

Graph clustering methods and community detection in online social networks. Are we living in a world of tribes?

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Abstract

The wide availability of user-provided content in online social media (Facebook, Twitter, . . .) facilitates the emergence of homogeneous clusters of people around common interests, worldviews and narratives, i.e. echo chambers [1]. Indeed, users online show the tendency a) to select information that adheres to their system of beliefs even when containing parodistic jokes; and b) to join polarized groups [2]. Uncovering the community structure exhibited by social networks is a crucial step towards an understanding of complex systems that goes beyond the local organization of their underlying graph structure. We consider bipartite networks in which the two disjointed sets of nodes are social media users and pages. A comment to a given information posted by a page determines a link between a user and a page. Through a thorough quantitative analysis on massive datasets, we conduct a comparative experimental study benchmarking some popular graph clustering algorithms in terms of execution time, peak memory usage and attained community structure precision. The results confirm that content consumption is dominated by the echo-chamber effect and that polarization increased over years [3, 4]. Moreover, users' comments have been processed and classified using text mining techniques. Our findings reveal that people belonging to the same echo chamber show many textual similarities, suggesting that this may be accurate detector of the same sentiment or opinion.

References

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