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Neural Networks

Oct 01, 2023

Reflection

Throughout the building process and execution of TeenNet, I fully understand of Object-Oriented Programming (OOP) principle in Python, and I also gained a clear impression and solid foundation of the Neural Networks. While working and debugging with TeenNet, I realized that the structure of the Neural Network consists of an input layer, a hidden layer, and an output layer. Furthermore, I learned the training loop, backpropagation loop, and checking method of Neural Networks. According to my acknowledge of Neural Network operation, I fully understand some points as below.

First, the Neural Network architecture, the TeenNet consisted of an input layer, a hidden layer, and an output layer, and between layers weights and activation functions were also included. Users could use the “***forward\_pass***” function of TeenNet to get the best quality performance.

Second, the backpropagation process is the most important part of the TeenNet. In the TeenNet source code, the User could use the “***train***” function to adjust hyperparameters to obtain the accuracy of the Neural Network. The backpropagation process involved the calculation of the gradient and tweaking weights in order to make the Neural Network prediction better.

Third, the activation function plays an important role in the TeenNet, which collects all parameters and weights and then triggers the output from the previous layer to the next layer. This process allows the Neural Network to become functional.

However, there are still some uncertain aspects about TeenNet. For example, regarding the input nodes and output nodes which are vectors, I still have a question about the vectors dimension transforming during the “***forward\_pass***” function and “***train***” (backpropagation) function.

Moreover, in the backpropagation process, the hyperparameter tuning is another question. I wonder what the basis of the hyperparameter initialization is. Additionally, I wonder how to identify which machine learning algorithm (MLAlgorithmChooser) TeenNet belongs to as I execute it.

As a result, studying and understanding TeenNet, which encouraged me to look forward to diving into more complex Neural Network studies in the following lectures.