Master Thesis Proposal: Automatic analysis of Swedish prepositional phrases

Dana Dannélls

2018-10-15

1. **Goal**: Automatic recognition and annotation of Swedish prepositional phrases (PPs) using the Swedish FrameNet.

2. **Background**: Humans can easily understand the meaning of a written sentence, however, this is by far not a trivial task for computers. Take for example the following sentences:

   (a) John eats pizza with a knife.
   (b) John eats pizza with olives.

   We know that the preposition phrase [with a knife] should be attach to the subject John, while the preposition phrase [with olives] should be attached to the object pizza. If we want a computer to make the same interpretation it might be sufficient to have access to the semantic value of the preposition phrases, that is, knife is TOOL and olives is FOOD.

   There are evidence showing that a computer can make the same interpretation if it has access to the semantic value of knife is TOOL and of olives is FOOD.

   We need to argument it with semantic information, in this case the computer needs to know that the semantic value of knife is TOOL and of olives is FOOD. A valuable resource for assigning correct semantic value to a PP is a lexical-semantic database such as FrameNet. Some work on English has shown that FrameNet information can be valuable for assigning correct semantic value to a PP. But this hypothesis have been been tested for Swedish.

   For a computer it can be sufficient to know

   A side effect of this work is to increase the database.
3. **Project description:** In the project, the student(s) would call on the Swedish FrameNet and examine whether this resource can be used for identifying and annotating prepositional phrases with their semantics.

4. **Recommended knowledge and skills:** The project requires basic knowledge of the Swedish language, and knowledge of some programming language, familiarity with machine learning is a plus.

5. **Supervisors:** The work would be supervised by Dana Dannélls, Språkbanken and possibly others from either Språkbanken or the Department of Computer Science and Engineering.

6. **References:**
