

Cold Start Issue with Federated Recommendation: Distinguishing Item Properties from User Interactions

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Abstract: *Federated recommendation systems typically don't have direct access to users' personal information on their own devices; instead, they train a global model on the server. Nevertheless, the recommendation model's separation and users' private information makes it difficult to deliver high-quality service, especially for new products like cold-start suggestions in federated settings. Item-aligned Federated Aggregation (IFedRec) is an innovative approach to this problem that is presented in this study. This is the first research on federated recommendation to focus on the cold-start scenario. The technique learns two sets of item representations simultaneously by utilising item attributes and interaction records. A federated learning framework includes an item representation alignment mechanism that aligns two item representations and learns the meta-attribute network at the server. IFedRec achieves improved performance in cold-start conditions, as shown by experiments on four benchmark datasets. Additionally, it is confirmed in this work that IFedRec exhibits strong resilience in the face of noise injection and low client involvement, which offers encouraging real-world application potential in privacy-protected enhanced federated recommendation systems. The code for implementation is accessible.*

Keywords: Federated Learning, Recommendation Systems, Cold-start

