

## Department of Statistics MASTER'S THESIS PRESENTATION

## JOSHUA FALK

Department of Statistics The University of Chicago

## Learning Subregular Phonological Patterns with Recurrent Neural Networks

THURSDAY, November 1, 2018, at 9:30 AM Jones 111, 5747 S. Ellis Avenue

## 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.

For information about building access for persons with disabilities, please contact Kirsten Wellman at 773.834.5169 or send an email to kwellman@galton.uchicago.edu. If you wish to subscribe to our email list, please visit the following web site: <a href="https://lists.uchicago.edu/web/subscribe/statseminars">https://lists.uchicago.edu/web/subscribe/statseminars</a>.