GOOGLE AI
OPEN IMAGES CLASSIFICATION

DATS 6203 – Machine Learning II

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12/04/2018

Group 8

OUTLINE

- Background

- Data Augmentation

- Convolutional Neural Network

- Activation Function

- Results

- Conclusions

DATA DESCRIPTION

- Google AI Open images dataset – open image dataset V4

- Dataset is built for the purpose of object detection and segmentation

- Consists of natural images – images that reflect everyday scene

- 10 classes with total 35,000 images- includes wide range of images - - 12 GB

- Images are:
  - High resolution (1024x760)

  - Various sizes and shapes

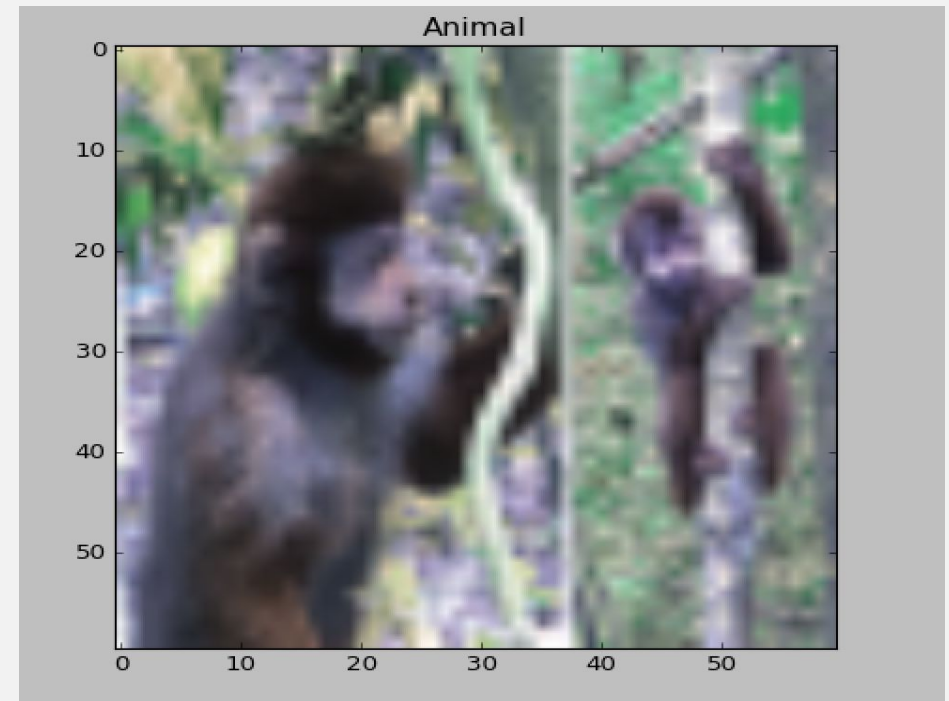 - Channel – grayscale and RGB

ISSUES WITH DATASET

- Many images with no class name

- Missing imageID in labels data

- Mixture of grey and color images
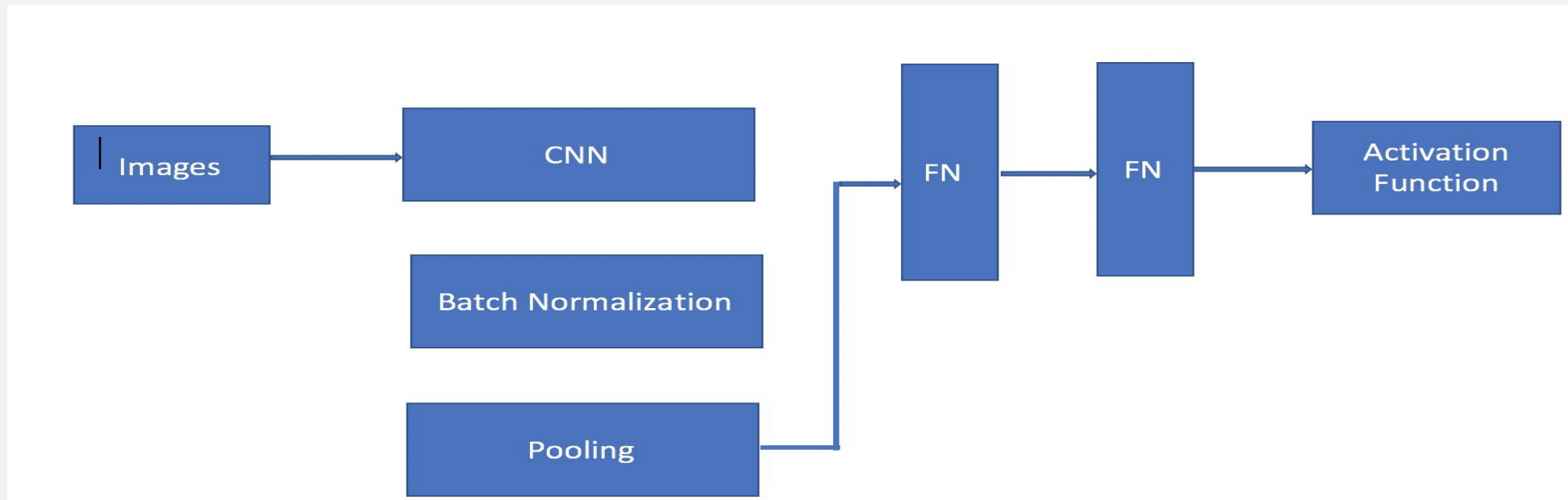
- Images are not in same shape
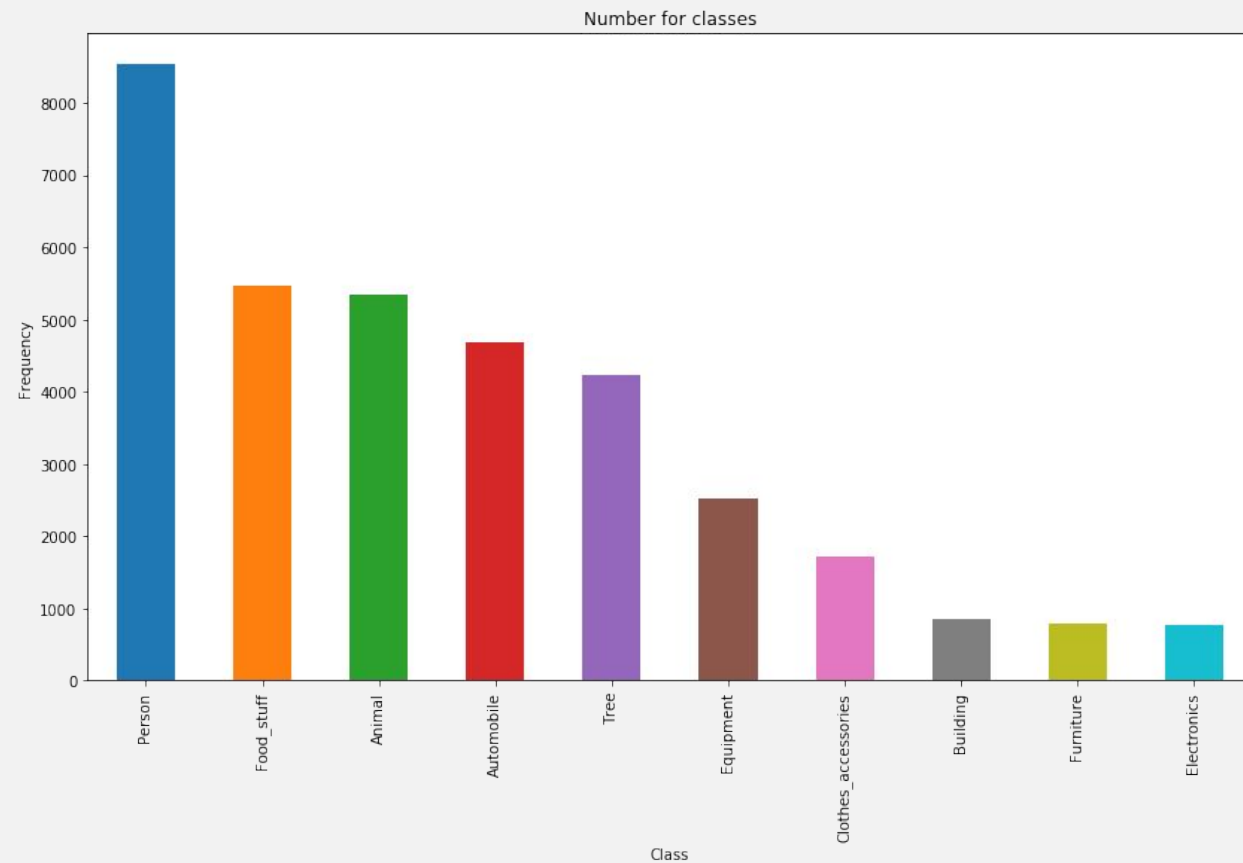
DATA AUGMENTATION

