

Steps of this assignment:

Step 1.

- Download and install Solr on laptop.
- Copy all the html files for Boston Globe, and index these pages using Solr.
- Create a website on my laptop with Apache Server that can deliver web pages, and run scripts.
- Write a PHP program as solr-php-client that accepts input from the user in a HTML form, and sends requests to the Solr server. (Here I modified example code from <https://github.com/PTCInc/solr-php-client>)
- Search in the webpage, and get top 10 result for each query.

Step 2.

- In order to use PageRank as ranking algorithm in Solr, we need to create an external file that stores rank.
- Loop each webpage in directory, and extract outgoing links using JSoup Library. (Here I referred code from <http://www-scf.usc.edu/~csci572/2017Fall/hw4/ExtractingLinks.pdf>)
- Use Boston_Global_Map.csv to create two map files, fileUrlMap and urlFileMap, and filter out resource outside the news website domain and those are not html files.
- Create a directed graph using the mapping file and extracted URLs. Vertices in the graph are webpage files and detected edge between two files represent a link between two. (Here I used edgeList format, when creating edges.)
- Load the web graph to NetworkX, and compute PageRank using parameters: "alpha=0.85, personalization=None, max_iter=30, tol=1e-06, nstart=None, weight='weight', dangling=None".
- Make the document id the same as the one presented in index.
- Name the pageRank scores file "external_pageRankFile", and put this file under the data folder of the core I created.
- There are 2 modifications of configuration files. First, add the field in the managed-schema which refers to this score. Second, define 2 listeners within the <query> element in solrconfig.xml file.
- Reload the index, or create a new core and configure it as above and leave the former one only for Lucene method.

Step 3.

- Compare the top 10 results for each query of the two ranking algorithms.

Why some pages have higher PageRank values than others?

Answer: The PageRank score of a webpage is high when it is important. The more importance the page has, the more webpages have link to it. That is why the results via PageRank are more likely to be <https://www.bostonglobe.com> or category pages. These pages have more in-links than others and gain a higher PageRank value.

Flow Screenshots (query = Elon Musk)

Initial page

localhost

Search:

Submit

Ranking Method: ☒ Lucene(Default) ☐ PageRank

Result for Lucene(Default)

localhost

Search: 'Elon Musk' Submit

Ranking Method: ☒ Lucene(Default) ☐ PageRank

1.

Title

Youngsters lift Bruins to victory over Predators in season opener

URL

<https://www.bostonglobe.com/sports/bruins/2017/10/05/youngsters-lift-bruins-victory/fsKD9FFTxXE1LQOXAS6kBM/story.html>

ID

/Users/vickie/Downloads/solr-7.1.0/BG/9c953dc082a2f0a150d0080a4879b2282da761083491ea820681216934de60f.html

Description

Jake DeBrusk and Charlie McAvoy scored their first NHL goals in 4-3 win over Nashville.

2.

Title

Youngsters lift Bruins to victory over Predators in season opener

URL

<https://www.bostonglobe.com/sports/bruins/2017/10/05/youngsters-lift-bruins-victory/fsKD9FFTxXE1LQOXAS6kBM/story.html>

ID

/Users/vickie/Downloads/solr-7.1.0/BG/b8f90777d21b21579a4888c74b65083061d2fbaa2d06f1d7ac1d3b68cf62f59.html

Description

Jake DeBrusk and Charlie McAvoy scored their first NHL goals in 4-3 win over Nashville.

3.

Title

Freight Farms unveils a smaller, smarter container farm - The Boston Globe

URL

<https://www.bostonglobe.com/2016/09/16/freightfarms/MYvuk0WwM3Aa0f8xmH0iN/story.html>

ID

/Users/vickie/Downloads/solr-7.1.0/BG/b8b2755cecf043e4234d2b1ff6821d631f751bf6c4ede65c97291be42140d.html

Description

Freight Farms has become somewhat of a darling to the startup set. Google is using one of its hydroponic containers to feed its 20,000 employees. Now it has a new sleek new design.

4.

Title

Commerce secretary: CEOs were wrong to quit Trump's councils after Charlottesville - The Boston Globe

URL

<https://www.bostonglobe.com/news/nation/2017/09/08/commerce-secretary-ceos-were-wrong-quit-trump-councils-after-charlottesville/0bTRkswTDE7uifNYNapI/story.html>

ID

/Users/vickie/Downloads/solr-7.1.0/BG/b58e69467dc893f5b43c8a28b212675d872c96b0d2a5db0fb3c69b494f96b7e.html

Description

"I think what's sad is for business leaders to give up an opportunity to influence policy over a singular issue with which they disagree," US Commerce Secretary Wilbur Ross said.

