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Artificial Intelligence

24 October 2018

### Tweemotion - Emotion in Text

According to the Turing test, a computer that can successfully impersonate a human being can be called intelligent. A large part of this interaction requires the computer to understand the subjects language, which is why natural language processing is currently one of the most important fields in AI. Lots of progress has been made in the text classification, and we hope to use a neural network to classify text by its emotional content. We will do so by analyzing tweets consisting of 240 characters or less.

In a 2015 paper, Siwei Lai, Liheng Xu, Kang Liu, and Jun Zhao showed that a recurrent convolutional neural network can perform very well for text classification. Xiang Zhang, Junbo Zhao, and Yann LeCun, have also been able to produce competitive results using a character-based convolutional neural network. However, since our goal is to detect emotion in tweets, our dataset may not be well suited for such a granular approach. Because of this, we will attempt to use a “bag of words” approach while building our network. This will be accomplished by using Keras on top of the Tensorflow framework. We have acquired a dataset of 40,000 tagged tweets with nine different emotions on which we will train our network. Depending on the performance of this approach, we may try to implement a recurrent or convolutional neural network for better results.

The applications of this project include emotional analysis of various populations around the world, as well as developing bots to respond to human emotion.

### Works Cited

Lai, Xu, Liu, Zhao. *Recurrent Convolutional Neural Networks for Text Classification*, 2015.

This paper overviews the application of recurrent neural networks for text classification and their performance overall in the given task. It was especially useful as it gave insight towards potential algorithms that could be used for accomplishing tasks similar to this.

Zhang, Zhao, LeCun. *Character-level Convolutional Networks for Text Classification*, 2012.

This article explores the application of convolutional neural networks for text classification, and demonstrates their effectiveness on specific datasets. The article emphasized the how many different factors can determine what approach to take for the dataset in question.

“Keras | TensorFlow.” *TensorFlow*, [www.tensorflow.org/guide/keras](https://www.tensorflow.org/guide/keras).

The Keras documentation provide examples and guidance on how to get started building a neural network. Keras provides a high-level abstraction for complex algorithms, making it easier to work with.