

# CSE 8803RS: Recommendation Systems

## Lecture 0: Outline of Topics

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# Surveys of Recommenders

01/18 and 01/20

- Examples of Recommenders
- Categorizations of Recommenders
  - Content-based
  - Collaborative filtering: memory-based; model-based
- Challenging issues for Recommenders

01/25: Joonseok Lee

- Tapestry
  - emails and news
- GroupLens
  - NetNews
- Virtual Community
  - Movies
- Ringo
  - Music and artists

# Memory-Based CF Methods

01/25

- User-based methods vs. Item-based methods
- Duality of users and items; asymmetry in real-world applications
- Similarity measures and extensions
- Fast methods for computing item similarity tables
- Experiments

01/27: Shreyas Joshi

- The idea of user feature profiles and coverage
- Biclustering based users' ratings

# Matrix Factorization Methods

02/01

- SVD and regularized SVD
- Incorporating memory-based methods

# Matrix Factorization Methods

02/03: Prashant Gaurav, and 02/08: Steven Crain

- Maximum-margin matrix factorization
- Bayesian formulation

# Matrix Factorization Methods

02/10 and 02/15: Liangda Li

- Matrix completion and compressive sensing
- Theoretical bounds



# Multiple Data Sources

02/17: Prashant Gaurav

- Incorporate user and/or item features
- Probabilistic models

# Multiple Data Sources

02/22:, 02/24: Thomas Perry

- Joint matrix factorization
- Application in document recommendation

# Temporal Recommendation

## 03/1: Thomas Perry

- Temporal dynamics
- Transient vs. recurrent interests

03/3: Prashant Gaurav

- Markov chain models

# Cold-Start Problems

03/8: Steven Crain, and 03/10: Ke Zhou

- Information criteria
- Static seed approaches
- Interview process

03/15: Joonseok Lee, and 03/17:

- Exploration and exploitation

03/29: Shuang Hong Yang, and 03/31:

- Matrix factorization based methods
- Multiple domain problems

04/5 and 04/7: Shuang-Hong Yang

- Trust and distrust
- Interests and friendship propagation
- Positive and negative influences



# Evaluation for Recommenders

04/12: Joonseok Lee

- Evaluation metrics
- Diversity

04/14 and 04/19: Shreyas Joshi

- Scalability
- Parallel implementations

04/21, 04/26 and 04/28:

- Several key applications