

# Summary on Towards Conversational Human-Computer Interaction

## *Contributions*

This paper presents a series of issues in Human-Computer dialogue modeling throughout the development of the spoken dialogue system in University of Rochester (TRIPS). The authors view “dialogue” as a cooperative problem-solving process between human and computer rather than a anticipating process to control or restrict the interaction.

The paper starts with a Dialogue type and complexity table, which listed different techniques of dialogue modeling method in order of complexity, which are finite-state script, frame-based, sets of contexts plan-based models and Agent-based Models.

By proposing two hypotheses, namely Practical Dialogue Hypothesis and Domain Independence Hypothesis, they are trying to build a generic dialogue system that can be adapted to any concrete task.

While the issues/challenges for dialogue systems are identified as parsing language in practical dialogues, integrating dialogue and task performance, intention recognition and mix-initiative.

In especial, semantic restriction (semantic type?) can be applied to parsing process, while it has limitation for being not generic, as a result, feature-based augmented context-free grammar with semantic restrictions is applied in TRIPS.

In order to answer the second issue, the author proposed an abstract problem-solving model, which includes four concepts Objectives, Solutions, Resources, and Situations. And every utterance in the dialogue will be interpreted as a manipulation on these aspects. This facilitates an easy way to model domain-specific task.

For intention recognition the authors suggest to use a two-stage process to lower computation cost.