Frank Richter: Grammatikformalismen für die Computerlinguistik

Aufgabenblatt 4

Exercise 1. [3 points] Write up the following simple abstract feature structures, where A_1 , A_2 and A_3 are the examples from pages 58–59 of *Grammar Formalisms and Parsing*, by stating their basis set, their re-entrancy relation and their label function:

- 1. A_1 /LIKES-BEST (the LIKES-BEST reduct of A_1),
- 2. \mathbb{A}_2 /OWNER (the OWNER reduct of \mathbb{A}_2),
- 3. A_3 /LIKES-BEST (the LIKES-BEST reduct of A_3 .)

It might be useful to start with drawing the corresponding concrete feature structures in MoMo and then to think about their abstract counterparts.

Exercise 2. [4 points]

(a) We presuppose the signature of lists and animals first given in Section 2.1.2. How many simple abstract feature structures satisfy the following description?

pet, color:~green.

Create a MoMo file with an interpretation window that contains (MoMo counterparts of) all these feature structures. Using the link http://milca.sfs.uni-tuebingen.de/A4/Course/Momo/mmps/Section231/non-green-pets231.mmp
you may download an mmp file that already contains the necessary signature.

(b) How many simple abstract feature structures satisfy the following description?

pet *> color:~green.

Add three examples to your mmp file (in a second interpretation window).

Exercise 3. [4 points] Translate the SPEC PRINCIPLE, page 65, and the CONTROL THEORY, page 67, into our syntax of descriptions (under Pollard and Sag's signature).

Recall that MoMo does not use the symbols \exists and \forall as quantifier symbols, since they do not belong to the standard symbols of keyboards. \exists is written as \uparrow , and \forall is written as V (capital V). $\exists X$ thus becomes $\uparrow X$ and $\forall X$ is written as VX. Following the conventions of the Prolog computer language, variables are written with an initial capital letter and may consist of strings of letters. Some examples for variables in MoMo are: H, Z, W, Head, Color.

Please test the well-formedness of your translations in MoMo on the basis of an adequately large fragment of the signature of Pollard and Sag in MoMo. For the

purpose of this exercise, we have prepared an mmp-file,

http://milca.sfs.uni-tuebingen.de/A4/Course/Momo/mmps/Section231/signature-fragment231.mmp that already contains the necessary fragment of Pollard and Sag's signature for downloading. You may notice that Pollard and Sag use sorts of the shape *list(synsem)* (so-called "parametric sorts"). For simplicity, we leave out the specification in brackets for now. Instead of "*list(synsem)*", we write "*list*".