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Proceedings of the Annual Meeting of the Cognitive Science Society

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Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 47(0)

Authors

Belkin, Sonja

Madsen, Jens Koed

Publication Date

2025

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Peer reviewed

Recommender Systems Issue Polarization in Social Networks

Sonja Belkin

University of Cambridge, Cambridge, United Kingdom

Jens Madsen

London School of Economics, London, United Kingdom

Abstract

This paper explores how personalized recommendation algorithms may inadvertently create echo-chambers, leading to the emergence of political issue polarization in online networks. Using an Agent-Based Modelling (ABM) approach, we conducted two studies, simulating users in three distinct algorithm designs. In Study 1, we found that personalized recommendation algorithms had a small but significant effect on increasing polarization, even among rational Bayesians. In Study 2, we introduced users with novelty-seeking preferences. Contrary to previous literature, our findings suggested interventions targeting personalization bubbles are ineffective, as introducing novelty-seeking preferences had no significant effect on reducing polarization levels. Together, our findings highlight the importance of algorithmic influence in creating online polarization, offer implications for social media network design, and urge caution regarding existing interventions aimed at minimizing polarization.