Ideology and the collective construction of knowledge of unfolding events on Wikipedia

Francesco Bailo
The University of Sydney

Rohit Ram
University of
Technology Sydney

Marian-Andrei Rizoiu
University of
Technology Sydney

Abstract

In this work, we share preliminary findings on the role played by political ideology in the editing of events pages on Wikipedia. We aim to estimate the ideological alignment of editors of articles that appeared during 2022 on the Portal "Current events" of the English version of Wikipedia, using a small sample of editors and their self-disclosed ideological labels. We use a left-right ideological scaling to assign an ideological score to 2,131 editors based on political "userbox" tags they used on their personal pages. We integrate additional structural layers such as URL, interest, language, and prolific editor features to maximize the classifier's performance. The resulting ideological score obtained from the classifier is then used to answer research questions related to homophily in user contributions, adversarial engagement, and the impact of knowledge production on the diversity of referenced sources. The study provides insights into the ideological distribution of Wikipedia editors and its implications for knowledge production.

Keywords: Ideology Detection, Wikipedia, Epistemic outcomes, Knowledge production, Polarization

Ideology, broadly intended as somebody's system of beliefs, is critical in shaping our interpretation of facts. As we are presented with new facts, we naturally fall back on our ideology to understand and make sense of them (Maio et al., 2003). Political ideologies, in particular, help us interpret current social arrangements through the lens of our normative ideas of what these arrangements should be.

The community behind Wikipedia does not encourage its editors to publicise their ideology on the site, yet it does not discourage or prevent them from doing so. As of January 2023, we found that 8,315 editors of the English version of Wikipedia decided to identify themselves with a political ideology by publishing a dedicated "userbox" on their user page. This arguably represents a small fraction of Wikipedia editors or about 2% of the top 1% of editors with at least 100 edits. Although problematic for researchers, non-disclosure is the most prevalent be-

haviour across social media, as only a minority of users opt to identify their ideology on their public profiles.

The ideological position of users is important in understanding their behaviour online. In Wikipedia, specifically, ideology might play an important role when users must quickly assemble knowledge about current events in the context of acute information disorder. Political ideologies can be determinant in shaping an article when an established and authoritative epistemic consensus making sense of the facts has not been reached yet. Because of the systemic importance of Wikipedia in distributing knowledge through Internet services, this impact can have consequences well beyond the Wikipedia domain.

Because of the importance of ideology as a predictor of behaviour, researchers have proposed several methods to classify Wikipedia editors according to their ideological alignment. A popular approach proposes inferring editors' ideology from the edited articles (Shi et al., 2019). However, this method would imply that users only engage with topics that align with their ideology. Contrary to that, in our research, we have observed that users often tend to engage, if adversarially, with topics they disagree with (a case in point is conspiracy theories that on social media are mostly reshared by users who intend to debunk them). We propose a semi-supervised learning approach instead.

We use a small sample of editors and their self-disclosed ideological labels to estimate the ideological alignment of all users active in editing articles that have appeared during 2022 on the "Portal:Current_events' page of the English version of the site.

First, using the left-right ideological scaling proposed by (Herrmann and Döring, 2023) for 15 ideologies, which we related to 57 "userbox" tags, we compute an ideological score for the 2,131 editors (see Figure 1). If an editor indicated more than one ideological tag, the respective scores were averaged. Editors with tags that we could not unequivocally relate to the 15 ideologies were not assigned a score.

To maximise the performance of the classifier given the information available, we alternate integrating additional structural layers while measuring their effect on the performance of the classification task. Specifically, we integrate the following information:

- URL features, in which editors are connected to the URLs of resources internal or external to Wikipedia, which they used in their revisions of the articles. The use of resources such as newspaper articles, which often have a political slant, is expected to occasionally signal the ideology of the editor (Ram and Rizoiu, 2023).

- Interest features, in which editors are connected with the interests they indicate with a "userbox" tag on their user page. We expect some personal interests (e.g. taxation, health care, national parks, etc.) to signal users' ideology and policy priorities (Pew Research Center, 2019).

- Language features, in which the editors' language in their comments in the articles' talk pages are encoded using a transformer-based language model (Cer et al., 2018). Such models have achieved state-of-the-art results in several tasks, including stance detection of social media users (Samih and Darwish, 2021). The resulting encoding ensures that users are estimated to be similar only if their language is semantically similar. Language is a strong signal of ideology since language politics often reveals one's ideology (Cichocka et al., 2016).

- Prolific editor features, in which editors are related to others based on replies-to and mentions published on the talk page. Editors are more likely to form ties and interact with other editors who are similar to them (due to homophily).

