Computational Linguistics (CL3.101)

Summer 2021, IIIT Hyderabad

28 July, Wednesday (Lecture 27) – Syntax 8

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Semantics (contd.)

Paninian Dependency Parsing (contd.)

Consider the sentence *I prefer the morning flight through Denver.* Here, the verb *prefer* forms the root of the sentence. *I* (with the relation `nsubj`) and *flight* (with the relation `dobj`) are its dependents. Similarly, *the* (`det`), *morning* (`nmod`) and *Denver* (`nmod`) are dependent on *flight*.

Tree-Adjoining Grammar

TAGs focus on exocentric relations (in contrast to rewrite grammars like PSG which handle endocentric relations better).

Rules in a TAG are trees with a special leaf node called the foot node, anchored to a word. There are two kinds of trees: initial (representing basic valency relations) and auxiliary (allowing for recursion).

Formally, a TAG is a 5-tuple $G = (\Sigma, NT, I, A, S)$. Σ is a terminal alphabet and NT is the set of variables. I is a finite set of finite, initial trees; A is a finite set of finite, auxiliary trees. S is a special non-terminal symbol.

The trees in $I \cup A$ are called elementary trees. Trees are combined by adjunction and substitution. Initial trees are elementary trees whose leaves are labelled with non-terminal or terminal categories, while auxiliary trees are those with a designated foot node.