# Transfer Learning using AlexNet and Dog Breed Classifier Dataset

You will need to have modified dataset.

- Download the "Dog Breed Identification" dataset from (https://www.kaggle.com/c/dog-breed-identification/data)
- Run "ModifyDataset.mlx" script to modify the dataset into directory wise categories

#### **Train**

#### Set up testing data

```
rootFolder = 'test';

LabelData = readtable('.\labels.csv', 'Format', '%C%C');
BreedLabels = string(transpose(table2cell(unique(LabelData(:,'breed')))));

BreedCount = numel(BreedLabels)

BreedCount = 120

testDS = imageDatastore(fullfile(rootFolder, BreedLabels), 'LabelSource', 'foldernames');
```

### Import GoogLeNet trained with Transfer Learning

Importing trained network for some manual validation and results.

int confMat = int64(ResNet18 confMat .\* 10000)

testDS.ReadFcn = @readFunctionTrain;

```
ResNet18_convnet = trainedNetwork_1;
```

#### Test classifer

```
[labels,err_test] = classify(ResNet18_convnet, testDS, 'MiniBatchSize', 64);
```

## **Determine overall accuracy**

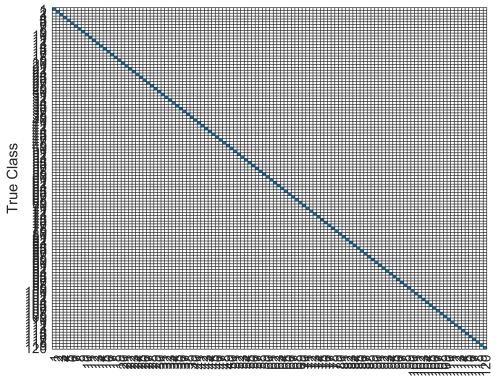
```
ResNet18_confMat = confusionmat(testDS.Labels, labels);
ResNet18_confMat = ResNet18_confMat./sum(ResNet18_confMat,2);
OverallAccuracy = mean(diag(ResNet18_confMat))

OverallAccuracy = 0.9687

BreedAcc = diag(ResNet18_confMat).';
```

int_confMat	= 120×	120 int6	4 matrix						
10000	0	0	0	0	0	0	0	0	0
0	9828	0	0	0	0	0	0	0	0
0	0	9884	0	0	0	0	0	0	0
0	0	0	9439	0	0	0	0	0	0
0	0	0	0	9189	0	0	0	0	0
0	0	0	0	0	9487	0	0	0	0
0	0	0	0	0	0	9412	0	0	0
0	0	0	0	0	0	0	9727	0	0
0	0	0	0	122	0	0	0	9634	0
0	0	0	0	0	0	0	0	0	9810
:									

confusionchart(int\_confMat)



**Predicted Class**