Developing a Typology of Dialogue Acts: Question – Answer Adjacency Pairs in Estonian Information Dialogues

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Abstract

Estonian dialogue corpus includes 320 spoken dialogues. We have worked out a typology of dialogue acts and are using it for annotating of the corpus. In this paper, we give an overview of the typology. The second part of the paper is based on the analysis of information dialogues. Most frequent question and answer types and typical sequences of questions and answers are found out with the purpose to model questioning – answering strategies in a dialogue system.

1 Introduction

The Estonian Dialogue Corpus (EDiC) includes 320 spoken dialogues, among them 205 calls and 115 face-to-face conversations, with total length of 80 000 running words.

We have worked out a typology of dialogue acts and use it for annotating our corpus (Hennoste et al., 2003). Our goal is to develop a dialogue system that will be able to interact with a user in Estonian and provide him/her some information, following norms and rules of human-human communication. This is the reason why we are studying human-human spoken dialogues. For this paper, we have chosen 101 information dialogues (calls for information, to travel bureaus, shops and outpatients' departments), and analyze the question – answer adjacency pairs (APs), the most important dialogue acts in information dialogues.

2 The EDiC Typology of Dialogue Acts

Our typology departs from the point of view of conversation analysis (CA) that focuses on the techniques used by people when they are actually engaged in social interaction (Hutchby and Wooffitt, 1998). The main idea behind the analysis is that conversation is the collaboration of participants based on three mechanisms: turn taking, repair, and APs. An advantage of this approach is that CA departs from empirical data, i.e. it tries to find out explicit markers in the text that allow to determine utterance functions.

Based on the principles of CA we get the following main typology of dialogue acts.

1. Adjacency pair (AP) acts
1.1. Dialogue managing acts
Fluent conversation
1) Conventional (greeting, thanking, etc.)
2) Topic change
Solving communication problems
3) Other-initiated self-repair
4) Contact control
1.2. Information acts
5) Directives (request, proposal, giving information, etc.)
6) Questions and answers
7) Opinions
2. Non-AP acts, or single acts
2.1. Dialogue managing acts
Fluent conversation
8) Conventional (contact, recognition, etc.)

9) Responses (continuer, acknowledgement)
Solving communication problems
10) Self-repair
2.2. Information acts
11) Primary single acts (advance note, promise, etc.)
12) Additional information (specification, explication, etc.)

The total number of dialogue acts is 126 in our typology. Act tokens are originally in Estonian.

3 Questions and Answers

There are three question types that depend on the expected reaction:
- questions that expect giving information: wh-question, open yes/no question
- questions that expect agreement/refusal: closed yes/no question, question that offers answer
- questions that expect the choice of an alternative: alternative question.

Open and closed yes/no question have similar form but they expect different reactions from the answerer (e.g. *Are you open in winter?* expects the answer *yes* or *no*, but by asking *Is there a bus that arrives in Tallinn after 8?* the questioner wants to know the departure times of buses). Open yes/no question is actually an indirect speech act – a request or wh-question that is expressed in form of yes/no question.

Our analyzed dialogues include 649 question tags: 233 wh-questions, 177 questions offering answer, 111 open and 81 closed yes/no questions, 27 alternative questions. The remaining 20 questions belong to the sub-type 'other'.

Different question types are used differently by participants. Most of the questions were asked by the client: 90% of open yes/no questions, 84% of closed yes/no questions, 77% of wh-questions, 66% of questions offering answer, and 52% of alternative questions. Wh-questions, open and closed yes/no questions are mostly used for topic initiation or continuation (74%, 92% and 73% of cases, respectively). Most of questions offering answer (60%) initiate repairs.

A typical information dialogue includes three parts: the conventional beginning, main information part, and conventional ending. The kernel of the information part is a question – answer adjacency pair: a question is asked and an answer is got. We have found three typical questioning – answering strategies in our dialogues.

Strategy 1. Client asks a question and gets a desirable answer. Two sub-types can be differentiated.

a) Client asks a wh-question or open yes/no question and gets the requested information (cf. Example), or (s)he asks an alternative question and gets one alternative as answer, or (s)he asks a closed yes/no question and gets answer *yes* or agreeing *no*.

Example (CA transcription used):
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Client: (.) ei tea mis kellast
doktor Laane vastu võtab.   WH-
QUESTION
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what is doctor Laane's reception time
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Officer: e kella neljateistkümnest
seitsmeteistkümneni.=  GIVING
INFORMATION
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from two to five p.m.

b) Client asks a wh-question or open yes/no question and gets the asked information, like in the previous case, but after that (s)he initiates a repair. The typical repair initiation is repeating a phone number.

Strategy 2. Client gets an undesirable answer (information is missing). Such cases are seldom in our analyzed dialogues, it is difficult to find out a preferred strategy.

Strategy 3. The officer initiates an inserted sequence before answering (a repair or a question adjusting the conditions of the answer).

4 Further work

Our further work will concentrate on finding out of more communicative strategies and on formal definitions of dialogue acts that make it possible automatic recognition of user's goals in a cooperative dialogue system.

References

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