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Selectional Preferences for Semantic Role Classification

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Selectional Preferences for Semantic Role Classification

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This paper focuses on a well-known open issue in Semantic Role Classification (SRC) research: the limited influence and sparseness of lexical features. We mitigate this problem using models that integrate automatically learned selectional preferences (SP). We explore a range of models based on WordNet and distributional-similarity SPs. Furthermore, we demonstrate that the SRC task is better modeled by SP models centered on

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both verbs and prepositions, rather than verbs alone. Our experiments with SP-based models in isolation indicate that they outperform a lexical baseline with 20 F_1 points in domain and almost 40 F_1 points out of domain. Furthermore, we show that a state-of-the-art SRC system extended with features based on selectional preferences performs significantly better, both in domain (17% error reduction) and out of domain (13% error reduction). Finally, we show that in an end-to-end semantic role labeling system we obtain small but statistically significant improvements, even though our modified SRC model affects only approximately 4% of the argument candidates. Our post hoc error analysis indicates that the SP-based features help mostly in situations where syntactic information is either incorrect or insufficient to disambiguate the correct role.

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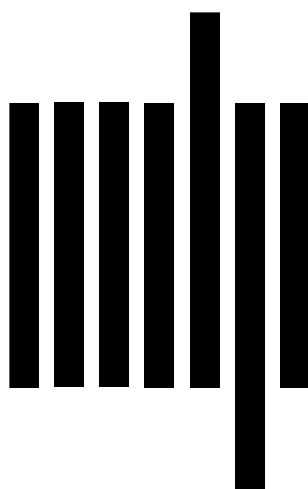
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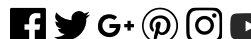Books

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