To identify the best classifier, we evaluate all combinations of these features via a 5-fold cross-validation over the editors with known ideology scores, collecting the area-under-the-receiver-operating-curve performance metric. Finally, we use the resulting ideological score obtained from the classifier to determine the impact of knowledge production in the 2022 event articles. We want to answer the following questions:

- RQ1: Do we note a tendency towards homophily in user contributions, with ideology score determining the assortment of users across event articles?

- RQ2: Are users more likely to engage adversarially (through reverting others' edits) across ideological boundaries than within the same boundaries?

- RQ3: Does the contribution from across the ideological spectrum increase the diversity of referenced sources? Does it also increase the use of low-quality sources (i.e. websites not of news, governmental or intergovernmental organisations)?

References

[Cer et al.2018] Daniel Cer, Yinfei Yang, Sheng-yi Kong, Nan Hua, Nicole Limtiaco, Rhomni St John, Noah Constant, Mario Guajardo-Cespedes, Steve Yuan, Chris Tar, Yun-Hsuan Sung, Brian Strope, and Ray Kurzweil. 2018. Universal Sentence Encoder, April. arXiv:1803.11175 [cs].

[Cichocka et al.2016] Aleksandra Cichocka, Micha l Bilewicz, John T Jost, Natasza Marrouch, and Marta Witkowska. 2016. On the grammar of politics–or why conservatives prefer nouns. *Political Psychology*, 37(6):799–815.

[Herrmann and Döring2023] Michael Herrmann and Holger Döring. 2023. Party positions from wikipedia classifications of party ideology. 31(1):22–41.

[Maio et al.2003] Gregory R. Maio, James M. Olsen, Mark M. Bernard, and Michelle A. Luke. 2003. Ideologies, values, attitudes, and behavior. In John Delamater, editor, *Handbook of social psychology*, pages 283–308. Kluwer Academic/Plenum Publishers.

[Pew Research Center2019] Pew Research Center. 2019. Public's 2019 priorities: Economy, health care, education and security all near top of list. Technical report, January.

[Ram and Rizoiu2023] Rohit Ram and Marian-Andrei Rizoiu. 2023. You are what you browse: A robust framework for uncovering political ideology, February. arXiv:2208.04097 [cs].

[Samih and Darwish2021] Younes Samih and Kareem Darwish. 2021. A few topical tweets are enough for effective user stance detection. In *Proceedings of the 16th Conference of the European Chapter of the Association for Computational Linguistics: Main Volume*, pages 2637–2646, Online, April.

[Shi et al.2019] Feng Shi, Misha Teplitskiy, Eamon Duede, and James A. Evans. 2019. The wisdom of polarized crowds. *Nature Human Behaviour*, 3(4):329–336, April.
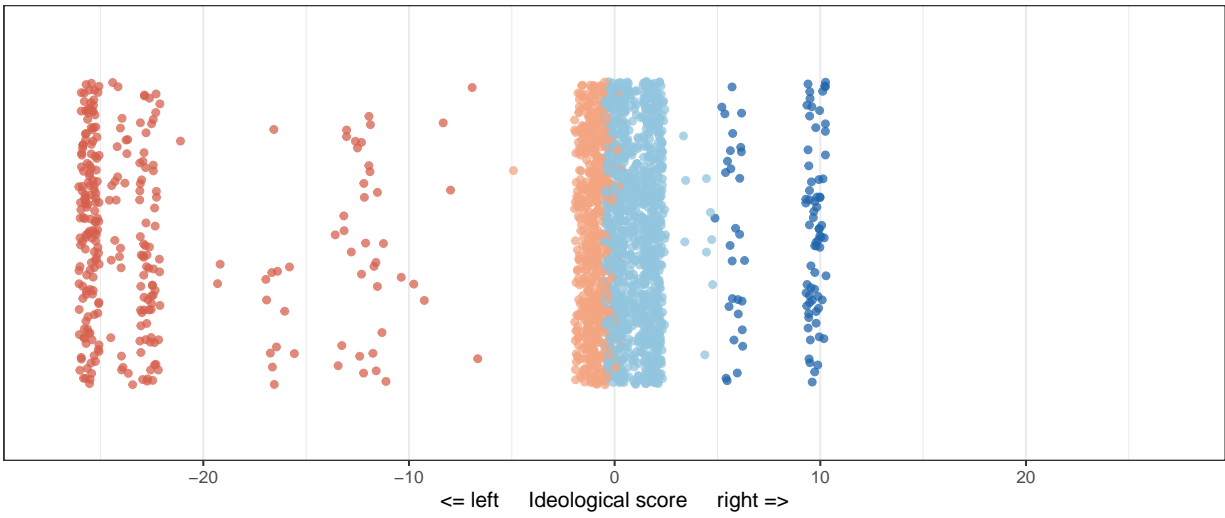
Figure 1: Ideological score of Wikipedia editors ($n = 2,131$) inferred from their "userbox" tags