Conquering Fashion MNIST with CNNs using Computer Vision

The Fashion MNIST dataset, which comprises of grayscale photos of various fashion products, is used in this code to train a convolutional neural network (CNN) model. The many parts and their functions are broken down below:

1. ***Importing the necessary libraries:***

The deep learning framework called TensorFlow was used to create and train the model. The fashion\_mnist module from the datasets in tensorflow.keras: provides tools for loading the MNIST dataset for fashion. The foundational layers of the CNN model are Sequential, Conv2D, MaxPooling2D, Flatten, and Dense from tensorflow.keras.layers.

1. ***Checking for intra-op parallelism by counting the number of threads:***

It shows how many parallel processing threads were utilised during model training.

1. ***Reading and splitting the MNIST fashion dataset:***

The dataset is loaded using the fashion\_mnist.load\_data() method, which provides two tuples that represent the training and testing sets as well as their accompanying labels. For labels, the data is divided into y\_train and y\_test, and for pictures, X\_train and X\_test.

1. ***Reshaping and Normalizing the input data:***

The dataset's pictures are rearranged to include a new dimension that represents the number of channels—in this example, one for grayscale—in each image. By dividing by 255, the image's pixel values are normalized to fall between [0, 1].

1. ***Creating the CNN model:***

Using Sequential(), a sequential model is produced. The model is expanded by adding layers using add(). The layers are two-dimensional convolutional (Conv2D), maximum pooling (MaxPooling2D), flatten (Flatten), and dense (Dense) layers.

1. ***Compiling the model:***

The model is built using the supplied metrics (accuracy), optimizer (adam), and loss function (sparse\_categorical\_crossentropy).

1. ***Training the model:***

The model is trained using the training set of data using the fit() technique. The training is carried out with a batch size of 128 across 10 epochs.

1. ***Evaluating the model:***

On the basis of the test data, the trained model is evaluated using the evaluate() function. The model's accuracy and loss are printed for the testing data.

This code serves as a simple illustration for creating and training a CNN model using TensorFlow on the Fashion MNIST dataset. For more difficult applications including picture categorization problems, it might serve as a starting point.