



TUPA at MRP 2019

A Multi-Task Baseline System

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github.com/danielhers/tupa/tree/mrp

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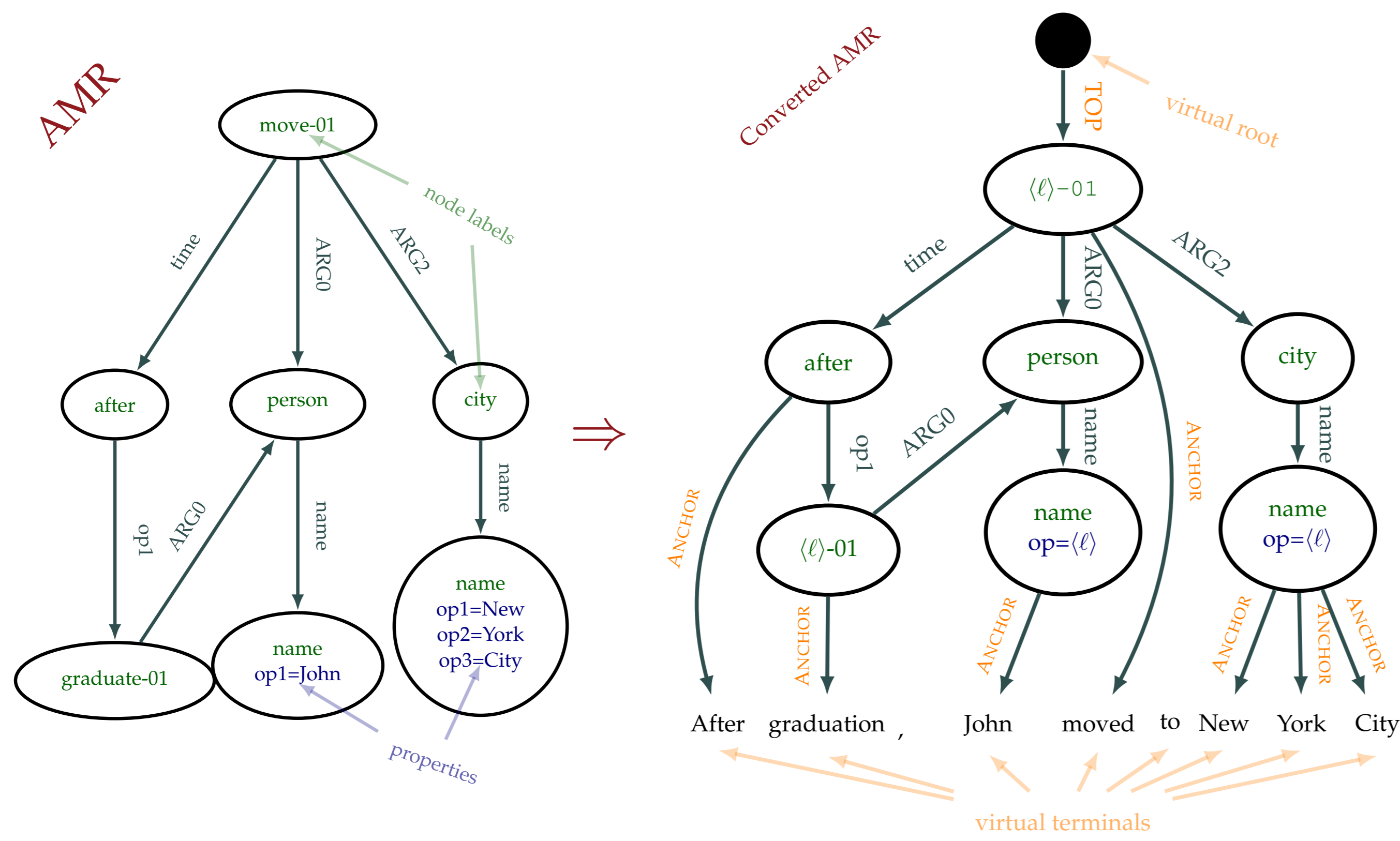
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CoNLL 2019 MRP Shared Task *baseline*.
Neural transition-based graph parser.

