

CSCI 5832
Natural Language Processing

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Lecture 12

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Today 2/26

- Syntax
 - Context-Free Grammars
- Review Quiz
- More grammars

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Syntax

- By syntax (or grammar) I mean the kind of implicit knowledge of your native language that you had mastered by the time you were 2 or 3 years old without explicit instruction
- Not the kind of stuff you were later taught in school.

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Syntax

- Why should you care?
 - Grammar checkers
 - Question answering
 - Information extraction
 - Machine translation

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Context-Free Grammars

- Capture constituency and ordering
 - Ordering is easy
 - What are the rules that govern the ordering of words and bigger units in the language
 - What's constituency?
 - How words group into units and how the various kinds of units behave wrt one another

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CFG Examples

- $S \rightarrow NP VP$
- $NP \rightarrow Det NOMINAL$
- $NOMINAL \rightarrow Noun$
- $VP \rightarrow Verb$
- $Det \rightarrow a$
- $Noun \rightarrow flight$
- $Verb \rightarrow left$

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CFGs

- $S \rightarrow NP VP$
 - This says that there are units called S , NP , and VP in this language
 - That an S consists of an NP followed immediately by a VP
 - Doesn't say that that's the only kind of S
 - Nor does it say that this is the only place that NPs and VPs occur

3.2.2.2

Generativity

- As with FSAs and FSTs you can view these rules as either analysis or synthesis machines
 - Generate strings in the language
 - Reject strings not in the language
 - Impose structures (trees) on strings in the language

3.2.2.3

Derivations

- A derivation is a sequence of rules applied to a string that accounts for that string
 - Covers all the elements in the string
 - Covers only the elements in the string

3.2.2.4
