

Computer Vision Task

Results of various augmentation techniques

- In part c) I have compared various augmentation techniques like RandomCrop, Grayscale, Horizontal Flipping, Rotation and Rotation + Flipping on CIFAR-10 dataset. Accuracy achieved by applying these following techniques are as follows: -

- LeNet (without augmentation) - 57%
- With Grayscale - 26%
- With RandomCrop - 61%
- With Rotation - 60%
- With Horizontal Flipping - 62%
- With Rotation + Horizontal Flipping - 61%

- All the transformations have improved the accuracy of the model compared to the actual model but grayscale transformation reduced the accuracy drastically, this may be because of the absence of the color feature which is very important in this classification problem.

- The highest performance is given by Horizontal Flipping mainly because this didn't reduce the quality of images much and also provided broader variety of images. Unlike in rotation where broader variety of images were provided but it reduced the quality of images.

- I wasn't able to train DCGAN generated images (generated images are available in part b folder) on LeNet architecture but I expect DCGAN images accuracy to be less than Real Images, this is because fake images trained by

DCGAN are not as accurate and clear as real images. Features represented in fake images are sometimes very noisy and are not located properly.

Collab Links: -

[Rotation + Flipping](#)

[Flipping](#)

[Rotation](#)

[Random Crop](#)

[Grayscale](#)

[LeNet \(without data augmentation\)](#)

[DCGAN](#)