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User Behavior Prediction via Heterogeneous Information Preserving Network Embedding

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Abstract

User behavior prediction with low-dimensional vectors generated by user network embedding models has been verified to be efficient and reliable in real applications. However, most user network embedding models utilize homogeneous properties to represent users, such as attributes or user network structure. Though some works try to combine two kinds of properties, the existing works are still not enough to leverage the rich semantics of users. In this paper, we propose a novel heterogeneous information preserving user network embedding model, which is named HINE for user behavior classification in user network. HINE applies attributes, user network connection, user network structure, and user behavior label information for user representation in user network embedding. The embedded vectors considering these multi-type properties of users contribute to better user behavior classification performances. Experiments verified the superior performances of the proposed approach on real-world complex user network dataset.

Keywords: Heterogeneous information, network embedding, behavior

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