People: Yi Zhang   Institution: University of California, Santa Cruz
Project : Bayesian Graphical Models for Adaptive Filtering

What?

Problem: A user often does not know that she/he needs to know.

Task: Adaptive filtering system that pushes information to the user (somewhat related to PIM)

How: Bayesian Decision Theory + Graphical Models

• The system learns its objective => user criteria modeled as a multivariate utility function defined over sub utilities

• The system represents what it has learned => complex user models represented as probabilistic graphical models

• The system learns smartly => trading off exploration and exploitation and doing active learning based on Bayesian decision theory

• The system works well for new users => borrowing information from existing users using hierarchical Bayesian

• Evaluation on several data sets 1) user study with 20+ users over four weeks: implicit and explicit feedback about web news collected; 2) TREC data

Results so far:

• Online active learning is useful but challenging (ICML 03)

• Graphical models can integrate implicit and explicit user feedback and create complex user models (HLT05)

• Borrowing data from other users helps solving the cold start problem for a new user

• Automatically learned user specific multivariate utility functions from explicit user feedback (in process)