PETFINDER.MY –PAWPULARITY

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PROBLEM STATEMENT

- Lots of stray animals on streets which suffer or get killed humanely in shelters around the world.
- Nice picture of these animals are available it would develop more interest to the people, and they can adopt it faster.
- The question is what is a good picture.
- Would need effective machine learning models, on different sets of images.
- PetFinder.my currently uses a basic cuteness meter to rank the pet photos.

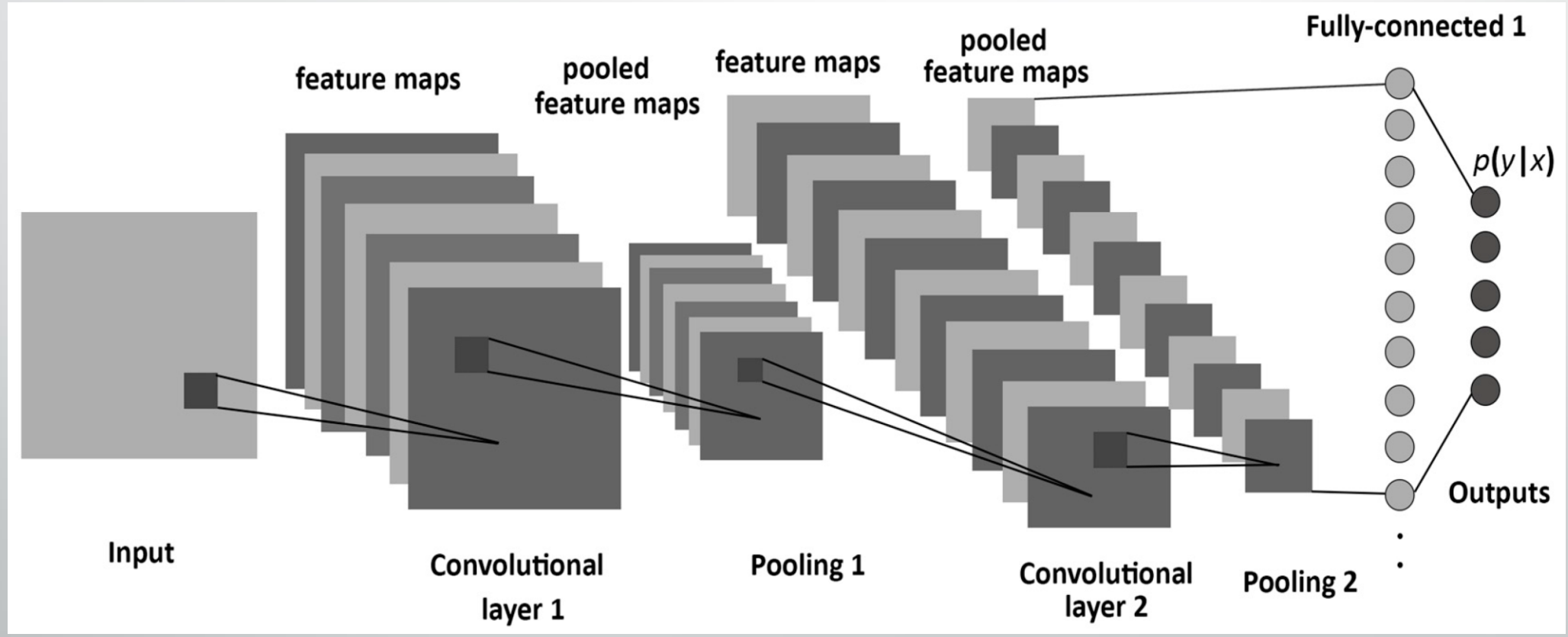
DATA PREPARATION

- The training images consists of around 10,000 pictures of animals along with meta data.
- The training data given by the welfare platform.
- The testing images are picked from resources like Google, Kaggle.

MACHINE LEARNING ALGORITHM USED

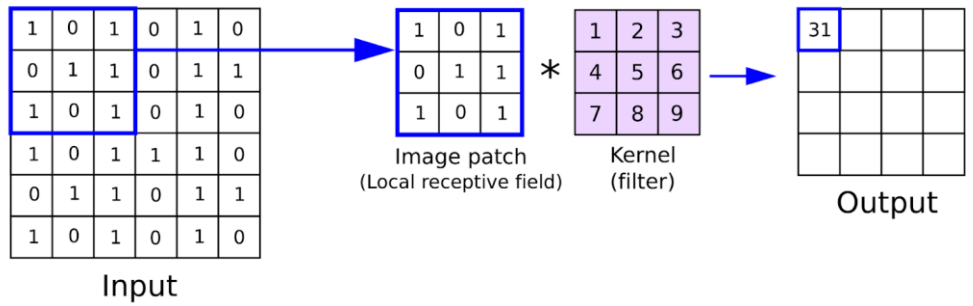
- It is Image recognition problem.
- Algorithm used – Convolutional Neural Network (CNN).
- Ability to detect different features on images.
- Helping in achieving high accuracy on recognizing images.

