Pragmatic and linguistic analysis of Italian human-machine dialogues in C-ORAL-ROM

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Within my doctoral research, from December to February 2013 I spent a period of study at the Laboratorio de Linguistica Informatica. During this period I pursued a survey on the Italian corpus of human-machine interaction (collected in the C-ORAL-ROM project, starting from the work on the equivalent Spanish corpus by GONZALEZ-LEDESMA – MORENO-SANDOVAL 2005), in which authors have identified «two clearly different approaches: the caller behaves as it was a human-to-human conversation, with failure; the caller behaves as he/she was talking to a machine. This results in success». In my work I have tried to link the two different behaviours (and the linguistic consequences related) to the initiative management in order to isolate potential users' models, with possible applicative implications.

The corpus analyzed consists of 46 conversations between speakers (39 women and 7 men) and automatic train timetable information, designed for the corpus C-ORAL-ROM. The dialogues have an average of 23.5 turns and a success rate of 60% (29 of 46).

The system is a mixed initiative, thus allows the speaker to take the initiative, not forcing him to answer exclusively the questions of the system. The mixed initiative is usual in the interactions between people (WALKER – WHITTAKER 1990): therefore, the first step has been to verify the real use of the initiative by the speaker in a situation of man-machine dialogue.

In more than a half of the dialogues (26), initiative always remains in the hands of the system, making the conversation more like interacting with a graphical interface than with an interlocutor. In the remaining 20 dialogues the speaker takes the initiative at least once (up to the maximum of 9 times encountered in only one dialogue) in order to correct the system after a confirmation request, to ask for clarification about an output not completely intended, to provide more information than explicitly requested by the system, to open a new task or to close the interaction.

Therefore the corpus has been divided into two sub-corpora (one consisting of the dialogues without initiative and one consisting of dialogues with at least one turn user-initiative) to verify the correlation between linguistic surface and pragmatic strategies and the initiative management. The division can be considered conventional, especially for the merging of all the dialogues with at least one turn user-initiative, a sub-corpus constitutionally more heterogeneous with respect to the sub-corpus without initiative. Unfortunately, the size of the corpus do not allow the adoption of thinner filters as regards the study of the behavior in the face of various degrees of initiative by the user.

The sub-corpus without initiative (57.7% success rate) shows a small amount and variety of microsyntactic constructions and grammatical elements, while are preferred elliptical constructions without a verb; macrosyntactic constructions also miss and, from a pragmatic-textual point of view, discourse markers and anaphoric pronominal elements are not present. If an error occurs, it is generally preferred the complete repetition of the turn.

The initiative sub-corpus (70% success rate) shows a greater amount and variety of microsyntactic constructions and grammatical elements; elliptical constructions are present but they alternate with full constructions (with verb); there are also macrosyntactic constructions and anaphoric pronominal elements. If an error occurs, in addition to the complete repetition of the turn misunderstood by the system, the speaker frequently changes the structure of the request: simplifying construction, making it explicit, using synonyms or aligning the construction to system's construction (*alignment*, BRANIGAN ET AL. 2003 and BRANIGAN ET AL. 2006).

The Italian corpus shows on the one hand an approach "without initiative" very homogeneous: the speaker never changes strategies and probably idea about the system; on the other hand we have a more heterogeneous behavior and an higher propensity to change strategies to meet the system. The results meet those of GONZALEZ-LEDESMA – MORENO-SANDOVAL 2005, where, the two types of behaviour identified (human-like and machine-like) can be formalized with the analysis of the use of the initiative by the user: 13 dialogues have no turn with initiative by the human speaker (machine-like behaviour), while 28 have at least

one turn of initiative, reflecting a behavior more similar to mixed initiative, typical of conversations between people.

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