Example: A∗ -Parsing

Consider the PCFG G = {N,T,P,S,p} with N = {S,A,B}, T = {a,b} and

P = {   0,3 S → AB (0,52)

0,7 S → BA (0,15)   Inside estimates:

0,1 A → AS (1)

0,9 A → a (0,05)

0,6 B → BS (0,22)

0,4 B → b (0,40)}.

S	∞	0,6	∞	1,42	…
A	0,05	∞	1,65	∞	…
B	0,40	∞	1,22	∞	…
	1	2	3	4	…

Outside estimates for n=4.

L = 4

Out(S,0,4,0) = 0

Out(A,0,4,0) = ∞

Out(B,0,4,0) = ∞

L = 3

Out(S,1,3,0) = min{1+ 0.05 + ∞} = ∞

Out(S,0,3,1) = ∞

Out(A,1,3,0) = min{0.15+0.4+0} = 0.55

Out(A,0,3,1) = min{0.52 + 0.4 + 0} = 0.92

Out(B,1,3,0) = min{0.52 + 0.05 + 0} = 0.57

Out(B,0,3,1) = min{0.15 + 0.05 + 0} = 0.2

L=2

Out(S,0,2,2) = ∞

Out(S,1,2,1) = min{1+0.05+0.92,0.22 +0.4 + 0.2}=0.82

Out(S,2,2,0) = min{0.05 + 1 + 0.55} = 1.6

Out(A,0,2,2) = ∞

Out(A,1,2,1) = ∞

Out(A,2,2,0) = ∞

Out(B,0,2,2) = ∞

Out(B,1,2,1) = ∞

Out(B,2,2,0) = ∞

L = 1

Out(S,0,1,3) = ∞

Out(S,3,1,0) = ∞

Out(S,2,1,1) = ∞

Out(S,1,1,2) = ∞

Out(A,0,1,3) = min{0.52+1.22+0, 0.52+ 0.4 + 1.6}= 1.74

Out(A,3,1,0) = min{0.15+1.22+0} = 1.37;

Out(A,2,1,1) = min{0.4 + 0.15 +0.82, 0.4 + 0.52 +1.6} = 1.37

Out(A,1,1,2) = min{1+0.6+0.55, 0.4 +0.5 +0.82} = 1.72

Out(B,0,1,3) = min{0.15 + 1.65 +0, 0.6 +0.22 +0.2} = 1.02

Out(B,3,1,0) = min{1.65 + 0.52 + 0} =2.17

Out(B,2,1,1) = min{0.05 + 0.52 + 0.82, 0.6 +0.22 +0.57} = 1.39

Out(B,1,1,2) = min{0.22 +0.6+0.57, 0.05 + 0.15 + 0.82} = 1.02