

Unit #1 Summary

LING 570

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Recap: formal grammars and languages

- Formal language and formal grammar
 - Chomsky hierarchy
 - Other grammars and languages
- The following are equivalent:
 - Regular language
 - Regular grammar
 - Regular expression
 - FSA (DFA and NFA)

Recap: FSA and FST

- FST and regular relation are equivalent
- Extension of FSA/FST
 - Probabilistic and weighted FSA
 - FST and weighted FST
- Algorithms:
 - NFA-to-DFA conversion
 - Viterbi algorithm for finding the best path
- Packages: AT&T, Carmel, NLTK
- Applications of FSA / FST:
 - Morphological analyzer
 - ASR
 - ...

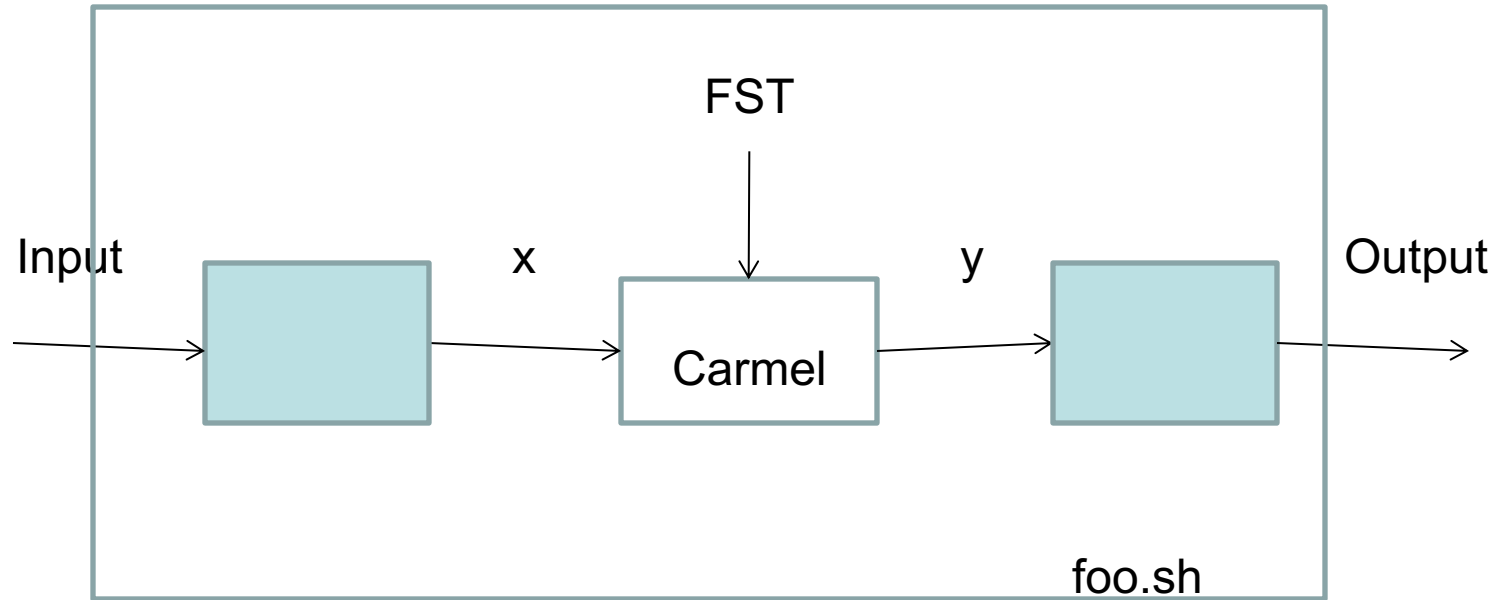
Recap: morphological analysis

- Three components:
 - Lexicon: book is a “regular” noun, -s is a PL suffix
 - Morphotactic rules: PL follows nouns
 - Orthographic rules: e-insertion, e-deletion

An example

- Task: foxes → fox +N +PL
- Surface: foxes
 - ↑ Orthographic rules
- Intermediate: fox s
 - ↑ Lexicon + morphotactics
- Lexical: fox +N +pl

Carmel



Input: w1 w2 w3 ... wn

x: "w1" "w2" "w3" "wn"

Output: w1/tag1 w2/tag2 ... wn/tag

Input: cuts

x: ???

Output: cut/irreg s/3sg