5.

Title

For electric car owners, 'range anxiety' gives way to 'charging time trauma' - The Boston Globe

URL

<https://www.bostonglobe.com/lifestyle/2017/10/05/for-electric-car-owners-range-anxiety-gives-way-charging-time-trauma/BbVjIWtQjSkOh9nDOK8Nl/story.html>

ID

/Users/vickie/Downloads/solr-7.1.0/BG/f9877c76231fe0f34a2ca29ba66b0a9649937c2f3b8e6158429ef2d6947f3270.html

Description

Modern electric cars still often need an entire night to recharge at home, and even at a commercial fast charging station, a fill-up can take an hour or more.

6.

Title

For electric car owners, 'range anxiety' gives way to 'charging time trauma' - The Boston Globe

URL

<https://www.bostonglobe.com/lifestyle/2017/10/05/for-electric-car-owners-range-anxiety-gives-way-charging-time-trauma/BbVjIWtQjSkOh9nDOK8Nl/story.html>

ID

/Users/vickie/Downloads/solr-7.1.0/BG/b3d68b92493a41a9af698b7505dc4ce704202958181135b4b9ed4-89c-4db1af.html

Description

Modern electric cars still often need an entire night to recharge at home, and even at a commercial fast charging station, a fill-up can take an hour or more.

7.

Title

Some corporations have had enough of Trump - The Boston Globe

URL

<https://www.bostonglobe.com/news/nation/2017/08/15/some-corporations-have-had-enough-trump/c2j1N2DpdkuaQYSx6HRJl/story.html>

ID

/Users/vickie/Downloads/solr-7.1.0/BG/86838e4b2771b5715d13530e087e434910b053515715f5aa066a8dfbc329c82d.html

Description

CEO defections from a White House jobs council are another crack in a presidency that has endured unprecedented erosion in relationships that normally would be strong for a Republican president.

8.

Title

Jeff Bezos has never lived or worked here, but he knows a lot about Boston - The Boston Globe

URL

<https://www.bostonglobe.com/business/2017/09/27/jeff-bezos-has-never-lived-worked-here-but-knows-lot-about-boston/Kb9pR9zfb1SMd1MeTTTdI/story.html>

ID

/Users/vickie/Downloads/solr-7.1.0/BG/f986ca5f49f1e9d39df88b50b6c774c4fca945b6f394164d7c044e18bd3a87.html

Description

What impact — If any — will his knowledge of Boston have on Amazon's eventual choice of a city for its second headquarters?

9.

Title

Some corporations have had enough of Trump - The Boston Globe

URL

<https://www.bostonglobe.com/news/nation/2017/08/15/some-corporations-have-had-enough-trump/c2j1N2DpdkuaQYSx6HRJl/story.html>

ID

/Users/vickie/Downloads/solr-7.1.0/BG/117c9c1aa382adbe77a28a794466cc1d367991b40134cc0565c3801bac29e.html

Description

CEO defections from a White House jobs council are another crack in a presidency that has endured unprecedented erosion in relationships that normally would be strong for a Republican president.

10.

Title

Jeff Bezos has never lived or worked here, but he knows a lot about Boston - The Boston Globe

URL

<https://www.bostonglobe.com/business/2017/09/27/jeff-bezos-has-never-lived-worked-here-but-knows-lot-about-boston/Kb9pR9zfb1SMd1MeTTTdI/story.html>

ID

/Users/vickie/Downloads/solr-7.1.0/BG/4b841318e463b7e84570b8048279718e0b259499b1e7797a99700213a6f6.html

Description

What impact — If any — will his knowledge of Boston have on Amazon's eventual choice of a city for its second headquarters?

