

Challenges and Directions for Future Research (cont.)

- **Challenge 5: How can we incorporate linguistic knowledge into topic models?**
 - Most current topic models are purely statistical
 - Some progress has been made to incorporate linguistic knowledge (e.g., [Griffiths et al. 04, Wallach 08])
 - More needs to be done
- **Challenge 6: How can we incorporate more sophisticated supervision into topic modeling to maximize its support for user tasks?**
 - Current models are mostly pre-specified with little flexibility for an analyst to “steer” the analysis process; need to develop a **general analysis framework** to enable an analyst to use multiple topic models together to perform complex text mining tasks
 - Need to combine topic modeling (as a generative model for feature learning) with **deep learning** to optimize task support