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Learning to Recommend with Negative Ratings Based on Factorization Machine

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Abstract : Rating prediction is an important problem for recommender systems. The task is to predict the rating for an item that a user would give. Most of the existing algorithms for the task ignore the effect of negative ratings rated by users on items, but the negative ratings have a significant impact on users’ purchasing decisions in practice. In this paper, we present a rating prediction algorithm based on factorization machines that consider the effect of negative ratings inspired by Loss Aversion theory. The aim of this paper is to develop a concave and a convex negative disgust function to evaluate the negative ratings respectively. Experiments are conducted on MovieLens dataset. The experimental results demonstrate the effectiveness of the proposed methods by comparing with other four the state-of-the-art approaches. The negative ratings showed much importance in the accuracy of ratings predictions.

Keywords : factorization machines, feature engineering, negative ratings, recommendation systems
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