Result of PageRank

Search: Eion Musk Submit	
Ranking Method: <input type="radio"/> Lucene(Default) <input checked="" type="radio"/> PageRank	
1.	<div><div>TitleTracking the dorm shortfall</div><div>URLhttps://www.bostonglobe.com/2014/05/04/tracking-dorm-shortfall/umqjVQjQWYrDCH7hcOFIN/story.html</div><div>ID/</div><div>Description</div></div>
2.	<div><div>TitleJeff Bezos has never lived or worked here, but he knows a lot about Boston - The Boston Globe</div><div>URLhttps://www.bostonglobe.com/business/2017/09/27/jeff-bezos-has-never-lived-worked-here-but-knows-lot-about-boston/yKb9pR9zfh1SMd1MeTTTd/story.html</div><div>ID/</div><div>DescriptionWhat impact — if any — will his knowledge of Boston have on Amazon's eventual choice of a city for its second headquarters?</div></div>
3.	<div><div>TitleYoungsters lift Bruins to victory over Predators in season opener</div><div>URLhttps://www.bostonglobe.com/sports/bruins/2017/10/05/youngsters-lift-bruins-victory/rKd9FTTnXElLQOXAS6kBM/story.html</div><div>ID/</div><div>DescriptionJake DeBrusk and Charlie McAvoy scored their first NHL goals in 4-3 win over Nashville.</div></div>
4.	<div><div>Title2015 Boston Globe Baseball All-Scholastics - The Boston Globe</div><div>URLhttps://www.bostonglobe.com/sports/2015/06/27/boston-globe-baseball-all-scholastics/EGDePAzBC6kT7R6kxIWAP/story.html</div><div>ID/</div><div>DescriptionState champion Braintree locked up Player and Coach of the Year honors.</div></div>
5.	<div><div>TitleFreight Farms unveils a smaller, smarter container farm - The Boston Globe</div><div>URLhttps://www.bostonglobe.com/2016/09/16/freightfarms/MVvdKOWwMSAof8cmH0lN/story.html</div><div>ID/</div><div>DescriptionFreight Farms has become somewhat of a darling to the startup set. Google is using one of its hydroponic containers to feed its 20,000 employees. Now it has a new sleek new design.</div></div>
6.	<div><div>Title2017 Boston Globe Girls' Tennis All-Scholastics - The Boston Globe</div><div>URLhttps://www.bostonglobe.com/sports/high-schools/2017/06/30/boston-globe-girls-tennis-all-scholastics/GTxcWey1r9d0RakjoNSL/story.html</div><div>ID/</div><div>DescriptionMia Wallace of Arlington was named Player of the Year.</div></div>
7.	<div><div>Title2017 Boston Globe Preps All-Scholastics - The Boston Globe</div><div>URLhttps://www.bostonglobe.com/sports/high-schools/2017/06/30/boston-globe-preps-all-scholastics/mVPOnQzev9TTHaPHQec9L/story.html</div><div>ID/</div><div>DescriptionHere are the spring 2017 honorees.</div></div>
8.	<div><div>TitleFor electric car owners, 'range anxiety' gives way to 'charging time trauma' - The Boston Globe</div><div>URLhttps://www.bostonglobe.com/lifestyle/2017/10/05/for-electric-car-owners-range-anxiety-gives-way-charging-time-trauma/BbVjIWtQjSk0hI9nDOK8NI/story.html</div><div>ID/</div><div>DescriptionModern electric cars still often need an entire night to recharge at home, and even at a commercial fast charging station, a fill-up can take an hour or more.</div></div>
9.	<div><div>TitleSome corporations have had enough of Trump - The Boston Globe</div><div>URLhttps://www.bostonglobe.com/news/corporations/2017/08/15/some-corporations-have-had-enough-trump/s2jN2ZDedkwoQYSx6HRJ/story.html</div><div>ID/</div><div>DescriptionCEO defections from a White House jobs council are another crack in a presidency that has endured unprecedented erosion in relationships that normally would be strong for a Republican president.</div></div>
10.	<div><div>Title2017 Boston Globe Girls' Tennis All-Scholastics - The Boston Globe</div><div>URLhttps://www.bostonglobe.com/sports/high-schools/2017/06/30/boston-globe-girls-tennis-all-scholastics/GTxcWey1r9d0RakjoNSL/story.html</div><div>ID/</div><div>DescriptionMia Wallace of Arlington was named Player of the Year.</div></div>

Click url <https://www.bostonglobe.com/lifestyle/2017/10/05/for-electric-car-owners-range-anxiety-gives-way-charging-time-trauma/BbVjIWtQjSk0hI9nDOK8NI/story.html>

Menu

Lifestyle

SUBSCRIBE TODAY

Ethical. Trustworthy. Real.

Subscribe

Members

Sign In

2018

CIVIC Si

Create the daily drive with 205 hp.

