CS571-Sentiment Analysis

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26 February 2019

1 Introduction

The task is to develop a deep learning model that takes each sentence from movie reviews and classifies it into one of the 5 sentiments: 0 - very negative, 1 - negative, 2 - neutral, 3 - positive, 4 - very positive. The method I tried is to use CNN to train the model based on the paper - "Convolutional Neural Networks for Sentence Classification".

2 CNN Structure

2.1 Input

Padding the sentence to maximum sentence length: 80 Embedding dimension: 50 The input size is (batchsize, 80, 50, 1)

2.2 Kernel Size

The kernels are used in this model with lengths 3, 4, and 5. For each kernel, I used 64 filters. After flatten layer, the output shape for each kernel is (batchsize, 64).

2.3 Concatenate

Concatenate three layers together, the output shape is (batechsize, 192)

2.4 Output

The final layer is a dense layer with parameter 5. The activation function for this layer is softmax, and L2-norm (0.15) is applied on this layer.

3 Result

After running 15 epochs, the final model achieved an accuracy of 68.86% on the training dataset and 43.23% on the developing dataset.