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Natural Language Processing with TensorFlow

What is TensorFlow?

TensorFlow is an end-to-end platform for the building and depolyment of machine learning

models[1]. Released in 2015[2], TensorFlow is used by data scientists and machine learning experts

for to explore the use of machine learning models with a powerful ecosystem designed to make

building and deployment easy and flexible. TensorFlow uses a directed graph construction to

represent the machine learning model.[2] It also allows for distributed computing for increased

efficiciency.[2]


What is Natural Language Processing?

Natural language processing is the process of enabling computers the ability to interpret natural

language in a way that is similar to human understanding.[3] It is commonly used in a variety of

contexts, whether that be speech-to-text, chatbots, or other services.[3] Given the highly complex

and abstract nature of natural human language, it is a difficult problem to develop computer

systems that are capable of understanding human language.[4] It is because of this complexity of

the problem that machine learning is often used as the core of techniques to engage in natural

language processing. [4]

TensorFlow and Nautral Language Processing

Given TensorFlow's use in machine learning and the importance of machine learning for natural language processing, it is a natural question to wonder about the possibilities of applying TensorFlow's technology to the problem of natural language processing. Unsurprisingly, TensorFlow can be used for natural language processing. The core element of the technique is to tokenize the text to be processed before training on a neural network. [5] Each word will be assigned a unique token. Once tokenization is complete, sequencing is the next step in the process, where the sequence of tokens in generated for the purpose of analysis. [6] Sequencing is important because word order is essential to engage in proper natural language processing, otherwise the analysis will not work properly. Once this process is complete, it is important to split the data into training or test sets for the purposes of model training. [7] Using separate data for training and testing allows us to test the model after it is trained in order to validate and confirm its effectiveness. At this point, TensorFlow can be used to build and then deploy our model. [7] Using TensorFlow, the process becomes very simple for performing natural language processing analysis once the initial steps of tokenization and sequencing are completed. This makes TensorFlow a powerful tool for natural language processing.

Is TensorFlow a Good Tool for Natural Language Processing?

Given TensorFlow's power as a tool for machine learning, it is unsurprising that TensorFlow is a useful tool for natural language processing as well. Natural language processing is a difficult computational problem, and leveraging all available technologies and computing techinques is essential to make progress in the field. Given machine learning's important role in the field of natural language processing, utilizing powerful machine learning tools like TensorFlow is an

inevitable part of this effort. TensorFlow's ease of use and availability are additional advantages to using TensorFlow for natual language processing. TensorFlow is a good tool for natural language processing.

Sources:

[1] https://www.tensorflow.org/about/

[2] http://download.tensorflow.org/paper/whitepaper2015.pdf

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[4] https://becominghuman.ai/a-simple-introduction-to-natural-language-processing-ea66a1747b32

[5] https://ritikaxx.medium.com/natural-language-processing-using-tensorflow-36d3714cd08b

[6] https://towardsai.net/p/nlp/natural-language-processing-in-tensorflow

[7] https://medium.com/@saitejaponugoti/nlp-natural-language-processing-with-tensorflow-b2751aa8c460