Intermediate Graph Representation

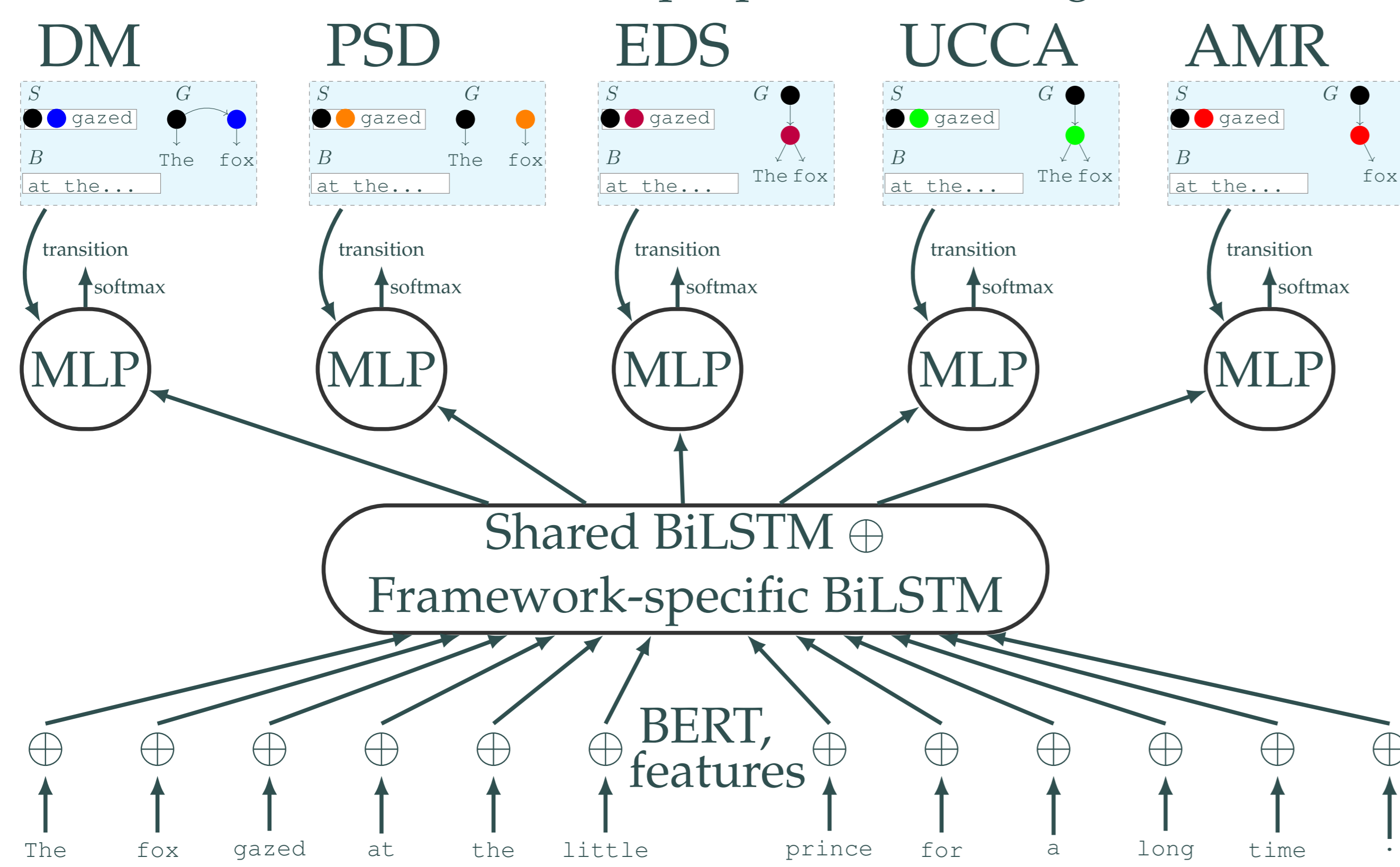
Originally developed for UCCA [2, 3].
Generalized to support DM, PSD, EDS and AMR.



