THE UNIVERSITY OF CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

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Learning Subregular Phonological Patterns with Recurrent Neural Networks

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ABSTRACT

I explore the ability of recurrent neural networks to learn certain types of patterns present in spoken language sound systems. I contrast the performance of classical recurrent neural networks with the performance of more recent models that are designed to better capture long distance dependencies (long short-term memory and gated recurrent units). I test various RNN types on both artificially generated corpora and natural language data. I find that for both local and long-distance phonological patterns, classical recurrent neural networks appear to be sufficient for learning in a supervised setting, but more complex models appear to have a slight edge, especially when presented with limited amounts of data. I also explore the performance of these models in an unsupervised setting, finding that they struggle with the artificially generated data, but are somewhat successful at capturing patterns in the natural language data.