Abstract. Estonian phone calls to travel agencies are analyzed with the further aim to develop a dialogue system. The analysis is based on the Estonian Dialogue Corpus. Customers’ initial requests introduce a topic or check the competencies of the official, and they have to be adjusted in a following information-sharing sub-dialogue. Information is given briefly, using short sentences or phrases. A collaborative travel agent offers substituting information or action if s/he is unable to fulfill the customer’s request. A dialogue system is being developed which gives travel information in Estonian. Ready-made sentence patterns are used in the current version for granting the users’ requests. Our study will help to make the grants more natural.

Keywords: Dialogue system, corpus analysis, request, grant, Estonian.

1 Introduction

There are many dialogue systems (DS) which interact with a user in natural language giving information or helping to perform practical tasks [1,2]. Dialogue corpora have been collected and used for studying human-human spoken communication in order to model it in a DS (Switchboard, Verbmobil, BNC, etc.).

Our goal is to develop a DS that performs the role of an information agent interacting with a user in Estonian. For this reason, we are studying Estonian human-human institutional calls in order to explain how a customer makes his/her requests, how the requests are further processed in collaboration of participants, linguistic means used by participants in conversation, the general structure of institutional calls, etc. Our further aim is to implement a DS which follows norms and rules of human-human communication. In a previous paper [3], customers’ requests were analyzed in Estonian spoken human-human dialogues with the aim to find out the linguistic cues that can be used for their automatic recognition. In this paper, we will study the officials’ grants to the customers’ directive acts.

The paper is organized as follows. In Section 2 we give an overview of our empirical material – the Estonian Dialogue Corpus and the dialogue act typology used for annotation of the corpus. Section 3 is dedicated to the corpus analysis. Different types of customers’ directives and agents’ reactions are considered. Section 4 discusses some...
results of the corpus analysis which will be implemented in an experimental DS. In Section 5 we will make conclusions.

2 Corpus and Dialogue Act Typology

Our current study is based on the Estonian Dialogue Corpus (EDiC) [4]. The corpus contains over 1,100 authentic human-human spoken dialogues, including about 1,000 phone calls. Dialogue acts are annotated in the corpus. A DAMSL-like typology of dialogue acts is used for annotation [5]. Our typology is influenced by the conversation analysis (CA) [6] that focuses on the techniques actually used in social interaction. According to CA, some dialogue acts form adjacency pairs (AP) where producing the first pair act makes the second one relevant (e.g. a request requires a grant). In naturally occurring talk some violations of the norm are possible: the grant may come in overlap with a request end or after a clarifying insertion sequence. Still, the second pair part remains relevant if it is not produced in the next turn. The computer as a dialogue participant must be able to differentiate the first part of an AP (which is expecting a response) from acts that do not require particular responsive actions (non-AP acts).

Acts are divided into nine groups in our typology. The overall number of dialogue acts is 127 (90 AP acts, 37 non-AP acts). Names of dialogue acts consist of two parts separated by a colon: 1) the first two letters give abbreviation of the name of an act-group, e.g. DI – directives, QU – questions, AI – additional information acts. The third letter is used only for AP acts – the first (F) or the second (S) part of an AP act; 2) full name of the act, e.g. DIF: Request, DIS: Giving information, AI: Specifying.

In this paper, we will consider directive APs. Their possible first parts are request, proposal and offer in our typology. Request expresses author’s need or intent to get information or to release an action of the partner. Giving information or missing information is a suitable reaction to information request (Ex 1, C – customer, A – travel agent; transcription of CA is used in examples). Agreement or refusal to do an action is a suitable reaction to action request.

(1)
C: sooviks ’Norrasse sõita. DIF: REQUEST
I would like to travel to Norway.
A: ää=ee DIS: OTHER
uh
C: ’jõu-lude ajal. AI: SPECIFICATION
in Advent.
A: ei, kahjuks meie ei=tee sinna sellel=ajal ’reise. DIS: MISSING INFORMATION
no, unfortunately, we do not organize trips there at that time

Proposal and offer (to do an action) expect an agreement or refusal in response (Ex 2). In the first case action will originate from partner (proposal: call me later) and in the second case from author (offer: I’ll call you later).