Ikhlas Attarwala
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Text Generation Using NNLMs / Paper 1

Generating Sequences with RNNs
        by Graves, Alex

        This is a rather interesting paper from 2013 that looks into sequential modeling from a probabilistic point of view, where instead of predicting future events, it provides a likelihood distribution of what's to be expected. Of course, in order to get around long-term dependencies, LSTMs were proposed in this model to approximate a probability distribution function of the next value in a sequence given its history. Graves used an online handwriting dataset to train an RNN model, breaking up samples into vectors. For the most part, separate strokes were counted that each consist of multiple vectors, where at times the stroke "ee" could have been written to illustrate two "e's", or individual strokes "e" and "e" could have done the same. Do note that this model trains on vectors, and not larger handstrokes.
        Graves looks into the probability distribution functions for what the RNN outputs during sampling, but also looks at the probability distribution functions for offsets and end stroke probabilities from the samples. This is very useful because it helps us understand how the machine chooses to handwrite. One of Graves' limitations is that vectorized drawings of animals are too complicated to train, but this makes sense considering there's no formal outline or template for any artwork. Even if the characters were Chinese, Graves' model can learn specific and acute detail to characters. The output may not spell anything coherent, but to the unfamiliar, this generation is at least convincing.