Transition Classifier

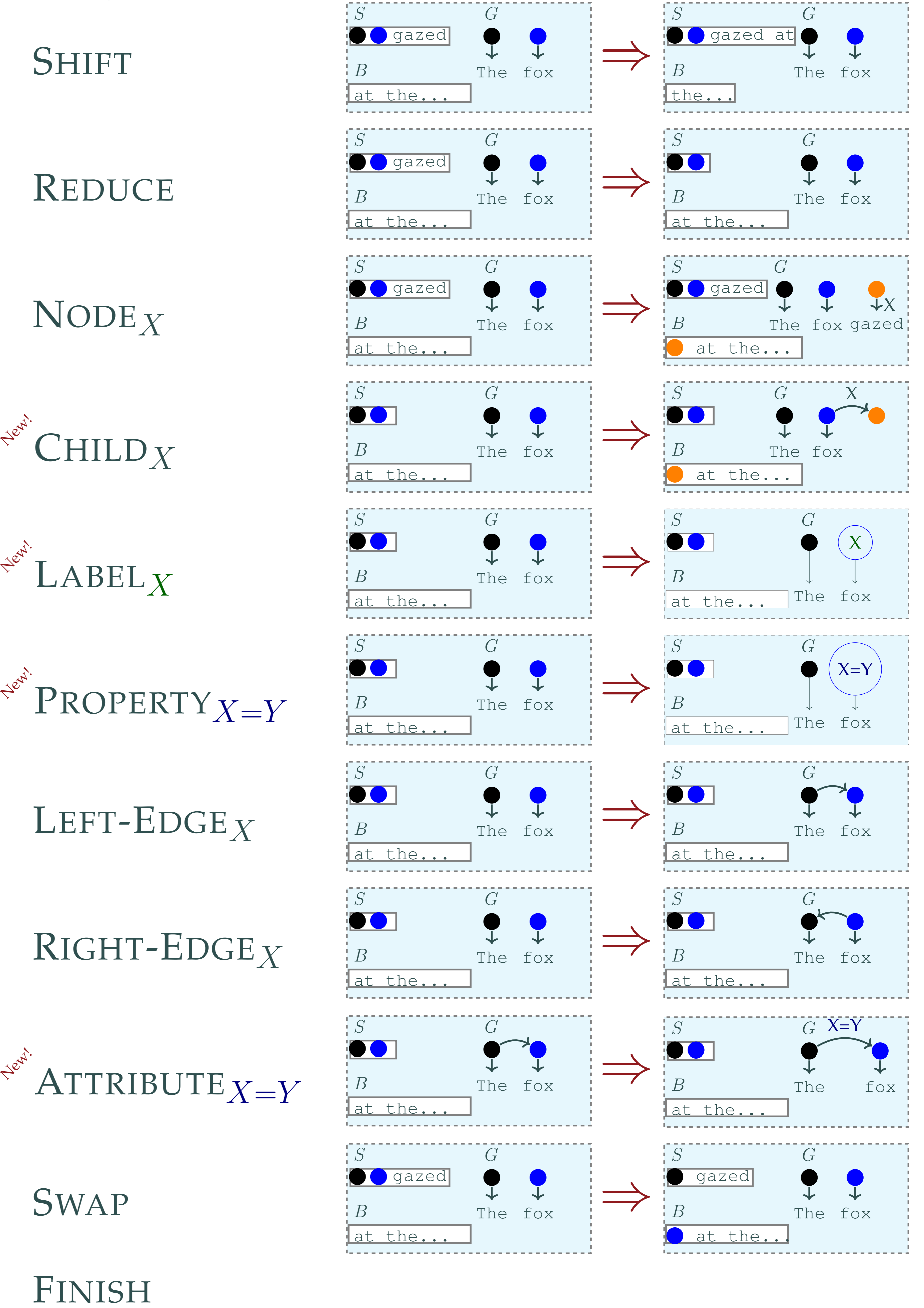
BiLSTM encoder [4] + BERT [1].

Single-task/multi-task over frameworks. Separate MLPs for transitions, node labels, node properties, and edge attributes.



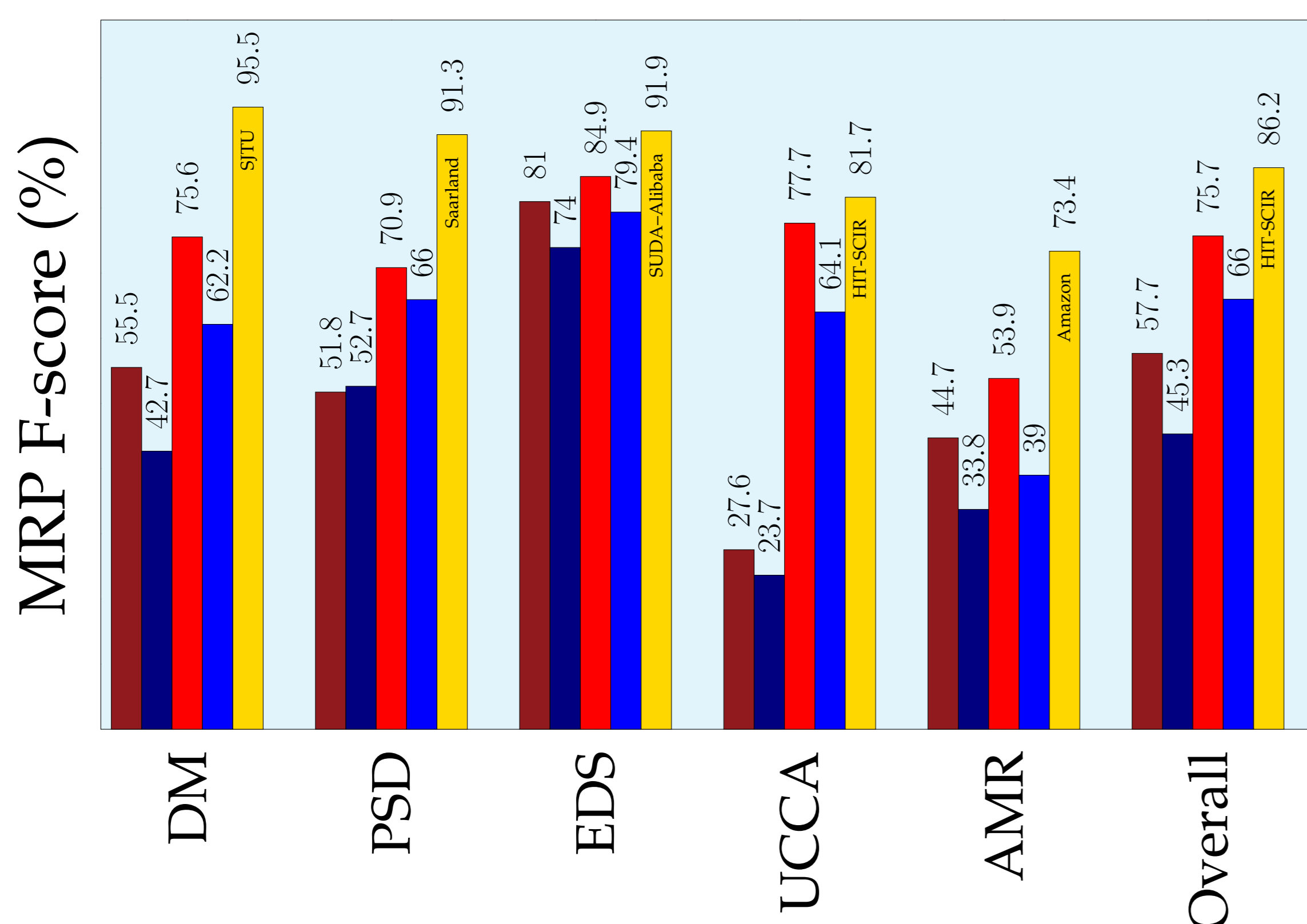
Transitions

General DAG parser, supporting reentrancy, discontinuity and non-terminal nodes.

