Carmel

Highlight

- A simple FSA/FST package, developed at USC/ISI
- The carmel package is stored under /NLP_TOOLS/ml_tools/FST/carmel/latest/ on patas:
  - bin/: commands; add the path to $PATH if needed
  - doc/: carmel tutorial

The format of FSA / FST

final_state
(from_state (to_state “input_symbol” “output_symbol”? weight?)*)
(from_state (to_state “input_symbol” “output_symbol”? weight?)*)
…

A state can be a number or string.

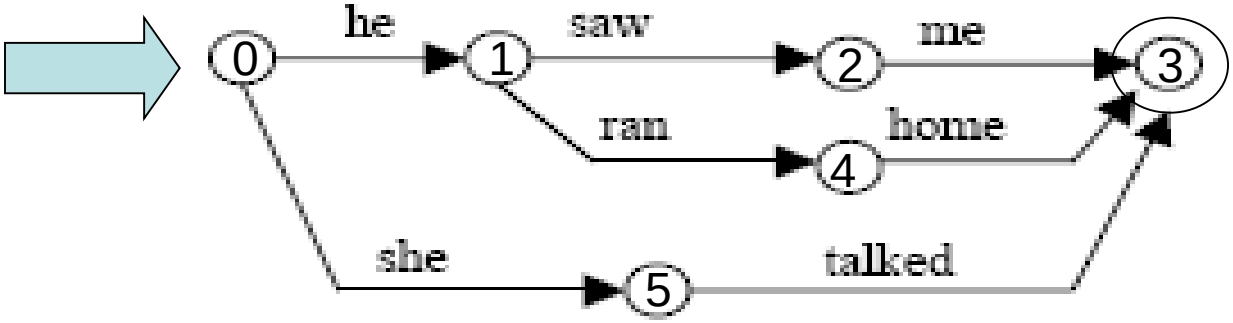
The from_state in the first edge-line is the start state.

ϵ is represented as *e*

output_symbol and weight are optional.

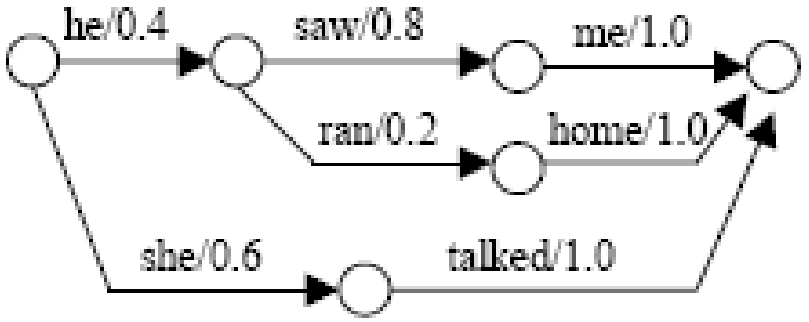
An FSA example: fsa1

```
%%%%%% Filename: fsa1 %%%%%%
3
(0 (1 "he"))
(1 (2 "saw"))
(2 (3 "me"))
(1 (4 "ran"))
(4 (3 "home"))
(0 (5 "she"))
(5 (3 "talked"))
```

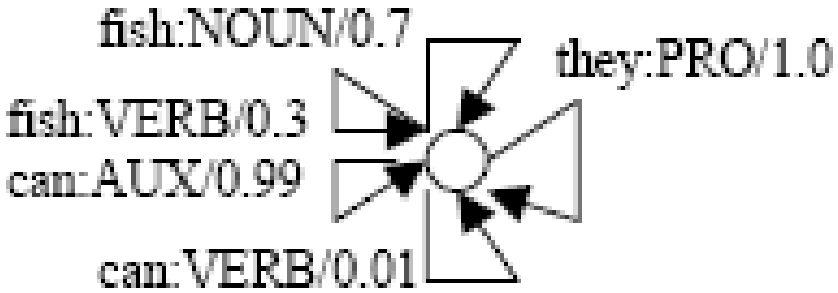


An WFSA example: wfsa1

```
%%%%%% Filename: wfsa1 %%%%%%
3
(0 (1 "he" 0.4))
(1 (2 "saw" 0.8))
(2 (3 "me" 1.0))
(1 (4 "ran" 0.2))
(4 (3 "home" 1.0))
(0 (5 "she" 0.6))
(5 (3 "talked" 1.0))
```



An WFST example: wfst1




```
%%%%%% Filename: wfst1 %%%%%%
S
(S (S "they" "PRO" 1.0))
(S (S "can" "AUX" 0.99))
(S (S "can" "VERB" 0.01))
(S (S "fish" "NOUN" 0.7))
(S (S "fish" "VERB" 0.3))
```

To use Carmel

- carmel fst1 fst2

  => return a new fst, which composes fst1 and fst2.

- carmel -k N wfst1

  => return the N most probable paths

- carmel -Ok N wfst1

  => return the N most probable output strings

To use Carmel (cont)

- cat input_file | carmel –sli fst1
  - create a foo_fst that corresponds to the first line in input_file
  - carmel foo_fst fst1
  - Ex: input_file is
    “they” “can” “fish”

- cat input_file | carmel –sri fst1
  - create a foo_fst that corresponds to the first line in input_file
  - carmel fst1 foo_fst
  - Ex: input_file is
    “PRO” “AUX” “VERB”

- cat input_file | carmel –b –sli fst1