

Assignment-5 Tournament Arc

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1 Model

We use a recent state of the art image classifier for this problem - EfficientNet. Specifically, the pretrained b1 variant with around 6.6M Parameters.

2 Split

Using the training set given, we make a 80-20 split for our training and validation that preserves the original class proportions.

3 Optimizer

We use an Adam optimizer with a learning rate of 0.0001 and momentum terms 0.9 and 0.999 respectively. The learning rate is reduced using Pytorch's ReduceLROnPlateau when the value of train loss stops improving.

4 Augmentation

Since the model is able to easily overfit quickly, we augment the data using RandomPerspective, ColourJittering, and RandomErasing. We also use Mixup augmentation and observe a performance boost. In Mixup augmentation, two images are combined as . By combining these pairs of examples, mixup is able to regularize the neural network. We use the Pytorch implementation provided here: <https://github.com/facebookresearch/mixup-cifar10>

5 Class Imbalance

All classes are not equally represented in the dataset. To handle this skew in this data, we use a WeightedRandomSampler. This sampler is used by the dataloader to ensure that each batch sees a proportional number of all classes.

References

- [1] Weights and biases.