

Maschinelles Übersetzen natürlicher Sprachen

8. Übungsblatt

2015-12-10

Aufgabe 1

Consider the following probabilistic regular tree grammar with start symbol S .

$$\rho_1: S \rightarrow \sigma(A, S) \quad \# 1/2$$

$$\rho_2: S \rightarrow \beta \quad \# 1/2$$

$$\rho_3: A \rightarrow \gamma(A) \quad \# 1/2$$

$$\rho_4: A \rightarrow \gamma(S) \quad \# 1/4$$

$$\rho_5: A \rightarrow \alpha \quad \# 1/4$$

Calculate the inside and outside weights of A and S .

Aufgabe 2

Consider the following probabilistic regular tree grammar.

$$\rho_1: S \rightarrow \gamma(S) \quad \# q$$

$$\rho_2: S \rightarrow \alpha \quad \# 1 - q$$

Calculate the inside and outside weight of S . Show that the expected count of a rule ρ in a derivation of this grammar is $out(A_0) \cdot p(\rho) \cdot \prod_{i=1}^k in(A_i)$ where $A_0 \rightarrow \sigma(A_1, \dots, A_k) = \rho$.