Neural NLP Refresher

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NLP is a topic that I was very interested in during college. As a Chinese born American, I used translation software a lot when I first moved to this country. Even in college on my first date with my husband, I had my phone out and google translate open so that I could try to communicate with him as clearly as possible. When I saw that my college was offering classes on NLP, I immediately decided to sign up, even though I'd have to learn a new language (Perl) for the class that wasn't going to be used in any other upper level coursework. Overall, I was a bit disappointed with how NLP was done at the time: statistical methods produced results which were "good but not great"... but only if you had a huge amount of data like Google. The only alternative was handcrafted algorithms, but still required many human designed features. As my English improved, NLP stopped being as important to my daily life, and I eventually stopped keeping up with the field. Recently however, I decided to look more closely at the field after seeing a job opening for NLP that really looked interesting to me. I wasn't surprised to learn that NLP has transformed a lot since I took my college courses, and I was also not surprised to find that Deep Learning was involved in the transformation of another application of AI. What did surprise me was that, according to this [comprehensive review](#), Deep Learning approaches were introduced to NLP in 2012, while I was still in college! I barely missed those developments, but I'm very excited that my recent Data Science certification at FlatIron has given me confidence in training and evaluating the neural networks that are now used in state of the art NLP engines.

The review also states that for the translation task most important to me (Chinese to English translation) "the Bible system from Microsoft achieved a human parity result"! I'm extremely excited to learn that the current state of the art is so good now, and I'm also very excited that the pieces you need to use to build a state of the art NLP engine are all things I'm familiar with from my Data Science classes and related reading. I learned about and trained Recurrent Neural Networks (RNNs) to create models for predicting Time Series data. I have experience combining Convolutional Neural networks with a Transfer Learning approach to classify monkey species (perfectly!) with limited data and training time. RNNs, CNNs, and Transfer Learning are all very applicable and important tools for building modern NLP engines.

The capabilities of the MemNN networks are amazing to me, and I'm trying to find a good dataset right now on Kaggle to get hands on with them. The ability to store and recall information for use in reasoning tasks is far beyond anything I ever used or expected from NLP. I'm very excited to practically apply it to generate value in the real world!

The review I read through was written during 2019 and the additional resources I've followed up on so far were released before then. I am both amazed by the progress in the field and excited that the skills I've developed in the past few years apply so well to an area that's been an interest of mine for many years. I am sure there are many more exciting developments

for me to read about from 2020 and 2021. I can't wait to share an update in this area covering my reading from that time period as well as the results of getting hands-on with some NLP work of my own!