

# Spoken Dialogue Systems: Challenges, and Opportunities for Research

Jason D. Williams

*AT&T Labs – Research*

*Shannon Laboratory, 180 Park Ave., Florham Park, NJ 07932, USA*

`jdw@research.att.com`

## **Abstract**

Research into spoken dialog systems has yielded some interesting results recently, such as statistical models for improved robustness, and machine learning for optimal control, among others. What are the basic ideas behind these techniques? What opportunities do they exploit? Are they ready to be deployed in real systems? What remains to be done?

This talk aims to tackle these questions. First, the task of dialog management and its challenges will be reviewed, including the effects of ASR errors; the curse of history; the lack of a single optimization metric; and the theory of mind problem. Next, current solutions to these problems will be addressed, focusing on learnings from real deployed systems, particularly in industry.

Though relatively pervasive, current practices in industry still yield systems with important flaws. Recently, the research community has attempted to advance the state-of-the-art with techniques such as statistical models, machine learning, simulation, and incremental processing. This talk will present the basic ideas of some of these techniques, and examine their prospects for success in real applications - in light of both pragmatic commercial constraints, and also more fundamental properties of dialog. Finally, opportunities for further progress will be suggested.