Transition-Based Parsing

Configuration:

STACK		BUFFER
S1	S0	b

Arc-hybrid (Kuhlmann et al., 2011)

Configuration:

STACK	BUFFER
who developed	the

Arc-hybrid (Kuhlmann et al., 2011)

Transition-Based Parsing

Configuration:

STACK		BUFFER
S1	S0	b

Arc-hybrid (Kuhlmann et al., 2011)

Transition-Based Parsing

Configuration:

Transitions:

STACK			BUFFER	
S1	S0		b	

Arc-hybrid (Kuhlmann et al., 2011)

Transition-Based Parsing

Configuration:

STACK

S1	S0

BUFFER

b

Transitions:

SHIFT

Arc-hybrid (Kuhlmann et al., 2011)

Transition-Based Parsing

Configuration: Transitions:

STACK   BUFFER

S1	S0		←──	b	

SHIFT

Arc-hybrid (Kuhlmann et al., 2011)

Transition-Based Parsing

Configuration:

Transitions:

STACK		BUFFER
S1	S0	b

SHIFT

STACK		BUFFER
S1	S0	b

RIGHT–ARC

Arc-hybrid (Kuhlmann et al., 2011)

Transition-Based Parsing

Configuration:

Transitions:

STACK	BUFFER	
S1 S0 |	←—b	SHIFT
S1 S0	b	RIGHT−ARC

Arc-hybrid (Kuhlmann et al., 2011)

Transition-Based Parsing

Configuration:

Transitions:

| STACK | BUFFER |
| | |

| S1 | S0 | ← | b |

SHIFT

| S1 | S0 | | b |

RIGHT–ARC

Arc-hybrid (Kuhlmann et al., 2011)

Transition-Based Parsing

Configuration: Transitions:

| STACK | | BUFFER |

| S1 | S0 | | ←——— | b | | SHIFT |

| S1 | S0 | | b | | RIGHT−ARC |

| S1 | S0 | | b | | LEFT−ARC |

Arc-hybrid (Kuhlmann et al., 2011)

Transition-Based Parsing

Configuration: Transitions:

STACK   BUFFER

| S1 | S0 | | ←── | b | SHIFT

| S1 | S0 | | b | RIGHT−ARC

| S1 | S0 | | b | LEFT−ARC

Arc-hybrid (Kuhlmann et al., 2011)

Transition-Based Parsing

Configuration:

Transitions:

Arc-hybrid (Kuhlmann et al., 2011)

Parsing algorithm

Drive   your   friend   home

SHIFT

RIGHT−ARC

LEFT−ARC

Parsing algorithm

Parsing algorithm

Drive   your   friend   home   **root**

SHIFT

RIGHT−ARC

LEFT−ARC

Parsing algorithm

SHIFT

RIGHT−ARC

LEFT−ARC

Drive your friend home **root**

[ ]   [Drive your friend home **root**]

Parsing algorithm

SHIFT

Drive   your   friend   home   **root**

[Drive]   [your friend home **root**]

Parsing algorithm

Parsing algorithm

LEFT-ARC

Drive   your   friend   home   **root**

[Drive]   [friend home **root**]

SHIFT

RIGHT−ARC

LEFT−ARC

Parsing algorithm

Parsing algorithm

Parsing algorithm

SHIFT

Drive   your   friend   home   **root**

[Drive home]   [**root**]

SHIFT

RIGHT−ARC

LEFT−ARC

Parsing algorithm

RIGHT-ARC

Drive　your　friend　home　**root**

[Drive]　　　[**root**]

SHIFT

RIGHT−ARC

LEFT−ARC

Parsing algorithm

TERMINAL CONFIGURATION
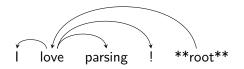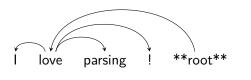
Drive   your   friend   home   **root**

SHIFT

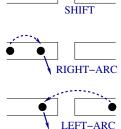RIGHT−ARC

LEFT−ARC

[ ]   [**root**]

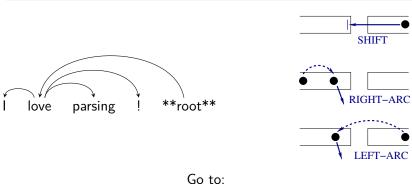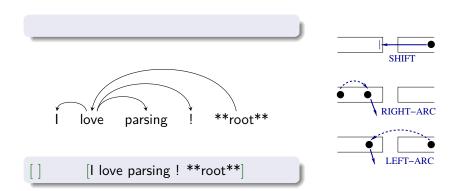Goal: figure out the transition sequence for this tree:

Quiz time!