CONVOLUTIONAL NEURAL NETWORK



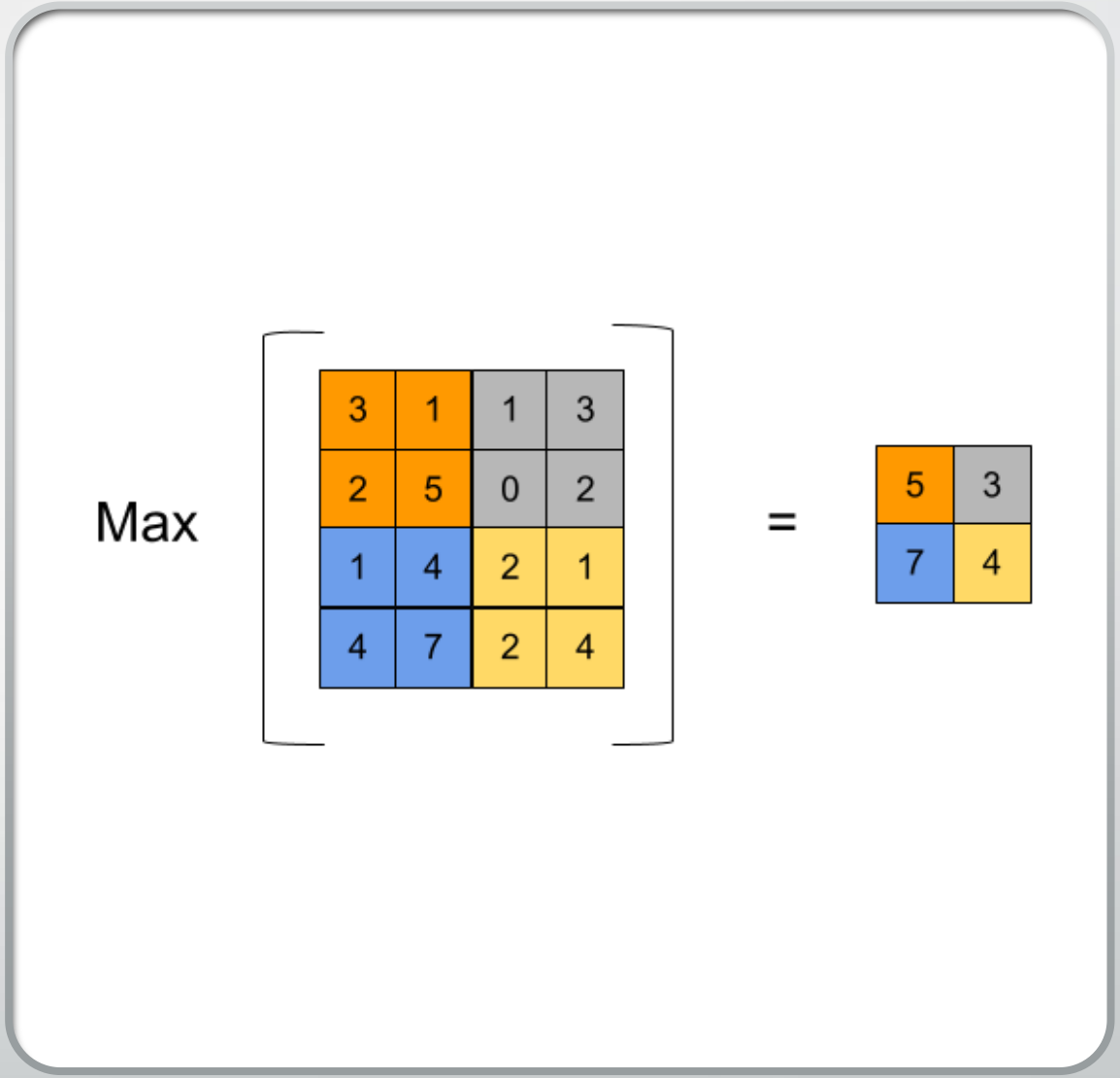
CONVOLUTIONAL LAYER

- Extracts features from input image.
- Preserves relationship between pixels by learning image features using small squares of data.
- Mathematical operation that takes two inputs such as image matrix and a filter.



