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Reflective Journal: Chihuahua vs. Muffin Image Classification Workshop

In this workshop, I learned how to build and train a simple neural network for image classification. The goal was to make a model that can say if a picture is a chihuahua or a muffin. We used PyTorch to build the network. Then we prepared the images by resizing and normalizing them. After that, we trained the model for a few epochs, used Cross-Entropy Loss to calculate the error, and updated the weights with the SGD optimizer. At the end, I tested the model on validation images to see how well it worked.

I learned many things. Image classification means giving a correct label to an image. A neural network has input, hidden, and output layers where the data passes through. I also learned that images are stored as tensors, which are like tables of numbers. Preprocessing, like resizing and normalizing, is very important. Dataloaders are also useful because they load data in small groups. I saw that the loss function shows how wrong the model is, and the optimizer helps it get better. Training for many epochs makes the model improve step by step. I also saw why we need training and validation sets, so the model does not just memorize the data.

I had some problems too. Sometimes I got errors because I did not run the notebook cells in the right order or forgot to load a library. First I fixed it by running all the cells from the beginning and it works, but for further understanding I redid it by checking the error messages. Another challenge was the dataloader output. At first, I only saw numbers, not images. Later, I remembered that it is because the images are stored as tensors. The workshop helps me learn a lot. At first, I knew neural networks were hard, but PyTorch made it easier to use. The part I liked the most was looking at the predictions. It showed when the model was right and when it was wrong. This helped me see that checking the results is very important in machine learning.

I also noticed that what we learned can be used in many real situations. For example, doctors can use it for scans, farmers for plants, or cars to detect people on the road. Even a small model like ours could be part of a bigger project.

In the end, this workshop gave me a good foundation in image classification. I learned the steps of building, training, and testing a model.

Cited work:

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