

Hide menu

Introduction to Neural Networks and TensorFlow

Video: Course 3 Introduction 3 min

Video: Lesson Introduction 44 sec

Reading: Lesson Introduction Clarification 10 min

Video: Neural Networks for Sentiment Analysis 3 min

Reading: Neural Networks for Sentiment Analysis 7 min

Video: Dense Layers and ReLU 2 min

Reading: Dense Layers and ReLU 5 min

Video: Embedding and Mean Layers 3 min

Reading: Embedding and Mean Layers 3 min

Lab: Introduction to TensorFlow 30 min

Ungraded App Item: [IMPORTANT] Have questions, issues or ideas? Join our community on Discourse! 10 min

Practice Assignment: Classification Using Deep Neural Networks

N-grams vs. Sequence Models

Lecture Notes (Optional)

Practice Quiz

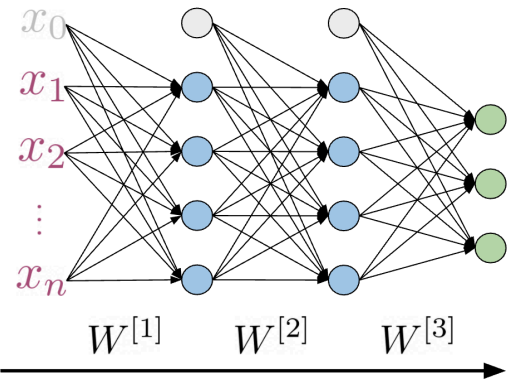
Assignment: Deep N-grams

Week 1 > Neural Networks for Sentiment Analysis

Neural Networks for Sentiment Analysis

Previously in the course you did sentiment analysis with logistic regression and naive Bayes. Those models were in a sense more naive, and are not able to catch the sentiment off a tweet like: "I am not happy " or "If only it was a good day". When using a neural network to predict the sentiment of a sentence, you can use the following. Note that the image below has three outputs, in this case you might want to predict, "positive", "neutral ", or "negative".

Forward propagation



$a^{[i]}$ Activations ith layer

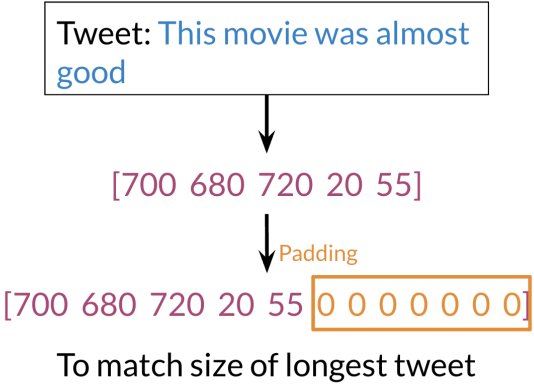
$$a^{[0]} = X$$

$$z^{[i]} = W^{[i]} a^{[i-1]}$$

$$a^{[i]} = g^{[i]}(z^{[i]})$$

Note that the network above has three layers. To go from one layer to another you can use a W matrix to propagate to the next layer. Hence, we call this concept of going from the input until the final layer, forward propagation. To represent a tweet, you can use the following:

| Word | Number |
|-------|--------|
| a | 1 |
| able | 2 |
| about | 3 |
| ... | ... |
| hand | 615 |
| ... | ... |
| happy | 621 |
| ... | ... |
| zebra | 1000 |



Note, that we add zeros for padding to match the size of the longest tweet.

A neural network in the setup you can see above can only process one such tweet at a time. In order to make training more efficient (faster) you want to process many tweets in parallel. You achieve this by putting many tweets together into a matrix and then passing this matrix (rather than individual tweets) through the neural network. Then the neural network can perform its computations on all tweets at the same time.

Mark as completed

