

Title: Online collaborative filtering via simultaneous use of item and user structure

Mina Karzand and Guy Bresler

Abstract:

We consider the problem of providing recommendations to users in an online fashion with structure present in both the item and user spaces. Previously, Bresler, Shah, and Voloch (2016) studied a model capturing structure among items and proved rigorous performance bounds for an item-item collaborative filtering algorithm. Here our focus is on jointly using both item-item and user-user similarities. Our model elucidates the system operating regimes in which existing algorithms are nearly optimal, as well as highlighting the sub-optimality of using only one of item or user structure. This prompts a new algorithm that is nearly optimal in essentially all parameter regimes.