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Leaves in the wind: identifying passivity in individual news selections via digital trace data

News Consumption, Recommenders, Social Media, User Agency, Digital Traces

Extended Abstract

Introduction

The nature of online algorithmic mediation has begun to shift, with the entrance of increasingly capable, reactive and interactive real-time 'user-in-the-loop' recommendation systems. Their impact on journalism is most evident within social media applications such as TikTok, where they have already started to shape new modes of news consumption [4] - but recent offerings built around this technology are starting to more explicitly compete with traditional outlets in the delivery of text-based news to consumers [2]. Within this context, user **passivity** emerges as a new kind of risk. As platforms relocate their algorithms to center-stage (i.e. 'for you') positions, users are herded towards a more *reactive* 'system-1' logic of navigating online content, away from a *rational* 'system-2' logic borne of the original hypertext architecture of the internet [1]. This generates new algorithmic affordances (notably: a further reduction in the role of traditional online opinion leader structures, see: Soffer [3]) and propels fundamental change in the structure of user agency online: the demand that users must express their preferences through (continuous) reactions effects an increase in the surface area through which they may be algorithmically influenced. Therefore, users who engage with these novel news contexts in a particularly passive manner are more at risk of having their news diets shaped by extrinsic interests and algorithmic failings.

Design and Data

The aim of our project is to assess this risk in a natural and non-interventional setting, by asking: *how self-perceived dependence on news recommendation systems relates to the dynamic nature of individual news selections over time*, within donated digital trace data. Using state-of-the-art transformer-based embedding techniques, we explore the relationships between self-reported news recommender usage (and sentiments towards news recommendation systems) and the cosine similarity of sequential news article selections, as well as overall news consumption diversity. Our data consists of approximately 2.8 million participant-validated and metadata-enriched Browsing, Search and YouTube trace records, spanning August 2021 to August 2022, and donated by $n = 147$ convenience sampled participants in the Netherlands. Of these records, approximately 57,000 (2%) are visits to news websites, a low but typical proportion observed accross trace data studies of news consumption. A survey taken at the time of donation captures information about participant demographics, political orientation and beliefs, trust in journalism and society, news consumption preferences, sharing behaviour as well as self-perceived usage of and beliefs about news recommendation systems.

Analysis

Validation analyses of the data have revealed a close correspondence between self-reported news usage and that which is evident within individual browsing histories, as well as expected positive relationships between self-reported political knowledge and efficacy and overall frequency of news consumption. An early implementation of our central analysis suggests that users who report occasional or frequent usage of news recommender features online (n=88), have a higher typical cosine similarity between sequentially read news articles (Q1 = 0.87, Q2 = 0.88, Q3 = 0.91) than those (n=56) who report no usage of such features (Q1 = 0.84, Q2 = 0.86, Q3 = 0.90). In other words, they tend to select articles that are slightly more similar to one another in time. Moreover, this heightened similarity is associated with a lower overall diversity score (Q1 = 0.23, Q2 = 0.27, Q3 = 0.35; vs. Q1 = 0.24, Q2 = 0.35, Q3 = 0.41), implying that greater sequential similarity of news selections - potentially driven by news recommender usage - may underlie a reduction in the overall breadth of news topics and sources that a user is exposed to. We also check that these differences are not related to the the individual frequency of news consumption; they are not, as we observe a substantial spread of both sequential similarity and diversity metrics over different levels of daily readership.

Next steps

We plan to further unpack the browsing context in which these differences take place, by considering differences in domain preferences (i.e., which news websites users frequent) as well as pathing (i.e., how users get to news articles: directly, via search or social media). We also plan to consider further timescales over which dynamic effects might play out, such as whether we see greater similarity in week-to-week or month-to-month news article selections for those who profess a greater reliance on news recommendation systems.

We hope to contribute initial and exploratory insight into the potential risks associated with user passivity in news selections amidst a changing algorithmic environment. By focusing on user self-perception of recommender system reliance, we aim to identify those users who tend towards reactive 'system-1' logics for navigating online news spaces and assess the consequences of these logics for their news diets. This work is a first step that will inform subsequent simulation and experimental stages aimed at understanding how people interact with news that is mediated via an interactive real-time recommendation system, over the medium to long term.

References

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