

11-711: Algorithms for NLP

Recitation #6

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Chart Parsing

Here is a small grammar and lexicon for a fragment of English:

Grammar:

- (1) S --> NP VP
- (2) NP --> DET N
- (3) NP --> N
- (4) NP --> NP PP
- (5) VP --> AUX VP
- (6) VP --> V NP
- (7) VP --> V
- (8) PP --> P NP

Lexicon:

- I: N
- can: N, AUX, V
- see: V
- the: DET
- man: N, V
- with: P
- telescope: N, V

1. Construct the set $\text{First}(A)$ for each of the non-terminals in the above grammar.
2. Run the chart parsing algorithm with top-down predictions and ambiguity packing on the first n words of the following sentence, where n is defined as the number of words we get through before recitation ends: I can see the man with the telescope. Keep backpointers to all created parse fragments and show the resulting parse tree or trees at the end of running the algorithm.