Natural Language Processing

Deep Learning and Text Generation

Generating text with seq2seq

The *seq2seq* (sequence to sequence) model is a type of encoder-decoder deep learning model commonly employed in natural language processing that uses recurrent neural networks like LSTM to generate output. seq2seq can generate output token by token or character by character. In machine translation, seq2seq networks have an *encoder* accepting language as input and outputting state vectors and a *decoder* accepting the encoder's final state and outputting possible translations.

One-hot vectors

In natural language processing, *one-hot vectors* are a way to represent a given word in a set of words wherein a 1 indicates the current word and 0s indicate every other word.

```
# a one-hot vector of the word "squid"
# in the sentence "The squid jumped out of the suitcase."

[0, 1, 0, 0, 0, 0, 0]
```

Teacher forcing for seq2seq

seq2seq machine translation often employs a technique known as *teacher forcing* during training in which an input token from the previous timestep helps train the model for the current timestep's target token.

Improving seq2seq

It is possible to improve seq2seq results by adjusting the model's quantity of training data, the dimensionality of hidden layers, the number of training epochs, and the training batch size.

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