

Balancing transactions in practical dialogues

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Abstract. In this paper a theory of dialogue acts analysis in problem-solving tasks-oriented conversations is presented. The theory postulates that in practical dialogues every transaction has a component in the obligations and the common ground planes of expression, and contributions made by dialogue acts making a “charge” in the transaction should be “balanced” by contributions making the corresponding “credit”, and a complete transaction is balanced in both of these planes. In addition, transactions have a structure which constrains strongly the realization of dialogue acts. A dialogue act tagging methodology based on the theory is also presented. The theory and its related methodology have been applied to the analysis of a multimodal corpus in a design task, and the figures of the agreement reached in the preliminary experiments are presented.

1 Introduction

In this paper a theory for the analysis of dialog acts in practical dialogs is presented. In this theory dialogues acts are analyzed in relation to the obligations and common ground structures of task oriented conversations, and we provide an explicit analysis and tagging methodology for these two dialogue structures. According to Allen et al. [1], practical dialogues have the purpose to achieve a concrete goal, and the conversational competence required to engage in this kind of dialogs is significantly simpler than general human conversation (i.e. the practical dialogue hypothesis) and the main aspects of language interpretation and dialogue management are domain independent (i.e. domain independence hypothesis). Simple dialogues can be reduced to achieve a single goal and involve only one transaction, but often the dialogue involves a sequence of transactions. From the empirical study of a corpus in the kitchen design domain we suggest that transactions are also characterized in terms of an intention specification phase, followed by the intention satisfaction phase, and the structure of the dialogue is closely related to the structure of the problem-solving task, and in this regard, our approach loosely resembles Grosz and Sidner’s discourse theory [7]. We also postulate the hypothesis that transactions can be analyzed in terms of their conversational obligations and common ground structures, and that complete transactions