SHOP NOW

GAIS

For electric car owners, 'range anxiety' gives way to 'charging time trauma'


f

t

p

in

21



Top 10 Trending Articles

Most Viewed

Most Commented

Most Shared

John Oliver signs off for the season with these three warnings about Trump

Berklee president: 11 faculty members have been terminated in 13 years for sex assault, harassment

Hand over your weapons

More than 15,000 scientists worldwide warn that the Earth is on the road to destruction

Rex Burkhead is as close to a two-way player as you will see in today's NFL

This ex-Fidelity worker won at the Supreme Court. Now a Boston jury will decide if she is a true whistle-blower

Donald Trump Jr. reportedly had contact with WikiLeaks during 2016 campaign

Why dozens of Massachusetts scientists signed the "Warning to Humanity" letter

We hope you've enjoyed your free articles

Continue reading by subscribing to Globe.com for just 99¢.

Subscribe now

Already a member?

Log in

Home

URLs of Top 10 Results

Query = Elon Musk

#	Results of Lucene	Results of PageRank
1	https://www.bostonglobe.com/sports/b Bruins/2017/10/05/youn-gsters-lift-bruins-victory/fsKD9FFtNxE1LQQXAS6kBM/story.html	https://www.bostonglobe.com/2014/05/04/tracking-dorm-shortfall/umq1VQjQWYrbDCH7hcOFIN/story.html
2	https://www.bostonglobe.com/sports/b Bruins/2017/10/05/youn-gsters-lift-bruins-victory/fsKD9FFtNxE1LQQXAS6kBM/story.html	https://www.bostonglobe.com/business/2017/09/27/jeff-bezos-has-never-lived-worked-here-but-knows-lot-about-boston/yKb9pR9zfb1SMd1MnTTTdj/story.html
3	https://www.bostonglobe.com/2016/09/16/freightfarms/MVvdKOWwrMSAof8cmH0iIn/story.html	https://www.bostonglobe.com/sports/b Bruins/2017/10/05/youn-gsters-lift-bruins-victory/fsKD9FFtNxE1LQQXAS6kBM/story.html
4	https://www.bostonglobe.com/news/nation/2017/09/08/com-merce-secretary-ceos-were-wrong-quit-trump-councils-after-charlottesville/0tBTfksWTtE7nfnfVNapI/story.html	https://www.bostonglobe.com/sports/2015/06/27/boston-globe-baseball-all-scholastics/EGDePA2zBCfkT7R6kxEWAP/story.html
5	https://www.bostonglobe.com/lifestyle/2017/10/05/for-electric-car-owners-range-anxiety-gives-way-charging-time-trauma/BbVjIWtQjSk0h9nDOK8NI/story.html	https://www.bostonglobe.com/2016/09/16/freightfarms/MVvdKOWwrMSAof8cmH0iIn/story.html
6	https://www.bostonglobe.com/lifestyle/2017/10/05/for-electric-car-owners-range-anxiety-gives-way-charging-time-trauma/BbVjIWtQjSk0h9nDOK8NI/story.html	https://www.bostonglobe.com/sports/high-schools/2017/06/30/boston-globe-girls-tennis-all-scholastics/GTzxcWey1r9d0RskjtoN5L/story.html
7	https://www.bostonglobe.com/news/nation/2017/08/15/some-corporations-have-had-enough-trump/o2JlJiN2DbdkuaQYSx6HRjI/story.html	https://www.bostonglobe.com/sports/high-schools/2017/06/30/boston-globe-preps-all-scholastics/mfVPQqt2ey9fTHuPHQec9L/story.html
8	https://www.bostonglobe.com/business/2017/09/27/jeff-bezos-has-never-lived-worked-here-but-knows-lot-about-boston/yKb9pR9zfb1SMd1MnTTTdj/story.html	https://www.bostonglobe.com/lifestyle/2017/10/05/for-electric-car-owners-range-anxiety-gives-way-charging-time-trauma/BbVjIWtQjSk0h9nDOK8NI/story.html
9	https://www.bostonglobe.com/news/nation/2017/08/15/some-corporations-have-had-enough-trump/o2JlJiN2DbdkuaQYSx6HRjI/story.html	https://www.bostonglobe.com/news/nation/2017/08/15/some-corporations-have-had-enough-trump/o2JlJiN2DbdkuaQYSx6HRjI/story.html
10	https://www.bostonglobe.com/business/2017/09/27/jeff-bezos-has-never-lived-worked-here-but-knows-lot-about-boston/yKb9pR9zfb1SMd1MnTTTdj/story.html	https://www.bostonglobe.com/sports/high-schools/2017/06/30/boston-globe-girls-tennis-all-scholastics/GTzxcWey1r9d0RskjtoN5L/story.html

