

Big Data Lab-8 Assignment

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- 1) Cifar10 dataset was downloaded and converted into the same format as the Imagenet data. MobileNetV2 model was used to predict on this dataset without any fine-tuning. The predictions of the model are shown below:

label	mobilenet_v2 predictions
frog	rock_python
bird	pinwheel
truck	bearskin
automobile	mousetrap
truck	oil_filter
truck	thresher
frog	jaguar
truck	moving_van
airplane	waffle_iron
automobile	panpipe
frog	sidewinder
truck	airliner
automobile	maraca
truck	thresher
frog	clog
truck	thresher
truck	moving_van
frog	jersey
truck	thresher
truck	thresher

only showing top 20 rows

Labels didn't match the predictions since the labels in Cifar10 & Imagenet are quite different.

- 2) We compared predictions from MobileNetV2, ResNet50, DenseNet121 & VGG19 by considering top prediction for each label in Cifar10 dataset. We selected a subset of 2000 images as it's costly to work with complete data in Colab notebooks.

True Label	MobileNetV2	ResNet50	VGG19	DenseNet121
Truck	moving_van	moving_van	moving_van	moving_van
Ship	speedboat	speedboat	speedboat	speedboat
Horse	sorrel	sorrel	sorrel	sorrel
Frog	fox_squirrel	tailed_frog	fox_squirrel	fox_squirrel
Dog	Japanese_spaniel	Japanese_spaniel	Japanese_spaniel	Japanese_spaniel
Deer	fox_squirrel	hartebeest	fox_squirrel	fox_squirrel
Cat	EntleBucher	fox_squirrel	fox_squirrel	fox_squirrel
Bird	fox_squirrel	limpkin	fox_squirrel	limpkin
Automobile	moving_van	moving_van	moving_van	moving_van
Airplane	moving_van	letter_opener	thresher	airliner

Conclusion: Correct top predictions are highlighted in yellow in the above table. ResNet50 matched 60% of the labels in the above table, and hence ResNet50 can be considered the best model for this particular task.

Note that labels in Cifar10 & Imagenet dataset don't match exactly. Hence, we approximated the results by considering some categories exactly the same.