Interpretation of User Utterances

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Abstract: In this work we deal with the interpretation methods of speech utterances. We describe the very basics of interpretation theory as well as the classic approach to perform interpretation. After that we suggest an alternative method based on modern knowledge in artificial intelligence. We describe main points of that methodology; show its advantages, draw-backs and successfulness in selected restricted domain.

Actually, what does the interpretation mean? We can simple imagine it as an interface between system knowledge base and its environment. In the linguistic context it has to use the same (or similar) cognitive actions as human would do to understand the utterance.

The knowledge in our approach is stored in concept dependency structure. Our solution of interpretation problematic consists in distribution of the responsibility for utterance interpretation among autonomous classes called concepts. If the concept is leaf (in the dependency structure), it processes its data (adds implicit knowledge, transforms its representation form e.g. from string to number etc.). If it is upper in the structure the concept is responsible for linking the knowledge of its direct constituents (dependent concepts, exactly one step lower in the dependency structure) and for derivation of new knowledge from this conjunction.

In the contrary to common approach we use combination of procedural and declarative knowledge representations. The rules are written in procedural language (Java) but concepts can use many services of dependency structure (the declarative part). We developed the object orientated framework which significantly eases the interpretation.

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