Modeling Conflicts in Multi-part Dialogue

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Abstract

We will propose a model to predict conflicts for multi-part dialogue. Conflicts are disagreements between two or more people. It includes task, process, and relationship conflicts.

1 Introduction

Conflict is defined as disagreement between two or more people (Paletz et al., 2011). In this paper, only short-term conflicts are considered. In other words, conflicts happen only in minutes but not a couple of days and not even longer.

The conflicts can be categorized by task, process, and relationship type (Jehn, 1995; Jehn, 1997). Linguistic researchers have argued that task conflict, under certain circumstances, can be beneficial, particularly for innovation (Jehn, 1997; West, 2002), whereas relationship and process conflict should hurt performance (Jehn, 1997).

Modeling conflicts in dialogues can be benefit to team development, dialog understanding, dialog managment, etc. Conflicts in general can also help credibility-based summarization (Kaneko et al., 2009).

2 Related Work

Bracewell et al. (2012) classified 11 social acts including agreement and disagreement on social medial based on gappy patterns with 50.4% f-measure. A gappy pattern consists of one or more words in between which there can exist gaps, or wildcards, which match any word. Acturally, the disagreement in this paper is not exactly as the same as conflict. Disagreement Act is defined as "statements a group member makes to indicate that he/she does not share the same view about something another member has said or done". Conflict should also include the relationship conflict act defined as "personal, heated disagreement between individuals".

Classifying agree/disagree opinions in conversational debates using Bayesian networks was presented in (Galley et al., 2004) based on adjacency pairs features.

Agree/disagree classification is formulized as a max cut problem in (Murakami and Raymond, 2010) for online debates.

Paletz et al. (2011) presented an extensive work on coding conflicts in natrual multi-part dialogues.

3 The Corpus

We are going to use the Eng data (Jang and Schunn, 2012; Friedberg et al., 1990), collected in University of Pittsburgh. It is a collection of natural dialogues among teams of college undergraduates working on their semester-long product design projects. The conversations involve 2-6 individuals. Most of the students were engineering majors (e.g., electrical, mechanical, and industrial), but some teams also had marketing students as members.

Among 45687 uttrances, 1401 of them are annotated as conflict. The conflict level is "low" or "high". Their counts are shown in Table 1.

The distribution of types of conflict is shown in Table 2.

Examples of conflicts are shown in Table 2.

type	Task	Process	Relationship	Off task	Off topic	Unknown
#	755	462	98	66	18	2

Table 2: Distribution of types of conflict in the Eng corpus

Speaker	Utterance	Conflict?	Level	Type
1	You never know, they are-	1	hi	Task
4	They are catching up,	1	hi	Task
4	But I doubt it.	1	hi	Task
4	Can you crank out a couple things tonight?	0		
1	No	0		
4	Homework?	0		
1	No	1	low	Process
4	Ok well the answer to the question is this is connected to that	0		
4	and I'm not holding that	0		
4	and that's another person who's [?]	0		
1	For what	0		
4	You're insane -	1	hi	Relationship

Table 3: Three examples of conflicts

Hi	Low	Unknown
1149	197	55

Table 1: number of conflicts and conflict level in the Eng corpus

4 Data Preprocessing

5 Methodology

5.1 Classification Model

Features I will use:

- Ngram
- Negative/Positive

5.2 Sequence Labeling Model

5.3 Event-Graph Model

6 Future Work

Relying only on transcriptions might not be very good for this problem. During the annotation, for over half the dataset, coders listen while watching. The latter definitely changed perceived conflict a little. In the annotation, the coders are also told that "if you are unsure and/or curious, be sure to watch/listen to the video. Watch for body language gestures, facial expression; listen to vocal changes, tone, etc."

7 Timeline

Sep 09 - Sep 22

- survey the related work regarding role recognition
- understanding the data, know how to extract and use the data

Sep 23 - Oct 20

- implement the method in using the manual transcription, the lexical model will be used as the local model
- do Automatical Speech Recognition (ASR)
- run the local model on ASR results

Oct 21 - Nov 9

- implement ILP global model, using the manual speaker segmentation

Nov 10 - Dec 12

- propose a model without the manual speaker segmentation
- try other global model such as Bayes network, improved social network

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