Query = Star Wars

#	Results of Lucene	Results of PageRank
1	https://www.bostonglobe.com/arts/movies/2015/12/15/the-force-with-star-wars-the-force-awakens/KyOQ1W4zeMyVDncrlirp5M/story.html	https://www.bostonglobe.com
2	https://www.bostonglobe.com/arts/movies/2015/12/15/the-force-with-star-wars-the-force-awakens/KyOQ1W4zeMyVDncrlirp5M/story.html	https://www.bostonglobe.com
3	https://www.bostonglobe.com/metro/2015/12/17/first-line-for-the-force-fan-stakes-out-spot-for-latest-star-wars-film/QBYM4R1QwbCoA7c7cBs8wO/story.html	https://www.bostonglobe.com/sports
4	https://www.bostonglobe.com/lifestyle/style/2015/12/18/for-star-wars-die-hards-hour-marathon-daunting-but-enjoyable-task/W08Q3d2TeXWCQzDalZaZsl/story.html	https://www.bostonglobe.com
5	https://www.bostonglobe.com/arts/2015/12/12/starwarsgenerations/PLDMidc6USG536AfUaPA7N/story.html	https://www.bostonglobe.com/business
6	https://www.bostonglobe.com/lifestyle/style/2015/12/12/star-wars-sneakers-not-just-for-kids/XnHidQOeClvVNY94HfptQJ/story.html	https://www.bostonglobe.com/arts
7	https://www.bostonglobe.com/metro/2015/12/17/charlie-baker-not-fan-new-star-wars-flicks/UX6q3i6wY5F6AluydfuTI/story.html	https://www.bostonglobe.com/business
8	https://www.bostonglobe.com/arts/movies/2015/12/12/getting-latest-scoop-scoops-star-wars/1CDNVgBUSzNeG9FPW50yJP/story.html	https://www.bostonglobe.com
9	https://www.bostonglobe.com/arts/movies/2015/12/12/getting-latest-scoop-scoops-star-wars/1CDNVgBUSzNeG9FPW50yJP/story.html	https://www.bostonglobe.com/arts
10	https://www.bostonglobe.com/arts/movies/2015/12/12/osc-ar-isaac-talks-about-acting-new-star-wars-movie/Z85IkTprnFbJz9wT7PoygM/story.html	https://www.bostonglobe.com/sports

Query = North Korea

#	Results of Lucene	Results of PageRank
1	https://www.bostonglobe.com/news/world/2017/09/08/korea-braces-for-another-possible-korea-missile-test/wrfYUFe7CEgGvKbcg41ZbN/story.html	-
2	https://www.bostonglobe.com/news/world/2017/08/09/trump-threatens-fire-and-fury-against-north-korea-endangers/sSaFxbsoTVeQ3syE8gJvgO/story.html	https://www.bostonglobe.com
3	https://www.bostonglobe.com/news/world/2017/08/09/trump-threatens-fire-and-fury-against-north-korea-endangers/sSaFxbsoTVeQ3syE8gJvgO/story.html	https://www.bostonglobe.com/metro
4	https://www.bostonglobe.com/opinion/2017/08/09/plan-for-north-korea-before-this-spirals-out-control/Q23bbp1BbDPITxdvYxv3LK/story.html	https://www.bostonglobe.com
5	https://www.bostonglobe.com/opinion/2017/08/09/plan-for-north-korea-before-this-spirals-out-control/Q23bbp1BbDPITxdvYxv3LK/story.html	https://www.bostonglobe.com/lifestyle/crossword
6	https://www.bostonglobe.com/news/world/2017/09/25/north-korea-minister-says-can-shoot-down-bombers/8TtjEtXdimYcixEArVHu5K/story.html	https://www.bostonglobe.com/opinion
7	https://www.bostonglobe.com/news/politics/2017/09/26/north-korea-seeks-help-from-republican-analysts-what-with-trump/Iro675CGFxHP3wqY4ZbzhK/story.html	https://www.bostonglobe.com/sports
8	https://www.bostonglobe.com/news/politics/2017/09/26/north-korea-seeks-help-from-republican-analysts-what-with-trump/Iro675CGFxHP3wqY4ZbzhK/story.html	https://www.bostonglobe.com
9	https://www.bostonglobe.com/news/nation/2017/09/03/trump-says-north-korea-very-hostile-and-dangerous/Sor0T7tl6i3MdNpwHonu9M/story.html	https://www.bostonglobe.com/lifestyle
10	https://www.bostonglobe.com/news/nation/2017/09/03/trump-says-north-korea-very-hostile-and-dangerous/Sor0T7tl6i3MdNpwHonu9M/story.html	https://www.bostonglobe.com/lifestyle

