

## Student Research Symposium 2003

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### **Flexible Mixture Model for Collaborative Filtering**

The rapid growth of the information on the Internet demands intelligent information agent that can sift through all the available information and find out the most valuable to us. Collaborative filtering is the intelligent system that makes recommendation decisions for a specific user based on the judgments of users with similar tastes.

This work presents a flexible mixture model (FMM) for collaborative filtering. FMM is based on the idea that users and objects in collaborative filtering system are different concepts and should be clustered separately, and at the same time we should allow them to belong to different clusters. Furthermore, our second observation is that users with similar or even identical preference patterns may have totally different rating behaviors.

Therefore, we propose a decoupled model (DM) to explicitly extract user preference values out of the surface rating values. Empirical study over two datasets of movie ratings has shown that our new algorithm outperforms five other collaborative filtering algorithms substantially. This is a cooperative work with Rong Jin, ChengXiang Zhai and Jamie Callan.