

Natural Language Dialogue Group

The primary goal of the ICT Natural Language Dialogue Group is to create computational models of purposeful communication between individuals. These models can be used for analyzing the structure and content of human conversation and to create artificial agents who can engage in human-like interaction with people and other agents. The group has research and development expertise in a range of enabling areas, including dialogue systems, spoken and natural language understanding, dialogue management, natural language generation, speech synthesis, and evaluation of dialogue systems.

Selected Research Topics

Typology of Dialogue Genres – We investigate a broad range of dialogue situations, which differ in the content, structure and meanings expressed, as well as the roles, relationships and individual and joint purposes of the participants. We have created virtual agents who act as interviewers, interview subjects, collaborative partners, training exercise role players, and non-cooperative negotiators. We also examine the best performing algorithms and system architectures for each of these genres.

Incremental Dialogue – We create models of dialogue that allow understanding and response to a person’s utterance as they are still speaking, which reduces overall processing latencies and allows richer and more human-like feedback.

Machine Learning for Dialogue - We make use of a variety of discriminative and generative models for natural language understanding, as well as reinforcement learning for dialogue management.

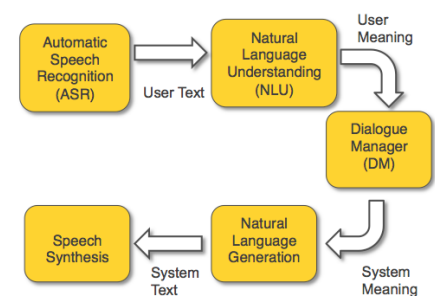
In addition, the group collaborates with others at ICT and elsewhere on integrated virtual humans, and transitioning natural language dialogue capability for use in training and other interactive applications. Sample applications include:

The Twins – Ada and Grace are life-sized virtual humans who have been at the Boston Museum of Science since 2009, answering questions from visitors about the museum and their technologies and their personal backgrounds.

SimCoach – a web portal where veterans can anonymously communicate with a virtual human about PTSD and find helpful resources.

INOTS – an educational platform, where Navy officers can practice active listening skills.

At the University of Southern California Institute for Creative Technologies leaders in artificial intelligence, graphics, virtual reality and narrative advance low-cost immersive techniques and technologies to solve problems facing service members, students and society.



Learn more at projects.ict.usc.edu/nld/group.