

# Challenges and Directions for Future Research

- **Challenge 1: How can we quantitatively evaluate the benefit of topic models for text mining?**
  - Currently, most quantitative evaluation is based on perplexity which doesn't reflect the actual utility of a topic model for text mining
  - Need to separately evaluate the quality of both topic word distributions and topic coverage (do more in line with "intrusion test"[Chang et al. 09])
  - Need to consider multiple aspects of a topic (e.g., coherent?, meaningful?) and define appropriate measures
  - Need to compare topic models with alternative approaches to solving the same text mining problem (e.g., traditional IR methods, non-negative matrix factorization)
  - Need to create standard test collections