Query = LA Dodgers

#	Results of Lucene	Results of PageRank
1	https://www.bostonglobe.com/sports/2017/10/07/mlb-boxscore-dodgers-diamondbacks/TAdQkAqY6OqncGtjZyG8O/story.html	https://www.bostonglobe.com/arts
2	https://www.bostonglobe.com/sports/2012/08/26/gonzo/Avzuwi4ZrRfOBdQKd1UFGP/story.html	https://www.bostonglobe.com/arts
3	https://www.bostonglobe.com/lifestyle/names/2017/09/28/carl-crawford-boston-carried-hate-for-that-city-for-long-time/SKvbZfN6QwarHEy24f965H/story.html	https://www.bostonglobe.com/lifestyle/names
4	https://www.bostonglobe.com/lifestyle/names/2017/09/28/carl-crawford-boston-carried-hate-for-that-city-for-long-time/SKvbZfN6QwarHEy24f965H/story.html	https://www.bostonglobe.com/lifestyle/names
5		https://www.bostonglobe.com/arts/2017/10/06/seuss-controversy-illuminates-cultural-clash/9bg6jN1x3Dzsk5yT1dv8XP/story.html
6		https://www.bostonglobe.com/arts/2017/10/06/seuss-controversy-illuminates-cultural-clash/9bg6jN1x3Dzsk5yT1dv8XP/story.html
7		https://www.bostonglobe.com/arts
8	https://www.bostonglobe.com/sports/2017/09/30/baseball-standings/G6K9mjYu6AokJmy36PkhcL/story.html	https://www.bostonglobe.com/news/bigpicture/2017/04/12/animal-expressions/jqzgvqqvk5GqncG2shUP1O/story.html
9	https://www.bostonglobe.com/sports/redsox/2017/09/16/in-dians-have-central-title-grasp/gBRKvUTjvx5LirE6i6HviO/story.html	https://www.bostonglobe.com/arts
10	https://www.bostonglobe.com/sports/redsox/2017/10/04/diamondbacks-advance-after-wild-one-over-rockies/ZXhz3EJeboHWpmrFA4UcRP/story.html	https://www.bostonglobe.com/news/bigpicture/2017/04/12/animal-expressions/jqzgvqqvk5GqncG2shUP1O/story.html

Query = Puerto Rico

#	Results of Lucene	Results of PageRank
1	https://www.bostonglobe.com/news/politics/2017/10/03/six-things-trump-probably-shouldn-have-said-about-puerto-rico-while-puerto-rico/z2A6pU5IozLPkjdMzSY3HP/story.html	https://www.bostonglobe.com
2	https://www.bostonglobe.com/news/politics/2017/10/03/six-things-trump-probably-shouldn-have-said-about-puerto-rico-while-puerto-rico/z2A6pU5IozLPkjdMzSY3HP/story.html	https://www.bostonglobe.com
3	https://www.bostonglobe.com/news/politics/2017/10/03/six-things-trump-probably-shouldn-have-said-about-puerto-rico-while-puerto-rico/z2A6pU5IozLPkjdMzSY3HP/story.html	https://www.bostonglobe.com/business
4	https://www.bostonglobe.com/news/politics/2017/10/03/six-things-trump-probably-shouldn-have-said-about-puerto-rico-while-puerto-rico/z2A6pU5IozLPkjdMzSY3HP/story.html	https://www.bostonglobe.com/business
5	https://www.bostonglobe.com/news/politics/2017/10/03/six-things-trump-probably-shouldn-have-said-about-puerto-rico-while-puerto-rico/z2A6pU5IozLPkjdMzSY3HP/story.html	https://www.bostonglobe.com
6	https://www.bostonglobe.com/news/politics/2017/10/03/six-things-trump-probably-shouldn-have-said-about-puerto-rico-while-puerto-rico/z2A6pU5IozLPkjdMzSY3HP/story.html	https://www.bostonglobe.com
7	https://www.bostonglobe.com/opinion/editorials/2017/09/26/where-urgency-puerto-rico-response/oFxAJi9duwxiaxVGK0LIL/story.html	https://www.bostonglobe.com
8	https://www.bostonglobe.com/opinion/editorials/2017/09/26/where-urgency-puerto-rico-response/oFxAJi9duwxiaxVGK0LIL/story.html	https://www.bostonglobe.com
9	https://www.bostonglobe.com/opinion/editorials/2017/09/23/don-let-puerto-rico-languish/k7iPpkMGa54CDFd65lwh4H/story.html	https://www.bostonglobe.com
10	https://www.bostonglobe.com/opinion/editorials/2017/09/23/don-let-puerto-rico-languish/k7iPpkMGa54CDFd65lwh4H/story.html	https://www.bostonglobe.com

