

UNLOCKING THE POTENTIAL OF NEWS RECOMMENDERS FOR AN OPEN INTERNET AND EMPOWERED CITIZENS



WHEN ARE RECOMMENDATIONS DIVERSE?



Liberal recommender: informs about politics, shows political alternatives, makes expert citizens more clever, *and for the rest gives people what they want*

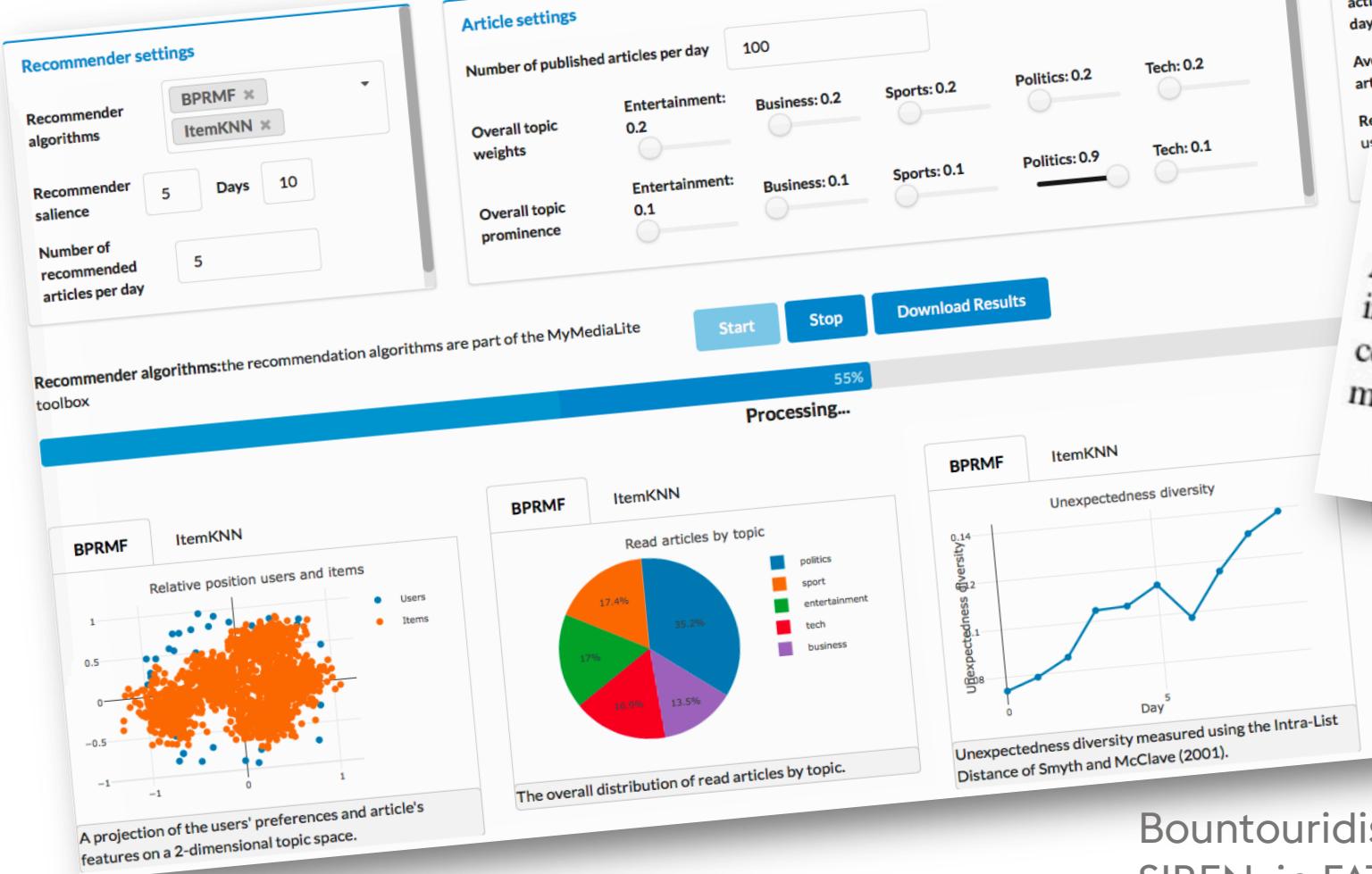
Participatory recommender: maps diversity of ideas and opinions in society, responds to differences in information needs, styles and preferences

