Mathematics, Statistics, and Computer Science   **@ UIC**

Statistics and Data Science Seminar

A smooth collaborative recommender system

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Abstract: In recent years, there has been a growing demand to develop efficient recommender systems which track users' preferences and recommend potential items of interest to users. In this talk, I will present a smooth collaborative recommender system to utilize dependency information among users and items which share similar characteristics under the singular value decomposition framework. The proposed method incorporates the neighborhood structure among user-item pairs by exploiting covariates to improve the prediction performance. One key advantage of the proposed method is that it leads to more efficient recommendation for ''cold-start'' users and items, whose preference information is completely missing from the training set. As this type of data involves large-scale customer records, efficient scheme will be proposed to achieve scalable computing. The advantage is confirmed in a variety of simulated experiments as well as one large-scale real example on *Last.fm* music listening counts. If time permits, the asymptotic properties will also be discussed.

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