Query = Hurricane Harvey

#	Results of Lucene	Results of PageRank
1	https://www.bostonglobe.com/news/nation/2017/09/08/ho-use-seals-deal-hurricane-relief/mgMI2SyD8kUIb4ewoFSBII/story.html	https://www.bostonglobe.com/1970/01/13/terms-service/XpUbEbX2aS9pkwUa7aOKTI/story.html
2	https://www.bostonglobe.com/news/bigpicture/2017/08/28/hurricane-harvey-devastates-southeast-texas/ZWm7Ln0xffqQpggzffYxL/story.html	https://www.bostonglobe.com/1970/01/05/term-purchase/RfO4zG3drUPKI8BRZKNIDP/story.html
3	https://www.bostonglobe.com/news/bigpicture/2017/08/28/hurricane-harvey-devastates-southeast-texas/ZWm7Ln0xffqQpggzffYxL/story.html	https://www.bostonglobe.com/1970/01/13/privacy-policy/LZx4MmGtzRGBg8CkDCladI/story.html
4	https://www.bostonglobe.com/news/bigpicture/2017/08/28/hurricane-harvey-devastates-southeast-texas/ZWm7Ln0xffqQpggzffYxL/story.html	https://www.bostonglobe.com/newsletters
5	https://www.bostonglobe.com/news/bigpicture/2017/08/28/hurricane-harvey-devastates-southeast-texas/ZWm7Ln0xffqQpggzffYxL/story.html	https://www.bostonglobe.com/tools/help/stafflist
6	https://www.bostonglobe.com/news/bigpicture/2017/08/28/hurricane-harvey-devastates-southeast-texas/ZWm7Ln0xffqQpggzffYxL/story.html	https://www.bostonglobe.com/tools/help/stafflist
7	https://www.bostonglobe.com/news/bigpicture/2017/08/28/hurricane-harvey-devastates-southeast-texas/ZWm7Ln0xffqQpggzffYxL/story.html	https://www.bostonglobe.com/newsletters
8	https://www.bostonglobe.com/news/bigpicture/2017/08/28/hurricane-harvey-devastates-southeast-texas/ZWm7Ln0xffqQpggzffYxL/story.html	https://www.bostonglobe.com/1970/01/05/term-purchase/RfO4zG3drUPKI8BRZKNIDP/story.html
9	https://www.bostonglobe.com/news/bigpicture/2017/08/28/hurricane-harvey-devastates-southeast-texas/ZWm7Ln0xffqQpggzffYxL/story.html	https://www.bostonglobe.com/1970/01/13/terms-service/XpUbEbX2aS9pkwUa7aOKTI/story.html
10	https://www.bostonglobe.com/news/bigpicture/2017/08/28/hurricane-harvey-devastates-southeast-texas/ZWm7Ln0xffqQpggzffYxL/story.html	https://www.bostonglobe.com/1970/01/13/privacy-policy/LZx4MmGtzRGBg8CkDCladI/story.html

