Zachary Snelick

COSC 493

Project 5

10/21/19

Algorithms

“The PageRank algorithm is an algorithm used by Google Search to rank websites in their search engine results.” (Geeks for Geeks) The name of the algorithm comes from the name Larry Rank, one of the founders of Google. The main use of the algorithm is to determine a page’s relevance or importance. One important aspect of this is the amounts of links between pages.

The PR of a page is the self-importance of it. This can be calculated by looking at other pages that point or link to this website. The PR of every page must be calculated first in order to find the page with the highest PR. In most cases on a website, the homepage will have the highest PR because all the side pages will have a link back to the homepage. Wikipedia and news channels have high PR because there are hundreds of thousands of links to their website. (Geeks for Geeks) (Princeton)

“35% of Amazon’s revenue is generated by its recommendation engine.” (Rejoiner) Amazon uses its recommendation system to try and find different products that they think you would be interested in buying by using different data such as; things you previously bought or a group of people that buy similar things. The amount of data processed by Amazon is huge. There are so many different variables; purchased items, abandoned carts, wish lists, and dwell times are just some of them that Amazon must process in order to get these recommendations. Amazon then uses this data to help recommend you to other products. Some of the most common ones are items that are frequently bought together, you’re browsing history, a newer version of an item you’ve bought before, and items that you have on your Wishlist. (StackOverFlow) (Rejoiner)

“In computing, SPMD (single program, multiple data) is a technique employed to achieve parallelism…” Parallelism is when many calculations or executions of processes are carried out at the same time. The way SPMD achieves this is by splitting up these tasks and running them on multiple processors in order to complete the task faster. There are two main systems that can use this, Distributed memory and Shared memory. Distributed memory is memory that is stored on multiple individual computers called nodes. These nodes communicate by sending and receiving messages within each other. Shared memory is on one computer with multiple processors where messages van be shared in the shared memory area. (Wikipedia)

References:

1. Geeks for Geeks

“Page Rank Algorithm and Implementation.” *GeeksforGeeks*, 29 Oct. 2018, [www.geeksforgeeks.org/page-rank-algorithm-implementation/](http://www.geeksforgeeks.org/page-rank-algorithm-implementation/).

1. Princeton

“Pagerank Explained Correctly with Examples.” *Princeton University*, The Trustees of Princeton University, [www.cs.princeton.edu/~chazelle/courses/BIB/pagerank.htm](http://www.cs.princeton.edu/~chazelle/courses/BIB/pagerank.htm).

1. StackOverFlow

Rachel, et al. “How Does the Amazon Recommendation Feature Work?” *Stack Overflow*, 1 May 1960, stackoverflow.com/questions/2323768/how-does-the-amazon-recommendation-feature-work.

1. Rejoiner

Rejoiner. “Amazon's Recommendation Engine: The Secret To Selling More Online.” *Rejoiner*, rejoiner.com/resources/amazon-recommendations-secret-selling-online/.

1. Wikipedia

“SPMD.” *Wikipedia*, Wikimedia Foundation, 2 Oct. 2019, en.wikipedia.org/wiki/SPMD.