Deliberative recommender: nudges to encounter different perspectives, serendipity, activates people to comment, share, engage, like, dislike

Constructionist recommender: nudges people to encounter and acknowledge minority opinions, but also: supports finding and engaging with like-minded

Goals	Save democracy	Activate	Foster tolerance, open mindedness	Serve users' autonomy and self-development	Stimulate discourse	Challenge
Potential target group	The good citizen	Tegenlicht-viewer	PVV voter	Digital literate	NPO viewer	The socio-criticus
Diverse exposure	Focus on political news, showing political alternatives	Inclusive representation of main different political/ideological viewpoints in society	Ratio of content featuring (representatives of) different cultures, ethnical, national and linguistic groups	Responsive to individual preference signals	Balanced content, commentary, discussion formats, background info	Minority voices Prominence for less popular content
	Proportional representation: stronger groups get larger share	Focus on political content/news but also: non-news content (e.g. more participatory models)	Different languages	Adaptive to preference changes Privacy-sensitive	Beyond politics	Critical tone
		Background info, political advertising	Shared content and experiences	Little variance, in the sense of distance from personal preferences	Share of articles presenting various perspectives, diversity of emotions, range of different sources	Content that is purposefully biased, provokes, exposes and challenges
Beyond exposure	Tone detached, unemotional, civil	Accessible, multi-platform, heterogeneity of styles and tones, can be emotional, emphatic, mobilising	Reconcillary, non-threatening, non-sensationalist, rational, compassionate	Active curation of media offer, recommendation Sharing, likes, clicks, duration of engagement	Rational, inclusive, showing both sides, consensus seeking + invite comment/participation	Heterogeneous, narratives, affective, emotional, provocative, figurative, shrill

IR-METRICS



D. α -Normalized Discounted Cumulative Gain (α -NDCG)
It uses novelty-biased gain measure which is based on the no: of information nuggets, which are the properties or part of documents that are relevant to the user [20].

$$= \sum_{i=1}^m l_i(r) (1-\alpha)^{rel_i(r-1)}$$

2) Intent-Aware Metrics:
A metric used for diversity evaluation proposed by Agarwal et al. [22]. Let $pr(i|q)$ be the probability of each intents “*i*” for a given query “*q*” and M_i be the value computed for each intent using nDCG measure or any other metric. Then Intent-Aware metric can be computed as,

$$= \sum_i Pr(i|q) M_i$$

IN OTHER WORDS: WE WILL DEVELOP

The image features three rounded rectangular boxes with a light pink gradient background, each containing a central icon. The first box on the left contains a telescope icon, the middle box contains a star map icon, and the rightmost box contains a smiley face and checklist icon.

- Tools to measure diversity in large quantities of news**
- Tools to map diversity in personalised recommendations**
- Tools to evaluate and improve diversity in news recommendation systems**



OUTPUT: DIVERSITY TOOLKIT

A fully automated and sustainable tool to benchmark recommendations and serve as an external measure for the diversity of recommendations

Elements:

- I. Content analysis:** analyzes articles in news using automated content analysis
- 2. Measuring:** based on input compute diversity metrics that can be aggregated to KPIs.

DIVERSITY ASSESSMENT

	Liberal	Participatory	Deliberative	Critical
Politicalness	-	++	++	+
Attention spread	n/a	0	++	++
Complexity	-	0	+	-
Concordance	++	+	0	-
Defragmentation	-	0	++	-
Coverage	n/a	0	0	-

Table 1: Expected value ranges for news recommender systems within different democratic models.

