

First half of the course:

- ▶ Introduction (Aug 27–29)
- ▶ Regular expressions (Sept 3–5)
- ▶ Edit distance (Sept 8)
- ▶ Information theory (Sept 10–12)
- ▶ Language models (Sept 15–22)
- ▶ Parts of speech and HMMs (Sept 24–Oct 3)
- ▶ Parsing (**Oct 6–10**)
- ▶ Review (Oct 13–15)
- ▶ Midterm (Oct 17)

Parsing unit:

- ▶ Constituents, parsing, and context free grammars (**Today**)
- ▶ Recursive descent parsing (Wednesday, in lab)
- ▶ CKY parsing (Friday)

Today:

- ▶ Why we care about parsing
- ▶ Grammar and parsing examples
- ▶ Formal definitions
- ▶ Parsing algorithms

Maciano's



At times one of the girls would start a song, the others joining in the chorus, or one would rise and dance, gracefully swaying to the music of a harp played by a companion.

No one I know has ever seen them or heard of them.

The mountain has steep sides and a broad, hollow top, like a basin, and in this basin the Flatheads have their dwellings.

Ozma had many arrangements to make before she could leave her throne and her palace in the Emerald City.

Dorothy wore around her waist the Nome King's Magic Belt, which protected her from harm.

So they turned to the right and, following the web found that it seemed to spread in a regular circle.

So they wandered among the bushes and finally came to a shallow pool of water, formed by a small bubbling spring.

The Mist Maids came nearer, holding out their arms.

Fragrant wild flowers were scattered throughout the grass.

You must realize that while I am a more powerful fairy than any other inhabitant of Oz.

It took them a good two hours to reach the foot of the round, flat mountain.

Dorothy knew at once why these mountain people were called Flatheads.

The book's grammar for $\mathcal{L}_0$, Fig 18.3

Sentence $\rightarrow$ *NounPhrase VerbPhrase*

NounPhrase $\rightarrow$ *Pronoun* | *ProperNoun* | *Det Nominal*

Nominal $\rightarrow$ *Nominal Noun* | *Noun*

VerbPhrase $\rightarrow$ *Verb* | *Verb NounPhrase* |
Verb NounPhrase PrepPhrase | *Verb PrepPhrase*

PrepPhrase $\rightarrow$ *Preposition NounPhrase*

Simpler language:

Sentence → *NounPhrase VerbPhrase*

NounPhrase → *Article Article Noun*

VerbPhrase → *Verb NounPhrase PrepPhrase*

PrepPhrase → *Preposition NounPhrase*

Language for next time

Sentence $\rightarrow$ *NounPhrasePredicate*

NounPhrase $\rightarrow$ *ConcNounPhrase* | *AbsNounPhrase*

ConcNounPhrase $\rightarrow$ *ArticleAdjectiveListNoun*

AdjectiveList $\rightarrow$ *AdjectiveAdjectiveList* | ε

AbNounPhrase $\rightarrow$ *ThatSentence*

(continued...)

Language for next time (continued)

Predicate $\rightarrow$ *VerbPhraseVerbModifier*

VerbPhrase $\rightarrow$ *LinkingVerbPhrase* | *TransitiveVerbPhrase* |
IntransitiveVerbPhrase

LinkingVerbPhrase $\rightarrow$ *LinkingVerbAdjective*

TransitiveVerbPhrase $\rightarrow$ *TransitiveVerbNounPhrase*

IntransitiveVerbPhrase $\rightarrow$ *IntransitiveVerb*

VerbModifier $\rightarrow$ *PrepositionalPhrase* | *Adverb* | ε

PrepositionalPhrase $\rightarrow$ *PrepositionNounPhrase*

Coming up:

- ▶ Do HMMs & POS programming assignment (Wed, Oct 8)
- ▶ Read J&M 18.(0-6). (Mon, Oct 6)
- ▶ Take grammars quiz (Tues, Oct 7)
- ▶ Take CKY parsing quiz (Fri, Oct 10)
- ▶ Do CKY parsing programming assignment (Wed, Oct 15)
- ▶ Take midterm (Fri, Oct 17)