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Using Machine Learning to Understand Transfer from First Language to Second Language

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Abstract

Machine learning can identify, with reasonable accuracy, the native language of someone writing in a foreign language (Joel Tetreault et al., 2013). Intriguingly, native language identification (NLI) can be accomplished looking only at the syntactic structure, ignoring word choice (Swanson, 2013). This finding has potentially broad relevance to cognitive science since it suggests a broad-based method to empirically study the effects of first language syntax on second language (L1-¿L2 transfer). However, that requires interpretation of the resulting models, which is notoriously difficult (Williams et al., 2017). As a first step, we compare the results of a variety of state-of-the-art machine learning techniques on NLI in two languages: English and Spanish.