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Résumé

Although several recommendation algorithms are widely used by both commercial and non-commercial platforms, they face unique challenges such as sparse data sets and the absence of negative or "neutral" feedback. One-class algorithms attempt to overcome the data sparsity problem by using the implicit feedback inherent in user's clicks and purchases, which are deduced from both positive and negative feedback. Existing literature uses several heuristic strategies to derive the negative samples needed for training, such as using random sampling or utilizing user-item interaction. However, these assumptions do not always reflect reality. In addition, with the explosive increase in the availability of big data for training recommendation systems, these methods might not adequately encapsulate the representations of the latent vectors. In this paper, we address the common issues of one-class recommendation and provide a survey on approaches that have been used to mitigate the existing challenges. To tackle the identified problems, we propose a neural network-based Bayesian Personalized Ranking (BPR) for item recommendation and personalized ranking from implicit feedback. BPR provides an optimization criterion derived from Bayesian analysis of a problem to develop an optimized model for such a problem. We conduct several experiments on two varieties of MovieLens datasets to illustrate the performance of the proposed approach. Our approach shows an impressive result in mitigating the issues of one-class recommendation when compared with the complexity of the state-of-the-art methods.

Mots clés : Recommender Systems, Deep Learning, One-Class Recommendation