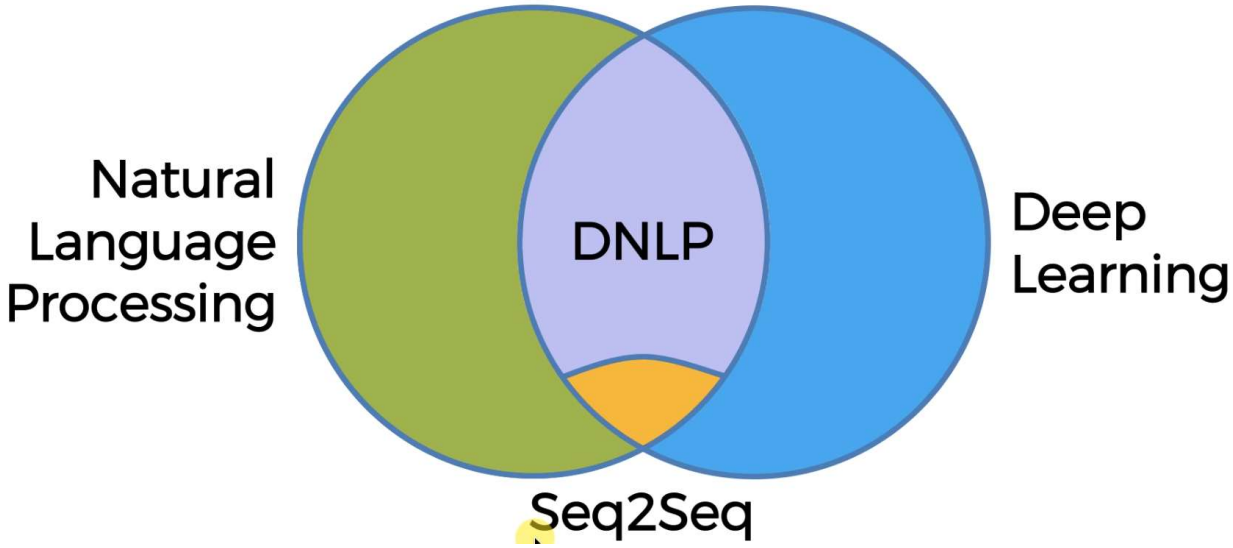
# NLP Intuition

Tuesday, December 17, 2024 10:22 AM

Types of Natural Language Processing
Classical vs Deep Learning Models
Bag-Of-Words

Types of NLP




- Deep Natural Language Processing

# Classical vs Deep Learning Models

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Examples:

If/Else Rules (Chatbot)
- Natural Language Processing
- A huge list of possible questions and the answers

Audio Frequency Components Analysis (Speech Recognition)
- Natural Language Processing
- Look at soundwaves of someone talking, and identify the waveforms that exist

Bag-of-words model (classification)
- Natural Language Processing
- Text analysis. Given a comment, assign each word with a numerical value. Trying to associate comments with pass/fail

CNN for text recognition (Classification)
- Deep Natural Language Processing Model
- A neural network mainly used for image/video processing

Seq2Seq (many applications)

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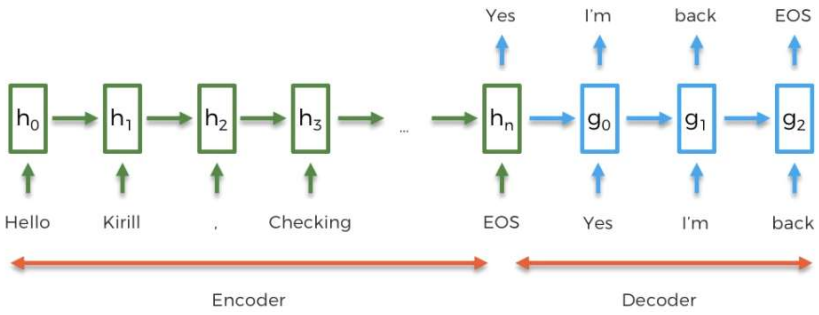

# Bag-Of-Words

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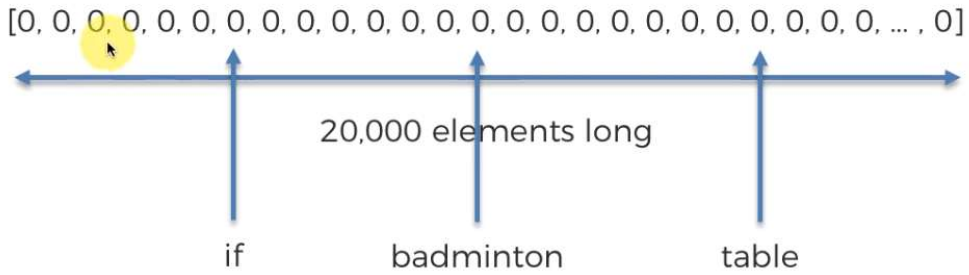
Given a string of text, we want to respond with a yes/no response

Start with a vector full of 0's
- 20,000 elements long.
- This is the number of words that Americans commonly use
- Every word in the English language will have a position in this vector



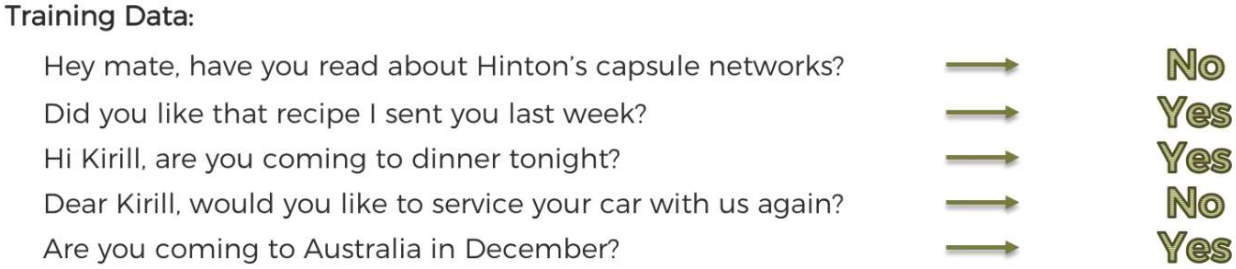

First element is reserved for SOS and second element is reserved for EOS
- SOS = Start of Sentence
- EOS = End of Sentence

Last element in array is reserved for Special words
- Words that we don't recognize within the 20,000 words

Commas and punctuation also count as a word

For each position, put in the frequency of words

Our goal is to come up with a yes/no response
- We are going to do that with training data of all emails previously sent




Convert each training emails into a 20,000 long vector

There are multiple ways we can apply the model
- One way is using the logistic regression
- Another way is by using a neural network
    - 20,000 neurons, and go through as many hidden layers as needed, and then a output layer