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# Symmetrical and overloaded effect of diffusion in information filtering

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**Abstract**

In physical dynamics, mass diffusion theory has been applied to design effective information filtering models on bipartite network. In previous works, researchers unilaterally believe objects' similarities are determined by single directional mass diffusion from the collected object to the uncollected, meanwhile, inadvertently ignore adverse influence of diffusion overload. It in some extent veils the essence of diffusion in physical dynamics and hurts the recommendation accuracy and diversity. After delicate investigation, we argue that symmetrical diffusion effectively discloses essence of mass diffusion, and high diffusion overload should be published. Accordingly, in this paper, we propose an symmetrical and overload penalized diffusion based model (SOPD), which shows excellent performances in extensive experiments on benchmark datasets $Movielens$ and $Netflix$.

*Keywords:*
Popuparity Mining, Popularity Control, Collaborative Recommendation, Complex Network

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