Name: Armant Touche

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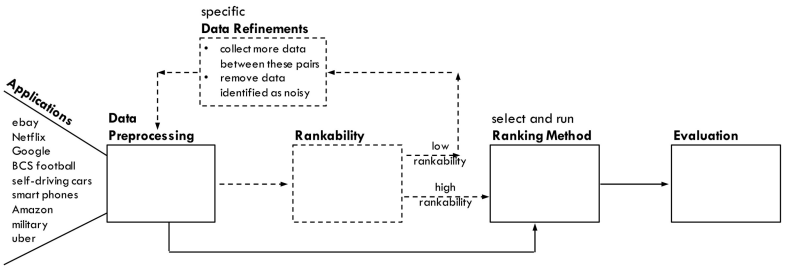
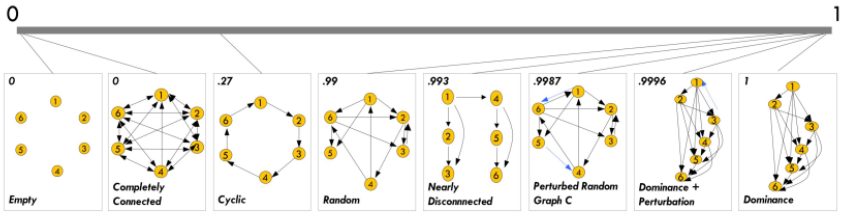
Description

I wanted to share a research article from the Data Science sphere about a common task that affects every one of us when we search the Internet. Imagine how Google, Youtube, or other notable online applications present search results to us. A lot of you may have heard of "Youtube's algorithm" but the algorithm is an abstract idea that is implemented on other online services other than Youtube. Ranking objects or results requires a lot of questioning. Can we trust the Algorithm? Ranking data is used in applications such as self-driving cars, resource allocation, cybersecurity, and of course, web searches. There are other applications but I wanted to highlight the more common applications we commonly use or are affected by. The figure below is an overview of the relationship between rankability and ranking. Rankability is quantifying a meaningful relationship amongst common objects and objects with high ranking go on to be rank by another process but how rankability is calculated is main topic of this research article because the implication can make or break an online platform. The most common way to represent objects is to use a computer science abstract data structure called graphs. Below the first image, is another figure that illustrates what a graph data structure looks like. Closer to the zero are graphs with less meaningful relationships and the others closer to one are graphs with dominant relationships. Websites like Kayak or Orbitz use this data structure to present the best flights or hotels based off your desired search. Overall, calculating rankability involves a mix of computer science, linear algebra, combinatorics, and some other subsets of mathematics which I do not have the tools to describe but just wanted to share.





Why

The reason why I wanted to share this article is because there is often a black-box effect with online search and buzzwords tend to mystify how data is presented to us in my own opinion. But, with a little intuition, anyone can begin to learn any subject and in this matter, the algorithm that people refer too is indeed abstract but the subjects used to implements ranking use rankability calculation before evaluating if a result is appropriate to share. This implementation can have geo-politicals. For instance, companies and even countries have been known to implement a similar ranking tool that aides in making high-stake decisions like brokering resolutions to conflicts in South Africa, Northern Ireland, and Israel-Palestine (Anderson, Chartier, & Langville, 2019). I feel it is important to demystify current technologies because their effects ripple through most facets of our lives and plus, I find it interesting to know how the algorithm is sort-of implemented even though I do not fully understand it. Making an attempt to understand a complex is better than making no attempt.

References

Anderson, P., Chartier, T., & Langville, A. (2019). Erratum: The Rankability of Data. *SIAM Journal on Mathematics of Data Science*, *1*(3), pp. 643–646.