TensorFlow in NLP

Machine learning is a complex discipline but implementing machine learning models is far less daunting and difficult than before because of the machine learning frameworks like TensorFlow that ease the process of acquiring data, training models, serving predictions, and refining future results.

Created by the Google Brain team, TensorFlow is an open-source library for numerical computation and large-scale machine learning. It was released under the Apache License 2.0 in 2015. TensorFlow bundles together a slew of machine learning and deep learning models and algorithms and makes them useful by way of a common metaphor. It uses Python to provide a convenient front-end API for building applications with the framework, while executing those applications in high-performance C++. It can be used across a range of tasks but has a particular focus on training and inference of deep neural networks. Tensorflow is a symbolic math library based on dataflow and differentiable programming.

TensorFlow is an end-to-end open-source platform for machine learning. It has a comprehensive, flexible ecosystem of tools, libraries, and community resources that lets researchers push the state-of-the-art in ML and developers easily build and deploy ML-powered applications. The system is general enough to be applicable in a wide variety of other domains, as well. TensorFlow provides stable Python and C++ APIs, as well as non-guaranteed backward compatible API for other languages.

TensorFlow is a rich system for managing all aspects of a machine learning system. TensorFlow APIs are arranged hierarchically, with the high-level APIs built on the low-level APIs. Machine learning researchers use the low-level APIs to create and explore new machine learning algorithms.

TensorFlow usage in NLP

Not all the data is present in a standardized form. Data is created when we talk, when we tweet, when we send messages on Whatsapp and in other activities. The majority of this data is in the textual form, which is of a highly unstructured nature. While having data of high dimensions, the information stored therein is not directly available unless it is manually interpreted or analyzed by an automated device. It is important to familiarize with the techniques and principles of Natural Language Processing in order to gain meaningful insights from text data.

TensorFlow has built-in high-level API named tf.keras to define and train machine learning models and to make predictions. tf.keras is the TensorFlow variant of the open-source Keras API.

Citations

- https://en.wikipedia.org/wiki/TensorFlow
- https://www.infoworld.com/article/3278008/what-is-tensorflow-the-machine-learning-library-explained.html
- https://developers.google.com/machine-learning/crash-course/first-steps-with-tensorflow/toolkit
- https://www.tensorflow.org/learn
- https://www.tensorflow.org/hub/tutorials/tf2_text_classification