteristically-unprepared-for-potential-departure-of-donta-hightower/
0.0899	0.0073	12.3146	http://nfltraderumors.co/tag/donta-hightower/
0.0776	0.0063	12.3146	http://www.csnne.com/new-england-patriots/patriots-do-list-tag-or-not-tag-hightower?int
0.0653	0.0053	12.3146	https://www.profootballrumors.com/2017/02/patriots-may-use-transition-tag-on-donta-hightower
0.0530	0.0043	12.3146	http://www.espn.com/blog/new-england-patriots/post/_id/4801020/donta-hightower-once-again-proves-his-value-to-patriots-in-super-bowl
0.0382	0.0031	12.3146	http://www.csnne.com/new-england-patriots/new-england-patriots-lb-donta-hightower-looking-forward-whats-coming-my-way-nfl-free-agency
0.0369	0.0030	12.3146	http://nesn.com/2017/02/donta-hightower-also-skipping-patriots-white-house-visit-been-there-done-that/
0.0148	0.0012	12.3146	http://www.patsmilitia.com/tag/donta-hightower/
0.0123	0.0010	12.3146	http://www.patriots.com/video/2017/02/14/what-will-patriots-do-jimmy-garoppolo-and-donta-hightower-offseason

Part 3

3.1 Getting page rank

To get the page rank I used http://www.prchecker.info/check_page_rank.php. This free page rank checker ranked pages from 0 to 9. The rankings of the web pages are shown in Table 2.

Table 2. Online Page Rank in Decreasing Order

PageRank	URI
1.0	https://twitter.com/zeus30hightower
0.8	http://www.espn.com/blog/new-england-patriots/post/_/id/4801020/donta-hightower-once-again-proves-his-value-to-patriots-in-super-bowl
0.8	http://patriotswire.usatoday.com/2017/02/22/patriots-uncharacteristically-unprepared-for-potential-departure-of-donta-hightower/
0.7	http://www.patriots.com/video/2017/02/14/what-will-patriots-do-jimmy-garoppolo-and-donta-hightower-offseason
0.7	http://nesn.com/2017/02/donta-hightower-also-skipping-patriots-white-house-visit-been-there-done-that/
0.6	http://www.csnne.com/new-england-patriots/new-england-patriots-lb-donta-hightower-looking-forward-whats-coming-my-way-nfl-free-agency
0.6	http://www.csnne.com/new-england-patriots/patriots-do-list-tag-or-not-tag-hightower?int
0.2	http://nfltraderumors.co/tag/donta-hightower/
0.0	https://www.profootballrumors.com/2017/02/patriots-may-use-transition-tag-on-donta-hightower
0.0	http://www.patsmilitia.com/tag/donta-hightower/

3.2 Comparing and Interpreting Results

Two of the files have a page rank of zero. This is most likely because they aren't in the domain of the page rank calculation site. An obscure domain with a page rank of zero have few links pointing to them. Therefore, they are on the bottom of the page ranks. To contrast, Twitter, which is the number one page rank with a 1.0 has many links point to it. I. Some well know domains that follow in page ranks are espn and usatoday.

The TF-IDF order is very different except for twitter, which has many retweeting and "@ing" going on. The reason the TF-IDF order is different than the page rank order is because TF-IDF doesn't discriminate against unpopularity. One very interesting observation is that both the csnn domains have the same page rank but vary by almost .04 in TF-IDF rank. This would suggest that there is very little correlation between page rank and TF-IDF calculations.

References

Stack Exchange. Write output of a loop to multiple files (2015). Available at:
<http://stackoverflow.com/questions/24119905/write-output-of-for-loop-to-multiple-files>