Goal: figure out the transition sequence for this tree:

Quiz time!

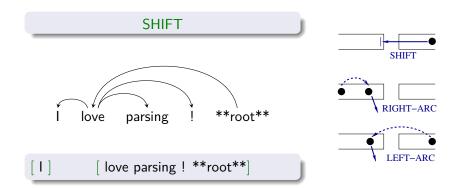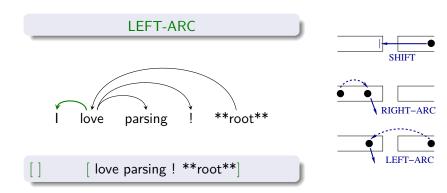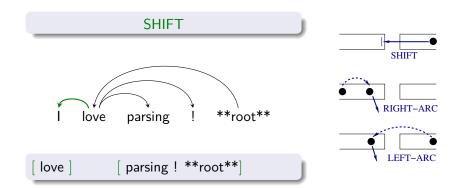Goal: figure out the transition sequence for this tree:

I   love   parsing   !   **root**

SHIFT

RIGHT–ARC

LEFT–ARC

Go to:

ucph.page.link/tb

Quiz - solution

I   love   parsing   !   **root**

SHIFT

RIGHT–ARC

LEFT–ARC

[ ]   [I love parsing ! **root**]

Quiz - solution

Quiz - solution

LEFT-ARC

I   love   parsing   !   **root**

[ ]   [love parsing ! **root**]

SHIFT

RIGHT–ARC

LEFT–ARC

Quiz - solution

SHIFT

I love parsing ! **root**

[love]   [parsing ! **root**]

SHIFT

RIGHT−ARC

LEFT−ARC

Quiz - solution

Quiz - solution

Quiz - solution

LEFT-ARC

I   love   parsing   !   **root**

[ ]   [**root**]
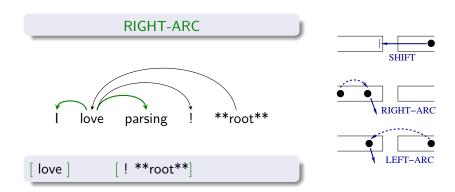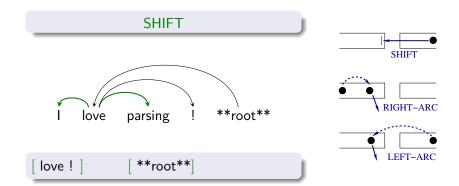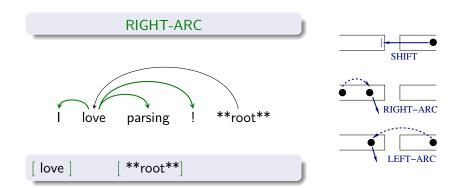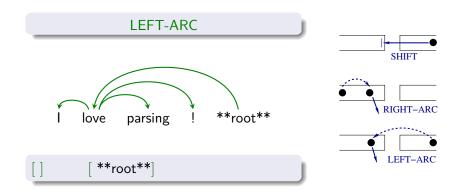
SHIFT

RIGHT−ARC

LEFT−ARC
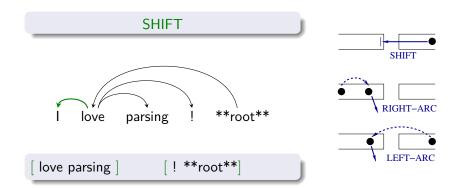
References

Marco Kuhlmann, Carlos Gómez-Rodríguez, and Giorgio Satta. 2011. Dynamic programming algorithms for transition-based dependency parsers. In *Proceedings of the 49th Annual Meeting of the Association for Computational Linguistics: Human Language Technologies*, pages 673–682.