Neural Networks Results

The goal of this assignment was to code the functions that were used in ANN from scratch. The data provided were images and hence ANN's aren't expected to give good results because they fail to capture the spatial characteristics of an image.

Due to RAM constraints the model was trained on 1000 images and tested on 100 images. The model was trained over 100 epochs. The training time took 3-4 hours.

Accuracy Achieved using one hidden layer:

Trial 1:

Dog classified as Dog: 43 Cat classified as Cat: 12 Cat classified as Dog: 40 Dog Classified as Cat: 5

Accuracy: 55%

Trial 2:

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Predictions over a 100 test samples: [1, 1, 0, 1, 1, 1, 0, 0, 1, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 0, 1, 1, 0, 1, 1, 0, 0, 1, 1, 1, 0, 1, 1, 1, 0, 0, 0, 1, 1, 1, 1, 1, 1, 1, 0, 0, 0, 1, 1, 1, 0, 1, 1, 1, 0, 1, 1, 1, 0, 1, 1, 1, 1, 1, 1]
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Dog classified as Dog: 30 Cat classified as Cat: 23 Cat classified as Dog: 23 Dog Classified as Cat: 24

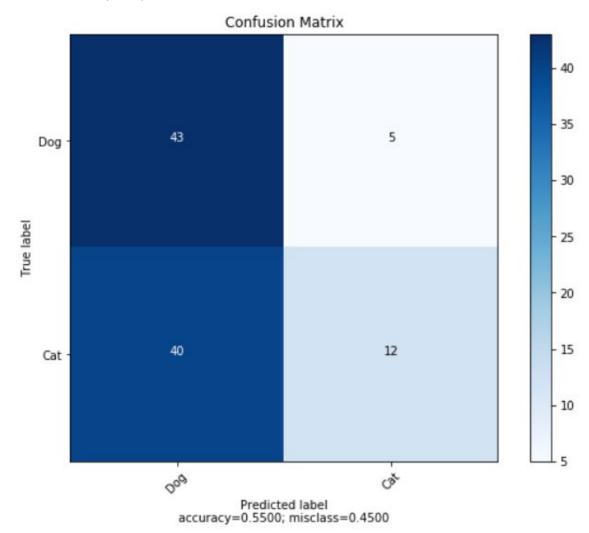
Accuracy: 53%

Trial 3:

Dog classified as Dog: 30 Cat classified as Cat: 17 Cat classified as Dog: 43 Dog Classified as Cat: 10

Accuracy: 47%

Confusion Matrix (Best):

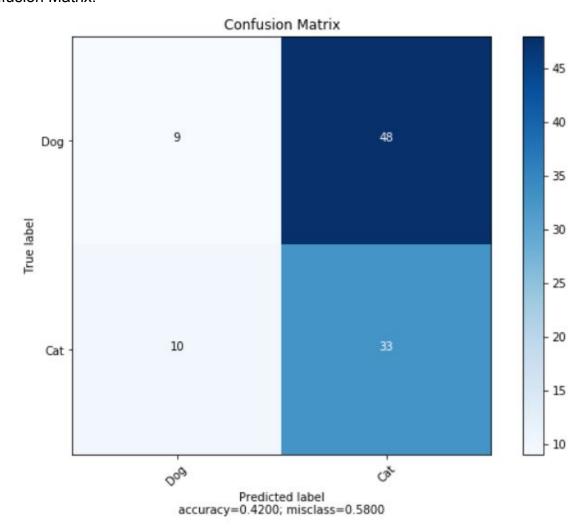


Accuracy Achieved using zero hidden layers (Akin to logistic regression):

Dog classified as Dog: 9 Cat classified as Cat: 33 Cat classified as Dog: 10 Dog Classified as Cat: 48

Accuracy: 42%

Confusion Matrix:



Accuracy Achieved using two hidden layer:

Dog classified as Dog: 41 Cat classified as Cat: 17 Cat classified as Dog: 35 Dog Classified as Cat: 7

Accuracy: 58%

Confusion Matrix:

