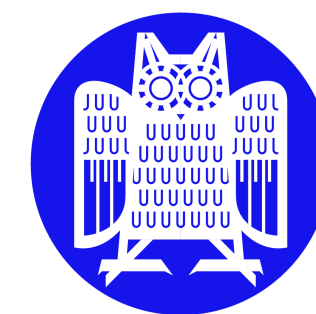


Hybrid Multilingual Parsing with HPSG for Semantic Role Labeling

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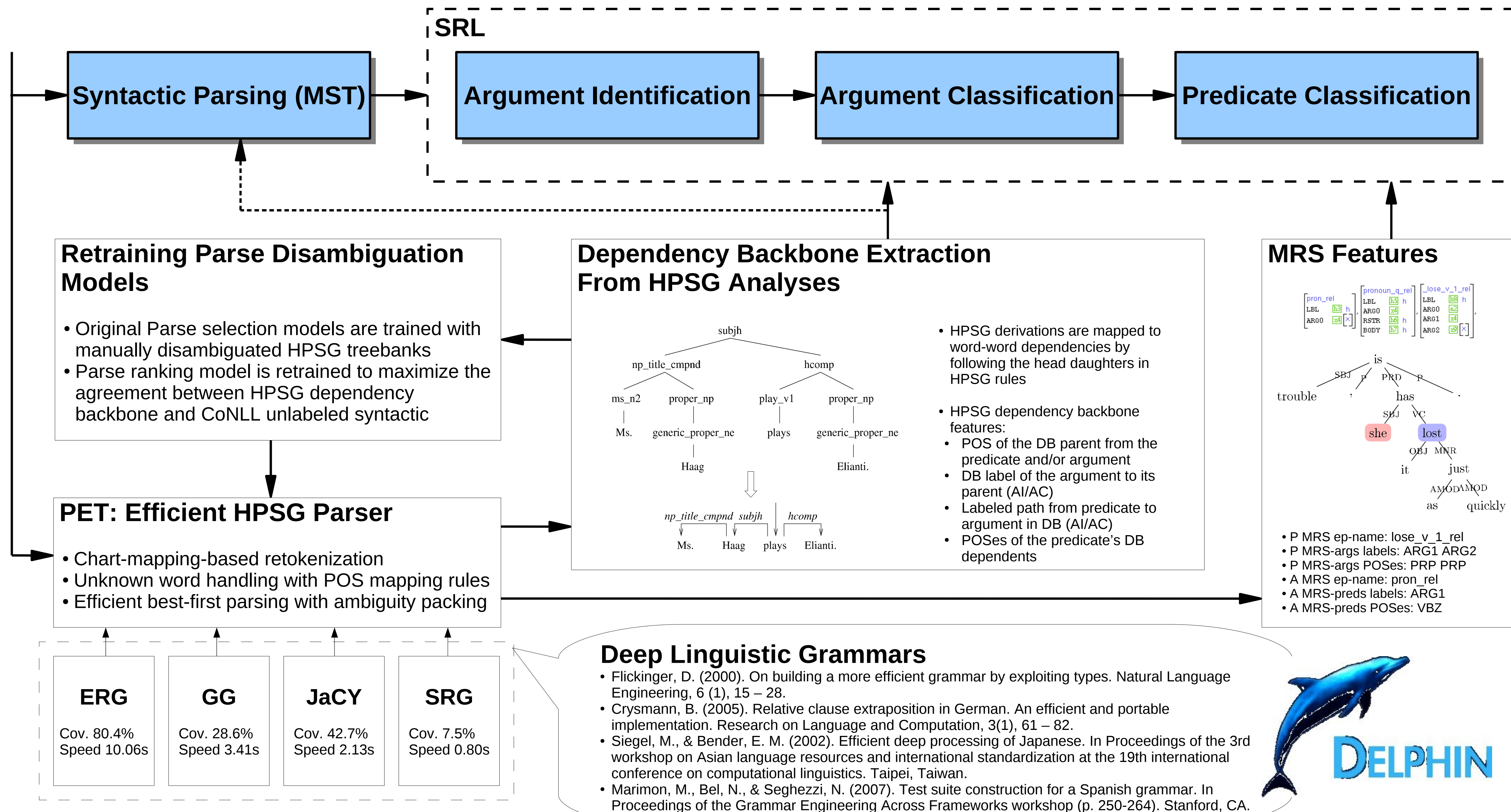
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Abstract

In this paper we present our syntactic and semantic dependency parsing system, which extends the system of Zhang, Wang, & Uszkoreit (2008) in the multilingual direction, and achieves 76.49 average macro F1 Score on the closed joint task. Substantial improvements to the open SRL task have been observed that are attributed to the HPSG parses with hand-crafted grammars.



