Yorick Chern
Homework 4 Report

Translation

<u>Success</u>:

German: Eine Blondine hält mit einem Mann im Sand Händchen.
Predicted translation: Blond girl with a man in her life.
Google translate: A blonde is holding hands with a man in the sand.

German: Eine Gruppe Asiatischer Jungen wartet am Grill darauf, dass Fleisch gar wird.
Predicted translation: A group of Chinese students are teaching BBQ to kids in the US.
Google translate: A group of Asian boys are waiting at the grill for meat to cook.

<u>Failures</u>:

German: Eine Frau in einem pinken Pulli und einer Schürze putzt einen Tisch mit einem Schwamm.
Predicted translation: A woman in a pink pullover and a smile makes a splash in a crowd.
Google translate: A woman in a pink sweater and apron is cleaning a table with a sponge.

German: Ein Mann schneidet Äste von Bäumen.
Predicted translation: Ein man who can walk a mile in under an hour
Google translate: A man cuts branches from trees.

Conclusion: I think the GPT-2 translator is able to capture the general "theme" of the translation. For example, in the first successful sentence, the predicted translation was able to capture the idea of a blonde girl and a man being in a relationship. However, my observation is that if the context involves too much "description," the translation may be lost. For example, the first failed translation describes a woman *in a pink pullover and an apron* (two descriptions) is cleaning a table *with a sponge* (another description of the action). I think GPT-2 is unable to capture these descriptions without losing the precise translation.

Sentiment Analysis

My accuracy is currently at 94%, and I think one thing that can help improve a sentiment analysis classifier is to add a dense neural network component right before the final output of positive/negative, just like how it is common practice to add a few dense layers after the the convolutional layers in CNN's. Additionally, we can also combine different mechanisms such as N-grams and Part-of-Speech tags. Combining these additional features in addition to GPT-2, we may potentially see an improvement in the accuracy.