Impact of Meta Learning for Privacy-Preserving Recommender Systems

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Abstract:
In this work, we explore the impact of meta learning for privacy-preserving recommender systems. Therefore, we utilize MetaMF, a matrix factorization-based recommender system, which employs federated rating prediction and meta learning to protect users' privacy while keeping high recommendation quality.

The contributions of our work are two-fold: On the one hand, we study the impact of meta learning on MetaMF's recommendation quality by conducting experiments on five datasets with different data characteristics. On the other hand, we acknowledge that users may have different tendencies of revealing information about themselves to a recommender system. Hence, in a second strand of experiments, we investigate the ability of MetaMF to cope with privacy constraints imposed by users.

The findings of our study provide strong evidence that meta learning is essential for MetaMF's ability to ensure high recommendation quality, while fulfilling users' privacy constraints.