Query = iPhone X

#	Results of Lucene	Results of PageRank
1	https://www.bostonglobe.com/business/2017/09/21/should-you-queue-for-new-iphone-wait-for/MZLL85K3mhl2iGVYuy8ofN/story.html	-
2	https://www.bostonglobe.com/business/2017/09/21/should-you-queue-for-new-iphone-wait-for/MZLL85K3mhl2iGVYuy8ofN/story.html	-
3	https://www.bostonglobe.com/ideas/2017/09/12/apple-world-iphone-doesn-need-look-like-iphone/C8EFHm2BFe6eV9oeCudAKO/story.html	https://www.bostonglobe.com/1970/01/13/terms-service/XpUbEbX2aS9pkwUa7aOKTI/story.html
4	https://www.bostonglobe.com/ideas/2017/09/12/apple-world-iphone-doesn-need-look-like-iphone/C8EFHm2BFe6eV9oeCudAKO/story.html	https://www.bostonglobe.com/1970/01/05/term-purchase/RfO4zG3drUPKI8BRZKNIDP/story.html
5	https://www.bostonglobe.com/ideas/2017/09/12/apple-world-iphone-doesn-need-look-like-iphone/C8EFHm2BFe6eV9oeCudAKO/story.html	https://www.bostonglobe.com/1970/01/13/privacy-policy/LZx4MmGtzRGBg8CkDCIadl/story.html
6	https://www.bostonglobe.com/business/2017/09/12/super-new-iphone-may-not-quite-super-enough-for-price/cVm5OkTOwWHIRtNtCORVDJ/story.html	https://www.bostonglobe.com/newsletters
7	https://www.bostonglobe.com/business/2017/09/12/super-new-iphone-may-not-quite-super-enough-for-price/cVm5OkTOwWHIRtNtCORVDJ/story.html	https://www.bostonglobe.com/tools/help/stafflist
8	https://www.bostonglobe.com/business/2017/09/12/super-new-iphone-may-not-quite-super-enough-for-price/cVm5OkTOwWHIRtNtCORVDJ/story.html	https://www.bostonglobe.com/tools/help/stafflist
9	https://www.bostonglobe.com/business/2017/09/12/super-new-iphone-may-not-quite-super-enough-for-price/cVm5OkTOwWHIRtNtCORVDJ/story.html	https://www.bostonglobe.com/newsletters
10	-	https://www.bostonglobe.com/1970/01/05/term-purchase/RfO4zG3drUPKI8BRZKNIDP/story.html

Query = Paris Climate Deal

#	Results of Lucene	Results of PageRank
1	-	https://www.bostonglobe.com/1970/01/13/privacy-policy/LZx4MmGtzRGBg8CkDCIadl/story.html
2	https://www.bostonglobe.com/news/politics/2017/06/02/jo-hn-kerry-calls-trump-climate-change-announcement-day-craven-ignorance-and-cynicism/GWBwSaQwm24lsxfX5jHmWM/story.html	https://www.bostonglobe.com/1970/01/13/privacy-policy/LZx4MmGtzRGBg8CkDCIadl/story.html
3	https://www.bostonglobe.com/news/politics/2017/06/02/jo-hn-kerry-calls-trump-climate-change-announcement-day-craven-ignorance-and-cynicism/GWBwSaQwm24lsxfX5jHmWM/story.html	https://www.bostonglobe.com
4	https://www.bostonglobe.com/magazine/2015/07/22/energy-secretary-ernie-moniz-cabinet-star-born/PsqmP1TairoTYQ1OSbt3uJ/story.html	https://www.bostonglobe.com/news/bigpicture
5	https://www.bostonglobe.com/business/2017/06/14/stata-slowing-down-hardly/xBhdDp7fFMfsxpjCzGunQJ/story.html	https://www.bostonglobe.com
6	https://www.bostonglobe.com/metro/2017/06/02/climate/qELM7JPNpKnORMMqkzi2XJ/story.html	https://www.bostonglobe.com/opinion
7	https://www.bostonglobe.com/metro/2017/06/02/climate/qELM7JPNpKnORMMqkzi2XJ/story.html	https://www.bostonglobe.com/sports
8	https://www.bostonglobe.com/metro/2017/06/02/climate/qELM7JPNpKnORMMqkzi2XJ/story.html	https://www.bostonglobe.com
9	https://www.bostonglobe.com/metro/2017/07/04/united-church-christ-approves-emergency-resolution-climate-change/pgzKhYbm3UEYJcxA21GPAI/story.html	https://www.bostonglobe.com/news/politics
10	https://www.bostonglobe.com/metro/2017/07/04/united-church-christ-approves-emergency-resolution-climate-change/pgzKhYbm3UEYJcxA21GPAI/story.html	https://www.bostonglobe.com/business

Overlap graph

