

# Parsing Beyond CFG

## Homework 3: TAG Parsing, Abgabe 15.05.2013

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### Question 1 (TAG CYK deduction rules)

*Generalize the CYK algorithm in order to make it work for a TAG which has elementary trees with more than two daughters per node. To achieve this, replace the two deduction rules *MoveUnary* and *MoveBinary* with a single new rule.*

Solution:

Replace the deduction rules **move-unary** and **move-binary** with a single new rule **move-up**:

$$\frac{[\gamma, (p \cdot 1)_{\top}, i_0, f_{11}, f_{12}, i_1], \dots, [\gamma, (p \cdot m)_{\top}, i_{m-1}, f_{m1}, f_{m2}, i_m]}{[\gamma, p_{\perp}, i_0, f_{11} \oplus \dots \oplus f_{m1}, f_{12} \oplus \dots \oplus f_{m2}, i_m]}$$

As a side condition, we require that the node address  $p \cdot (m + 1)$  does not exist in  $\gamma$ .