Doubling DOP* A comparison of Double-DOP and DOP*

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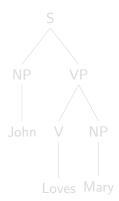
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Parsing

► input: sentence

John Loves Mary

output: constituent tree



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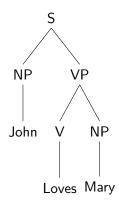
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Parsing

input: sentence

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A grammar describes:

- how trees can be built
 - CFG's elementary rules
 - ► TSG's larger units: fragments
- ▶ how likely constructions are: *probabilistic* grammars
 - ▶ PCFG's independence
 - PTSG's derivations

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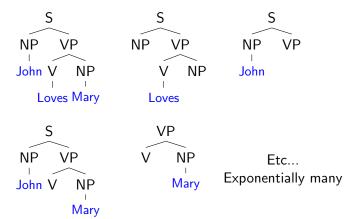
Analyzing grammars

Summary

 $S \rightarrow NP \ VP$ $VP \rightarrow V \ NP$ $NP \rightarrow John$ $NP \rightarrow Mary$

 $V \rightarrow loves$

Grammar: Tree fragments



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Analyzing grammars

- Assumption
 - Language is an infinite parse tree distribution
 - ► Treebank is a finite sample
- Estimate the true distribution
- Expected estimate should get better when the treebank grows → expected loss should decline
- ▶ Consistency: Expected loss is 0 when the sample size approaches ∞

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Double-DOP

Extraction: Maximal Overlap

Estimation: relative frequency

► Coverage: PCFG rules

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► Held-out estimation - HC and EC

Extraction: Shortest derivations

► Estimation: relative frequency in shortest derivations

► Coverage: smoothing PCFG rules with probability p_{unkn}

Double-DOP and

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Comparison

- Shortest derivations or Maximal overlap
- Held-out estimation or one vs. the rest.

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Maximal overlap ↔ shortest derivation

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Split \leftrightarrow one vs. the rest

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F1 scores

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Double-DOP and

Double-DOP and

Summary

Outlook

lines.

- Something you haven't solved.
- Something else you haven't solved.

The first main message of your talk in one or two lines.

► The second main message of your talk in one or two

Perhaps a third message, but not more than that.