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# 'Filter Bubble': How Personalization Impacts Search Queries?

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A squirrel dying in front of your house may be more relevant to your interests right now than people dying in Africa.

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Mark Zuckerberg

There is no doubt that personalization is making our lives easier in many ways be it online shopping on Amazon or watching videos on YouTube and Netflix. With the advent of powerful computers and the availability of large volume of data, it became easier to do the complex analytics on the data. Companies are using sophisticated machine learning algorithms to provide recommendations to users in real time. These algorithms make use of the behavioural & historical data to generate recommendations and the users see only the things they are interested in. However, there is a trade-off that comes with personalization which is: "People only consume the content tailored for them". On one hand it has improved the user experience to a great extent, but on the other hand, the relevant information is filtered out at times which creates a Filter Bubble around the user. The problem associated is that it limits the user's perception and develops a confirmation bias as what they happen to be interested in past shapes what they see in the future. A recent political scandal showed how Cambridge Analytica used the data of millions of people's Facebook profiles [1] without their consent to polarise the voters during the 2016 presidential elections in the United States. Therefore, it can be implied that the media consumed by the users plays a vital role in formulating the thoughts. There are conflicting views on this topic, some people call it a breach of trust stating that it is unjust to use the personal information for political purposes while others are sanguine about it maintaining that if people choose to stay in the bubble without exploring what is going around them then it is the problem with the people and not the technology.

A filter bubble, as defined by the internet activist Eli Pariser, is a state of intellectual isolation [2]. Personalization, in simpler term, is filtering out the

information that the algorithm finds irrelevant for the user. These algorithms take behavioural and contextual information to generate recommendations while filtering out the results that might be useful for others. The behavioural information could be the amount of time a user spent on some page, past search history etc. The contextual information refers to a user's location, age, gender etc. In a nutshell, the whole process can be formulated in three steps: "First, you figure out who people are and what they like. Then, you provide them with content and services that best fit them. Finally, you tune to get the fit just right. Your identity shapes your media." If we take Google as an example then it makes use of 57 signals [2] to generate results that mean two very similar users may get very different results for the same search query based on some factors. This could be good or bad depending on the situation. For Example: If the person wants to search for the pizza places in Munich, it does not make sense if he gets the results that include the places in Berlin. In this case, the user's contextual information is helpful in filtering out the irrelevant results. On the contrary, let's consider Google page rank algorithm that uses machine learning to show the search results. The search results are based on the consumption and contextual information. When a user clicks on the link from the search results and goes back to the result page, then the algorithm degrades the position of the link and considers it to be irrelevant which might not necessarily be true. Therefore, there is a possibility of having an easy article, full of errors, being ranked above the more complex and challenging article [3].

There have been various studies done on the impact of filter bubble. A scientific study done by the researchers at Wharton claims that the users used the filters while listening to online music to expand their taste rather than to limit it [4]. Zweig et. al[5] conducted a study on finding out the extent to which the output of search engines personalized in the context of elections in Germany and concluded that there is 80% overlap in search results between users in candidate searches and slightly less overlap when parties are considered.

In my opinion, personalization is acceptable as long as people fully understand what is happening behind the scenes. The users should have control over the information they are exposed to and the regulations should be made to provide more transparency. As the article in The Guardian maintains "more than 60% of Facebook users are entirely unaware of any curation on Facebook at all, believing instead that every single story from their friends and followed pages appeared in their news feed [6]." It could be worrying if the users consider Facebook as their main news source. Therefore, it becomes important for the people to understand the nature and extent to which the information is filtered out and they should rely on doing extensive research and fact-checking whenever required.

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