

Demos

- Recognizing entities and relations
- Dependency parsing

Recognizing Entities and Relations

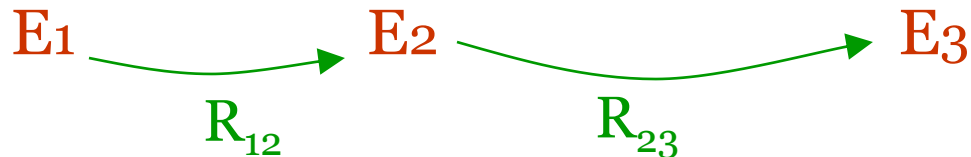
[Roth&Yih'04,07]

other	0.05
per	0.85
loc	0.10

other	0.10
per	0.60
loc	0.30

other	0.05
per	0.40
Loc	0.45

Dole 's wife, Elizabeth, is a native of N.C.



irrelevant	0.05
spouse_of	0.45
born_in	0.50

irrelevant	0.10
spouse_of	0.05
born_in	0.85

- Features: bag of words, part of speech tags

Recognizing Entities and Relations

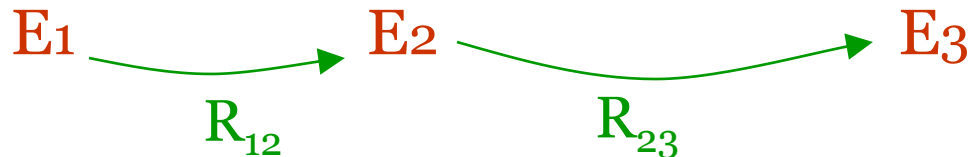
[Liu & Yih'04,07]

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Loc	0.45

Dole 's wife, Elizabeth, is a native of N.C.



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born_in	0.50

irrelevant	0.10
spouse_of	0.05
born_in	0.85

- Features: bag of words, part of speech tags

Results

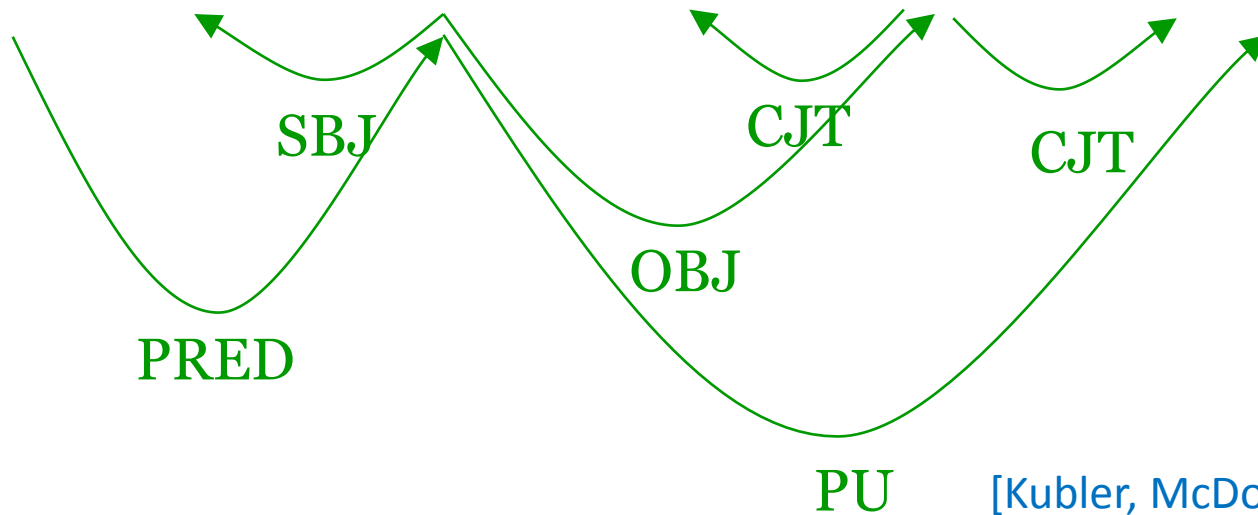
% cd demo/entityrelation

% make er.perf

Method	Entity F1	Relation F1	Training Time
VW	92.2	45.8	5 sec
VW (+constraints)	92.6	53.7	5 sec
SSVM (+constraints)	88.0	50.0	300 sec

Dependency Parsing

Root They operate ships and banks .



[Kubler, McDonald, Nivre 09]

Actions

- Shift:



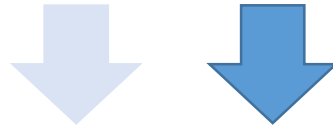
Root They operate ships and banks .

- Reduce-Left

- Reduce-Right

Actions

- Shift:



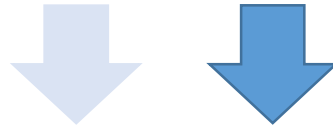
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- Reduce-Left

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- Shift:



Root They operate ships and banks .

- Reduce-Left

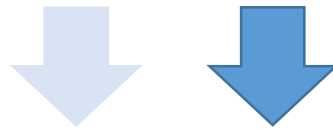


Root They operate ships and banks .

- Reduce-Right

Actions

- Shift:

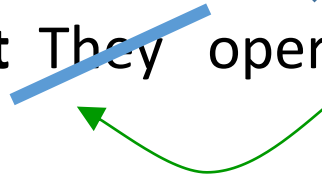


Root They operate ships and banks .

- Reduce-Left



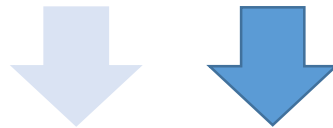
Root ~~They~~ operate ships and banks .



- Reduce-Right

Actions

- Shift:



Root They operate ships and banks .

- Reduce-Left



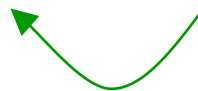
Root ~~They~~ operate ships and banks .



- Reduce-Right

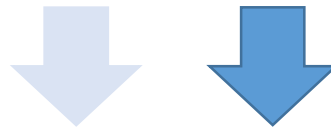


Root They operate ships and banks .



Actions

- Shift:



Root They operate ships and banks .

- Reduce-Left



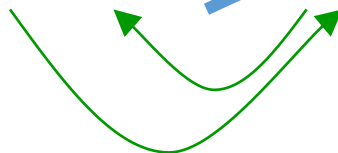
Root They operate ships and banks .



- Reduce-Right



Root They operate ships and banks .



VW Implementation

```
Loop until reaching the end of the sentence {  
    extract_features(...);  
    get_valid_actions(...);  
    get_gold_actions(...);  
    pred_action = Search::predictor(...).predict();  
    transition_hybrid(..., pred_action);  
}
```

```
./vw -k -c -d test/train-sets/wsj_small.dparser.vw.gz --search_task dep_parser --  
search 3 --search_alpha 1e-4 --search_rollout oracle --passes 2 --holdout_off
```