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Exercise 3
Deep Learning Lab WS1819

The objective of this exercise was to learn about implementation learning. A Network was built for learning the actions using TensorFlow library. The TF library was used to get a better understanding of its workings.

The network was built using 3 convolutional layers and a stride of [1,2,2,1] and a Relu activation at each convolutional layer. They are followed by the dense layers.

Hyperparameters:

The training was conducted using 10000 samples which were generated manually. The hyperparameters for training the network on the data are
Learning rate = 0.01
Number of batches = 300.

The network was trained with the following values.
Loss = 1.01800
Training accuracy = 0.781
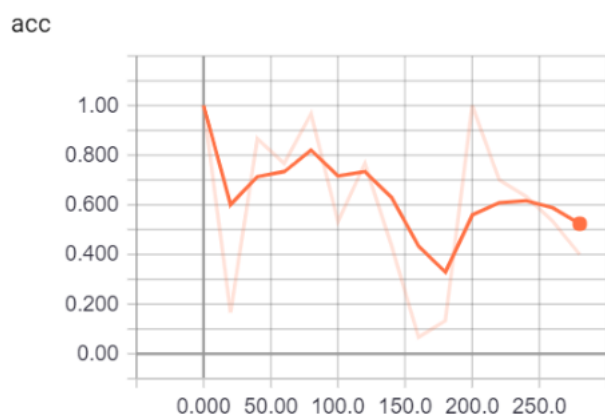Validation accuracy = 0.582

Tensorboard Plots:
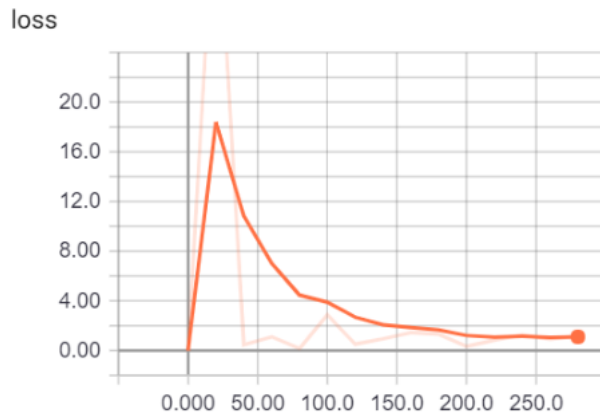

Figure 1: Training accuracy

loss

Figure 2: Training loss

Architecture

Another architecture was tried by changing the convolutional layers to 2. This resulted in lesser accuracy in the training phase.
The values using this network were:
Loss = 1.2148645
Training accuracy = 0.53333336
Validation accuracy = 0.542

Challenges faced

The training of the network could not run the car properly on the track. The problem being the network giving a high score to only one of the actions. Many variations of the approach have been tried but with less improvement in the performance.