

**Seamless Natural Communication between Humans and Machines**  
**Zhou Yu, Columbia University**

Dialog systems such as Alexa and Siri are everywhere in our lives. They can complete tasks such as booking flights, making restaurant reservations, and training people for interviews. However, currently deployed dialog systems are rule-based and cannot generalize to different domains, let alone flexible dialog context tracking. We will first discuss how to design studies to collect realistic dialogs through a crowdsourcing platform. Then we introduce a dialog model that utilizes limited data to achieve good performance by leveraging multi-task learning and semantic scaffolds. We further improve the model's coherence by tracking both semantic actions and conversational strategies from dialog history using finite-state transducers. Finally, we analyze some ethical concerns and human factors in dialog system deployment. All our work comes together to build seamless natural communication between humans and machines.