

Foundations of Language Science and Technology

Exercises Finite State Tools for Morphology

1 Automaton Construction

Construct an automaton for the following regular expression:

$ab(ab)^*(ba|\epsilon)$

Try to build the automaton such that it contains only one final state or no epsilon transition. Can you do both?

2 Union of automata

Given two automata with start states q_{s0} , q_{s1} and final states q_{f0} , q_{f1} , try to construct an automaton that recognizes the union of the languages of the original automata, using new states and ϵ transitions.

3 e-Insertion Transducer

For which pair below say which state the e-insertion transducer finishes in and whether it accepts or rejects the pair

1. `aardvark#:aardvark#`
2. `aardvark^s#:aardvarks#`
3. `aardvark^s#:aardvarkes#`
4. `boss^s#:bosses#`
5. `boss^s#:boss#`
6. `fizz^s#:fizzes#`
7. `fizz^s#:fizzes#`
8. `fizz^ing#:fizzing#`

4 Consonant Doubling Transducer

Construct a transducer for consonant doubling before -ed and -ing, like in *beg / begging*
