Data Donations – A Study Design to hold Algorithms Accountable by Crowd Sourcing

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In 2011, the Western world was baffled by a new theory: the theory of algorithm-generated filter-bubbles (Pariser, 2011). In his book, Eli Pariser explained how recommendation algorithms that are personalized might trap people by showing them more and more narrow parts of the information richness, tailored to their likings and opinions. To underline his arguments, he showed to vastly different search engine results of two of his friends, who both searched for the term "Egypt" on the same search engine. While the one merely got tourist information, the other one got political information about the country. In 2016 at the presidential election, other accusations against search engines and social media platforms were issued (Krafft & Zweig, 2017). One that was pivotal, was the study by Trielli, Mussenden, and Diakopolous. They searched for all presidential candidates on Google and found, that – on average – more positive links were found among the three democratic candidates than among the 13 republican ones. However, they only searched once. While this one was done on a non-logged in browser (no personal Google account information availabable), there might have been cookies that revealed the user who might lean towards the democrats.

Search Keyword	Katrin Göring-Eckardt	Dietmar Bartsch	Angela Merkel	Sahra Wagenknecht	Cem Özdemir	Alexander Gauland	Alice Weidel	Christian Lindner	Martin Schulz	AfD	Die Linke	Bündnis90/Die Grünen	CSU	SPD	FDP	CDU
Average number of links not shared (pairwise)	0.9	1	1.1	1.1	1.1	1.2	1.4	1.7	1.8	2.6	3.1	3.3	3.4	3.4	3.6	3.7
Average number of links that could be personalized	-	-	-	-	-	-	-	-	-	2.7	1.3	1.3	2.9	1.5	1.5	2.2

Figure 1: In the first Data Donation project by AlgorithmWatch, we asked citizens to donate us the results of the first page of the Google search engine, when the above mentioned keywords are searched for. Search was automated by a browser plugin which runs every 4 hours if the browser is active.

Based on this research and Pariser's Filter Bubble Theory, I designed the "Data Donation Project" to find out what multiple users see when they search for the same terms. The project was organized by AlgorithmWatch, a German NGO devoted to make algorithms more transparent and accountable but also to discuss the chances of algorithmic decision making, and it was financially supported by a group of state media authorities. The data was collected by a little browser plugin to be downloaded from our

website[1]. We used the two months before the German Bundestagswahl (German national election) 2017 and searched for 9 party leaders and chancellor candidates and the 7 parties most likely to enter the Bundestag (parliament) up to 6 times a day. We logged more than 4,000 downloads of the plugin and about 600 active users on the main time points over the day (12h, 16h, 20h). For each search term, the results of the organic search of the first result page were centrally stored and then published as an open data source[2]. The result was that – based on the names of politicians as search terms and this user basis – almost all shown links are shared by more than 80% (See Figure 1). On average, only 1 to 2 links were not shared – these covered a variety of very different outlets. For parties, only about half of the links were shared on average. Another 2 to 3 links were clearly regionalized links, e.g. to party websites of a city. Again, only 2-3 links were – on average – not shared. Thus, there is actually not much room for much of a filter bubble, on average.

It is obvious to see that the general setting of a plugin that looks over the shoulder of a person using a personalized recommendation algorithm can be used to detect discrimination or biased results that go beyond a meaningful personalization. In our proof-of-concept we have shown that users are in principle willing to support such a project and that the results can be analyzed for various effects. In my presentation I would, thus, like to discuss when the general idea of a data donation project is applicable to make black box algorithms accountable and what its limits might be.

References

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[1] https://datenspende.algorithmwatch.org/
[2] https://datenspende.algorithmwatch.org/data.html