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Discriminative Syntax-Based Word Ordering for Text Generation

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Abstract Full Text Authors

Word ordering is a fundamental problem in text generation. In this article, we study word ordering using a syntax-based approach and a discriminative model. Two grammar formalisms are considered: Combinatory Categorial Grammar (CCG) and dependency grammar. Given the search for a likely string and syntactic analysis, the search space is massive, making discriminative training challenging. We develop a Discriminative Syntax-Based Word Ordering for Text Generation | Computational Linguistics | MIT Press Journals

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learning-guided search framework, based on best-first search, and investigate several alternative training algorithms.

The framework we present is flexible in that it allows constraints to be imposed on output word orders. To demonstrate this flexibility, a variety of input conditions are considered. First, we investigate a "pure" word-ordering task in which the input is a multi-set of words, and the task is to order them into a grammatical and fluent sentence. This task has been tackled previously, and we report improved performance over existing systems on a standard Wall Street Journal test set. Second, we tackle the same reordering problem, but with a variety of input conditions, from the bare case with no dependencies or POS tags specified, to the extreme case where all POS tags and unordered, unlabeled dependencies are provided as input (and various conditions in between). When applied to the NLG 2011 shared task, our system gives competitive results compared with the best-performing systems, which provide a further demonstration of the practical utility of our system.

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