

Assignment -11

Title: How to Train a Neural Network with Tensor Flow/Pytorch and evaluation of logistic regression using tensor Flow

Problem Statement: How to Train a Neural Network with Tensor Flow/Pytorch and evaluation of logistic regression using tensor Flow

Objective: To Train a Neural Network with Tensor Flow/Pytorch and evaluation of logistic regression using tensor Flow

Software Required:

Tensor Flow/Pytorch

Theory:

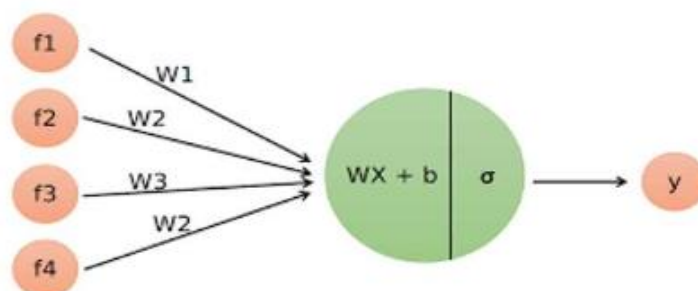
What is Tensor Flow?

Tensor Flow is a free and open-source software library for machine learning and artificial intelligence. It can be used across a range of tasks but has a particular focus on training and inference of deep neural networks. It was developed by the Google Brain team for internal Google use in research and production. The initial version was released under the Apache License 2.0 in 2015. Google released the updated version of Tensor Flow, named Tensor Flow 2.0, in September 2019. It can be used in a wide variety of programming languages, including Python, JavaScript, C++, and Java. This flexibility lends itself to a range of applications in many different sectors.

What is Pytorch?

PyTorch is an open source machine learning (ML) framework based on the Python programming language and the Torch library. Torch is an open-source ML library used for creating deep neural networks and is written in the Lua scripting language. It's one of the preferred platforms for deep learning research. The framework is built to speed up the process between research prototyping and deployment. The framework supports over 200 different mathematical operations. It's popularity continues to rise, as it simplifies the creation of artificial neural network models. PyTorch is mainly used by data scientists for research and artificial intelligence (AI) applications.

Diagram:



Algorithm:

- Step 1: Importing necessary modules
- Step 2: Loading and preparing the mnist data set
- Step 3: Setting up hyper parameters and data set parameters
- Step 4: Shuffling and batching the data
- Step 5: initializing weights and biases
- Step 6: Defining logistic regression and cost function
- Step 7: Defining optimizers and accuracy metrics
- Step 8: Optimization process and updating weights and biases
- Step 9: The training loop
- Step 10: Testing model accuracy using the test data

Conclusion:

We have successfully implemented a Neural Network with Tensor Flow/Pytorch and Evaluation of logistic regression using tensor Flow

Questions:

1. Large scale handwritten digit recognition problem in CNN.
2. Explain Lnet 5
3. Explain AlexNet
4. Explain VGG 16
5. Explain Residual Network