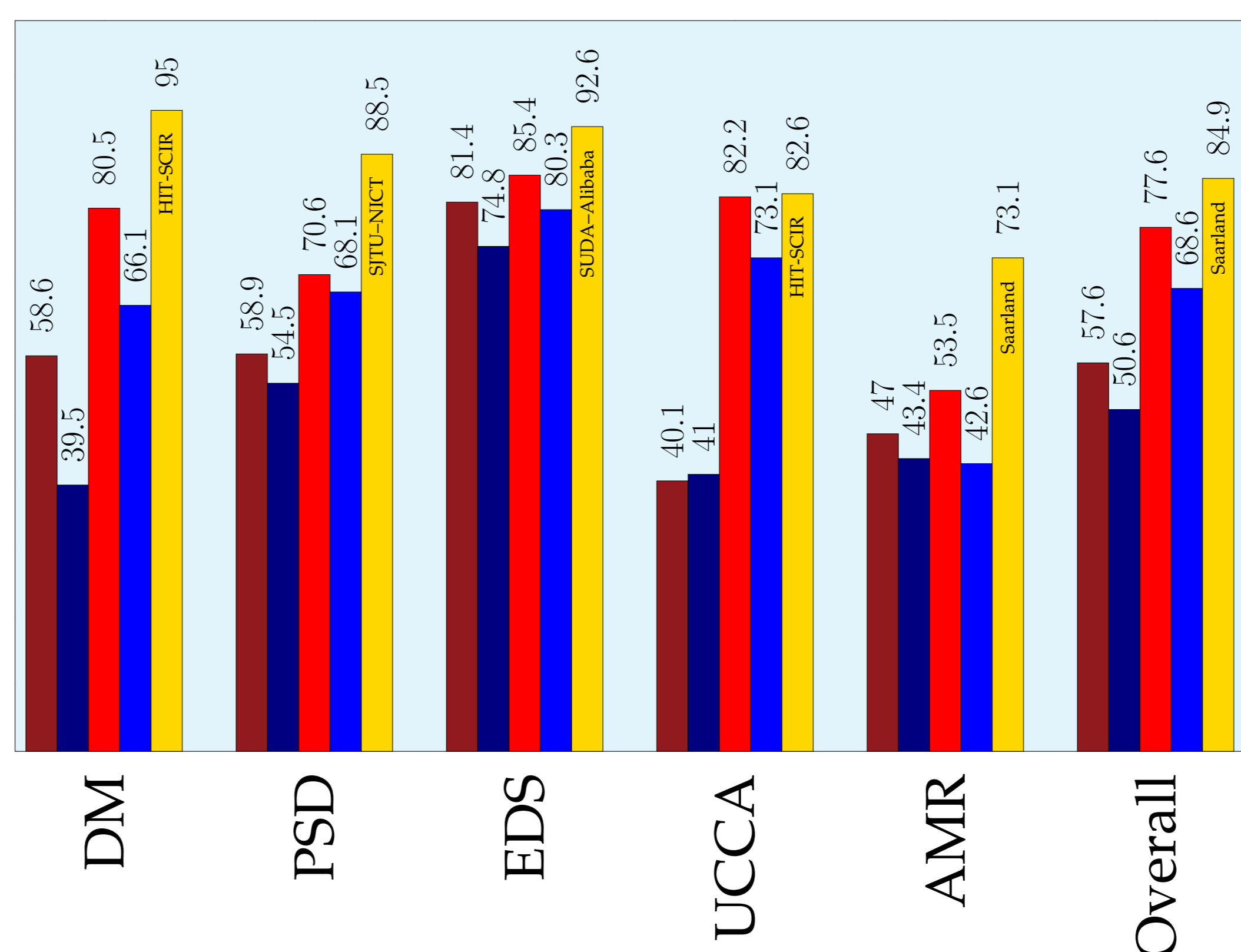


NODE_X, CHILD_X, *-EDGE_X transition for each edge label X.
Single LABEL, PROPERTY, ATTRIBUTE transitions.

Full Evaluation



The Little Prince Subset



References

- [1] Jacob Devlin, Ming-Wei Chang, Kenton Lee, and Kristina Toutanova. BERT: Pre-training of deep bidirectional transformers for language understanding. In *Proc. of NAACL*, pages 4171–4186, 2019.
- [2] Daniel Hershcovich, Omri Abend, and Ari Rappoport. A transition-based directed acyclic graph parser for UCCA. In *Proc. of ACL*, pages 1127–1138, 2017.
- [3] Daniel Hershcovich, Omri Abend, and Ari Rappoport. Multi-task parsing across semantic representations. In *Proc. of ACL*, pages 373–385, 2018.
- [4] Eliyahu Kiperavasser and Yoav Goldberg. Simple and accurate dependency parsing using bidirectional LSTM feature representations. *TACL*, 4:313–327, 2016.

Legend for bar charts:
 ■ Single-Task
 ■ Multi-Task
 ■ Single-Task (Post-Eval.)
 ■ Multi-Task (Post-Eval.)
 ■ Best System