- Resize the images into 60 X 60

- Considered only color images
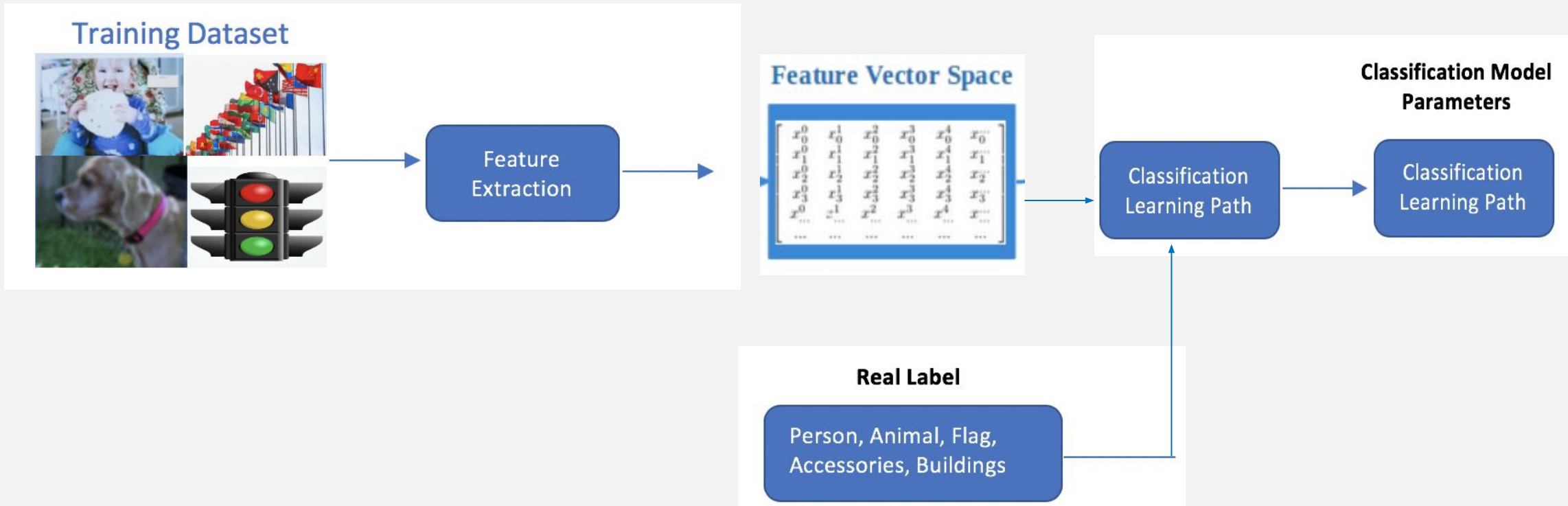
- Remove grey scale images

CONVOLUTIONAL NEURAL NETWORK

- One or more convolutional layer

- Has many built-in functions

- Resulting in easy to train networks with many fewer parameters

ARCHITECTURE FOR LEARNING TASK

RESULTS

Frameworks		Accuracy	Layers	Kernel size	Epochs
Tensorflow	No Batch Normalization	35%	4	5x5	200
Keras	No Batch Normalization	40%	4	5x5	20
Keras	With Batch Normalization	45%	6	5x5	20
Keras	K-fold cross validation	50%	6	5x5	20

CONCLUSION

- With batch normalization, we got better results

- Accuracy from our small dataset is low

- Challenge faced in this project is the size of the data

- Data augmentation: rotating images and adding more training dataset
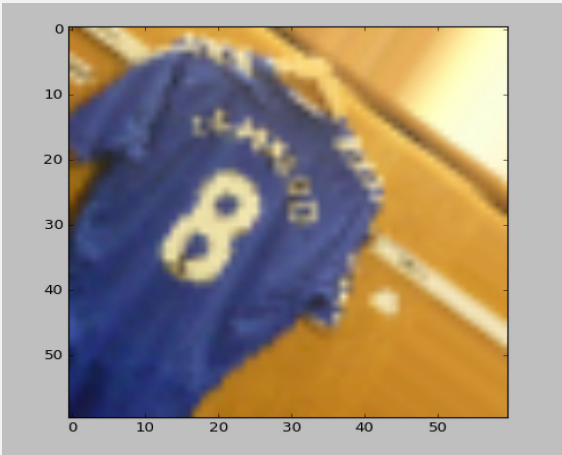
LIMITATION

- Can be done better by adding more training data -Memory use

- Trying with different parameters - kernel size, epochs, optimizers might give us better performance

- Classes are equally not distributed
                    High - Person/food-stuff
                    Low - Building, Furniture

REFERENCES

https://storage.googleapis.com/openimages/web/index.html

http://www.kaggle.com/c/dogs-vs-cat

https://github.com/amir-jafari