Experiment Settings

- Syntactic Parsing:** MST Parser, training and testing are both with P-columns; HPSG features are also experimented, but not included in the submitted system
- Semantic Role Labeling:** MaxEnt-based pipeline of classifiers, with parameters estimated with the open source TADM system; open systems include extra MRS and HPSG DB features
- Parameter tuning:** feature sets are fine-tuned separately for each language on development sets, for both closed and open systems

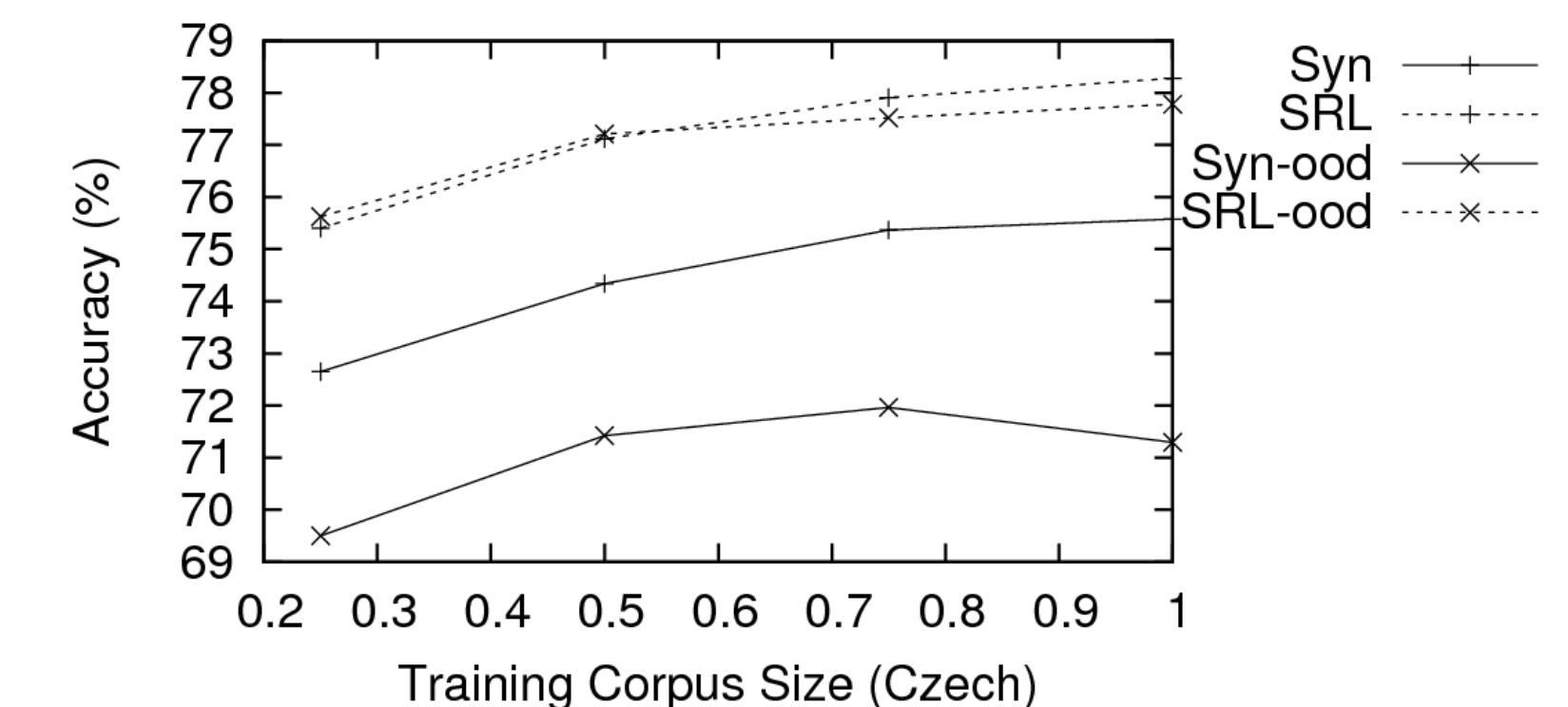
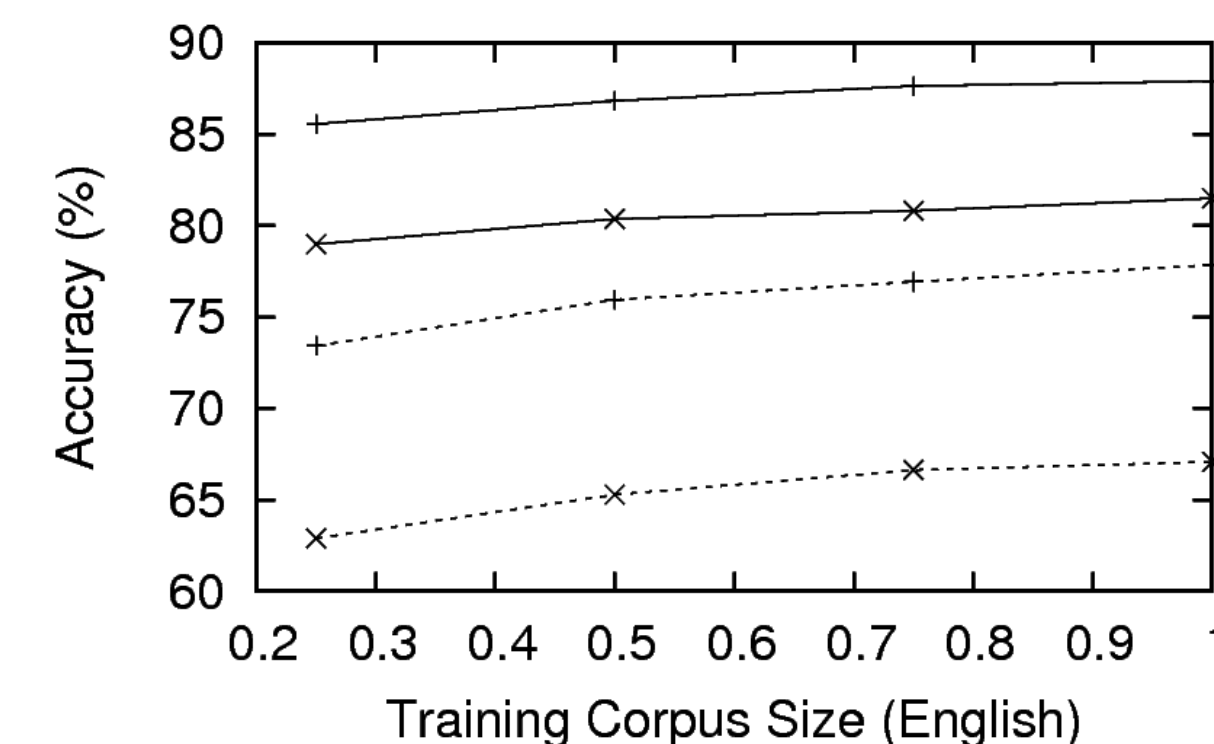
		ca	zh	cs	en	de	ja	es
Syn	proj	+	+	-	+	+	-	+
	morph	-	N/A	+	N/A	-	-	-
SRL	closed	+	+	+	+	+	+	+
	open	-	-	-	+	+	+	+

Conclusion & Future Work

- The overall ranking of the system is #7 in the closed challenge, and #2 in the open challenge
- The results clearly show that the integration of HPSG parsing results in the semantic role labeling task brings substantial performance improvement. The conclusion from Zhang et al. (2008) on English has been reconfirmed on multiple languages, even where grammar coverage is low
- The gain is more significant on out-of-domain tests, indicating that the hybrid system is more robust to cross-domain variation
- The closed SRL system needs to be improved in the future

Results

		ca	zh	cs	en	de	ja	es
SYN	Closed	82.67	73.63	75.58	87.90	84.57	91.47	82.69
	ood	-	-	71.29	81.50	75.06	-	-
SRL	Closed	67.34	73.20	78.28	77.85	62.95	64.71	67.81
	ood	-	-	77.78	67.07	54.87	-	-
	Open	-	-	-	78.13 (↑0.28)	64.31 (↑1.36)	65.95 (↑1.24)	68.24 (↑0.43)
	ood	-	-	-	68.11 (↑1.04)	58.42 (↑3.55)	-	-



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