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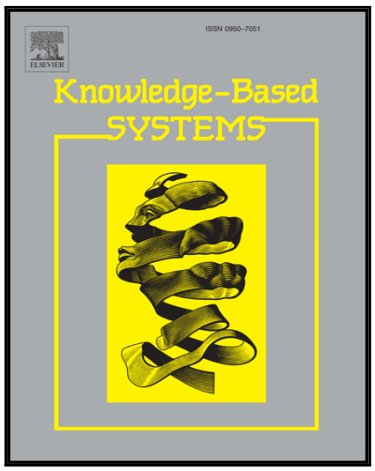


# Mobi-SAGE-RS: A Sparse Additive Generative Model-based Mobile Application Recommender System

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# Mobi-SAGE-RS: A Sparse Additive Generative Model-based Mobile Application Recommender System

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**Abstract**

With the rapid prevalence of smart mobile devices and the dramatic proliferation of mobile applications (Apps), App recommendation becomes an emergent task that will benefit different stockholders of mobile App ecosystems. However, the extreme sparsity of user-App matrix and many newly emerging Apps create severe challenges, causing CF-based methods to degrade significantly in their recommendation performance. Besides, unlike traditional items, Apps have rights to access users' personal resources (e.g., location, message and contact) which may lead to security risk or privacy leak. Thus, users' choosing of Apps are influenced by not only their personal interests but also their privacy preferences. Moreover, user privacy preferences vary with App categories.

In light of the above challenges, we propose a mobile sparse additive generative model (Mobi-SAGE) to recommend Apps by considering both user interests and category-aware user privacy preferences in this paper. To overcome the challenges from data sparsity and cold start, Mobi-SAGE exploits both textual and

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