Assignments for Syntactic and semantic parsing for natural language understanding 2017

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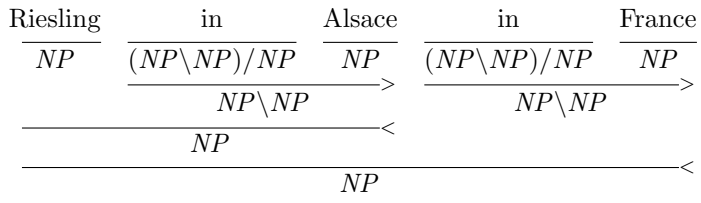
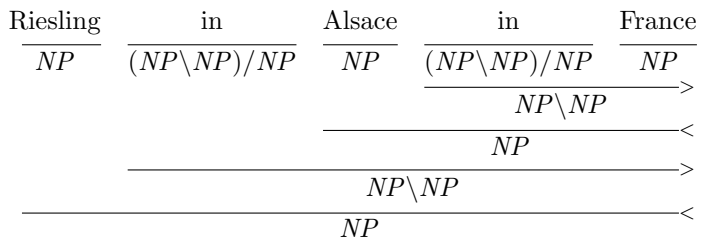
1 Submission

- Report due: January 31, 23:59 (JST)
- Format: Electronic file (pdf in A4 format)
- Language: English or Japanese
- Details: Send an e-mail attaching a pdf file to `noji@is.naist.jp`. The file can be generated either by scanning hand-written papers, or by some softwares such as LaTeX and Word. The last section shows some hint to produce a CCG derivation on TeX (Using TeX is **not** obligatory).
- Contact: If you have any questions, visit A705 **after** contacting with me by an e-mail.

2 Problems



(a) One derivation.



(b) Another derivation.

As in the above figure, the phrase "Riesling in Alsace in France" can be analyzed in two different ways. Now answer the following questions.

Q1. Let us assume we have lexicon in Figure 1. Then, what is the logical form for the analysis of (b)? (Hint: The logical form of (a) becomes $in(in(R', A'), F')$.) (60 points)

Q2. There is another derivation from the supertag assignments of (a) and (b). Find and depict it. (Hint: use a composition rule) (20 points)

Q3. The logical form of the third derivation found in Q2 would be the same as the one of (a) or (b). Which one? Answer (a) or (b). (20 points)

Riesling	NP	R'
in	$NP\backslash NP/NP$	$\lambda x.\lambda y.in(y,x)$
Alsace	NP	A'
France	NP	F'

Figure 1: Lexicon. Tuples of (word, CCG category, logical form).

3 Producing CCG derivations on TeX

There are several LaTeX library for depicting a CCG derivation. The following style file is an example.

`https://github.com/jasonbaldridge/cg-latex/blob/master/ccg.sty`

Using this, the first CCG derivation on this file is generated with the following command:

```
...
\usepackage{ccg}
...
\begin{figure}[h]
\deriv{5}{
{\rm Riesling}&{\rm in}             &{\rm Alsace}&{\rm in}         &{\rm France} \\
\uline{1}     &\uline{1}            &\uline{1}   &\uline{1}        &\uline{1}    \\
\it NP        &\it (NP\bs NP)/NP    &\it NP      &\it (NP\bs NP)/NP&\it NP       \\
              &\fapply{2}           &\fapply{2}                                    \\
              &\mcc{2}{\it NP\bs NP}&\mcc{2}{\it NP\bs NP}                        \\
\bapply{3}                                                                       \\
\mcc{3}{\it NP}                                                                  \\
\bapply{5}                                                                       \\
\mcc{5}{\it NP}                                                                  \\
}
\end{figure}
```