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Assignment 2

This is a report on the CNN model developed to classify images using the CIFAR-10 dataset. This model was built using PyTorch and tuning included multiple stages

Comparing 2 optimizers: Adam and SGD

optimzer	lr	accuracy
adam	0.1	10
	0.01	10
	0.001	67
	0.0001	55
SGD	0.1	60
	0.01	56
	0.001	28
	0.0001	12

The best result from tuning the optimizer came from Adam optimizer with a learning rate of 0.001.

<u>Layer Tuning</u>

Set up				param	accuracy (%)
1	conv1	3	10		
	conv2	10	30		
	conv3	30	50		67
2	conv1	3	10		
	conv2	10	20		
	conv3	20	30		66
3	conv1	3	10		
	conv2	10	30		
	conv3	30	40		66
4	conv1	3	15		
	conv2	15	30		
	conv3	30	60		67
5	conv1	3	22		
	conv2	22	38		
	conv3	38	75	292129	69
6	conv1	3	25		
	conv2	25	50		
	conv3	50	100	402260	68

Testing 6 combinations of layer parameter inputs, the best result came from set up 5 with a 69% accuracy using 3 input parameters and 22 output parameters in the first layer, 22 and 38 in the second, and 38 and 75 in the third respectively. The number of parameters in this set up was 292,129. This was a 2% increase from the previous accuracy.

Kernel Tuning

kernel size	padding	accuracy (%)
7, 5, 3	3, 2, 1	69
3, 3, 3	1, 1, 1	71

Initially, the kernel size decreased between layers. However, the best result came from adjusting all kernel sizes to 3x3 which increased the overall accuracy from 69% to 71%.