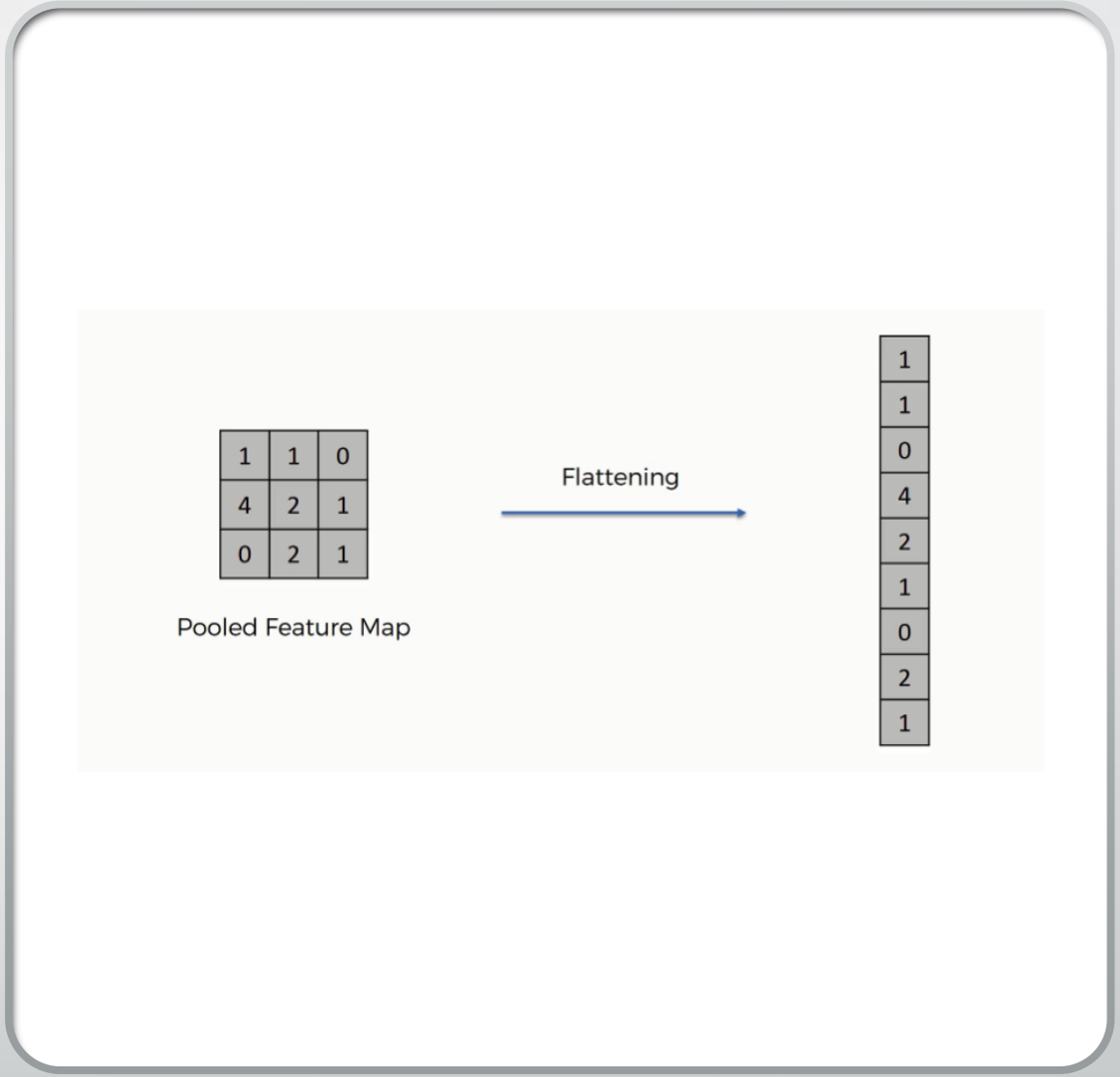
POOLING LAYER

- Reduces dimensions of the output from the convolutional layer.
- Reduces number of parameter to learn
- Reduces amount of computation.



FLATTENING LAYER

- Converts data to 1- dimensional array.
- It inputs for next coming dense layer or fully connected layer.



METHODOLOGY

- Recognizes if the image is good picture that interests people (0) or not (1).
- Activation functions used ReLU and sigmoid function (for output layer)
- Epochs -10

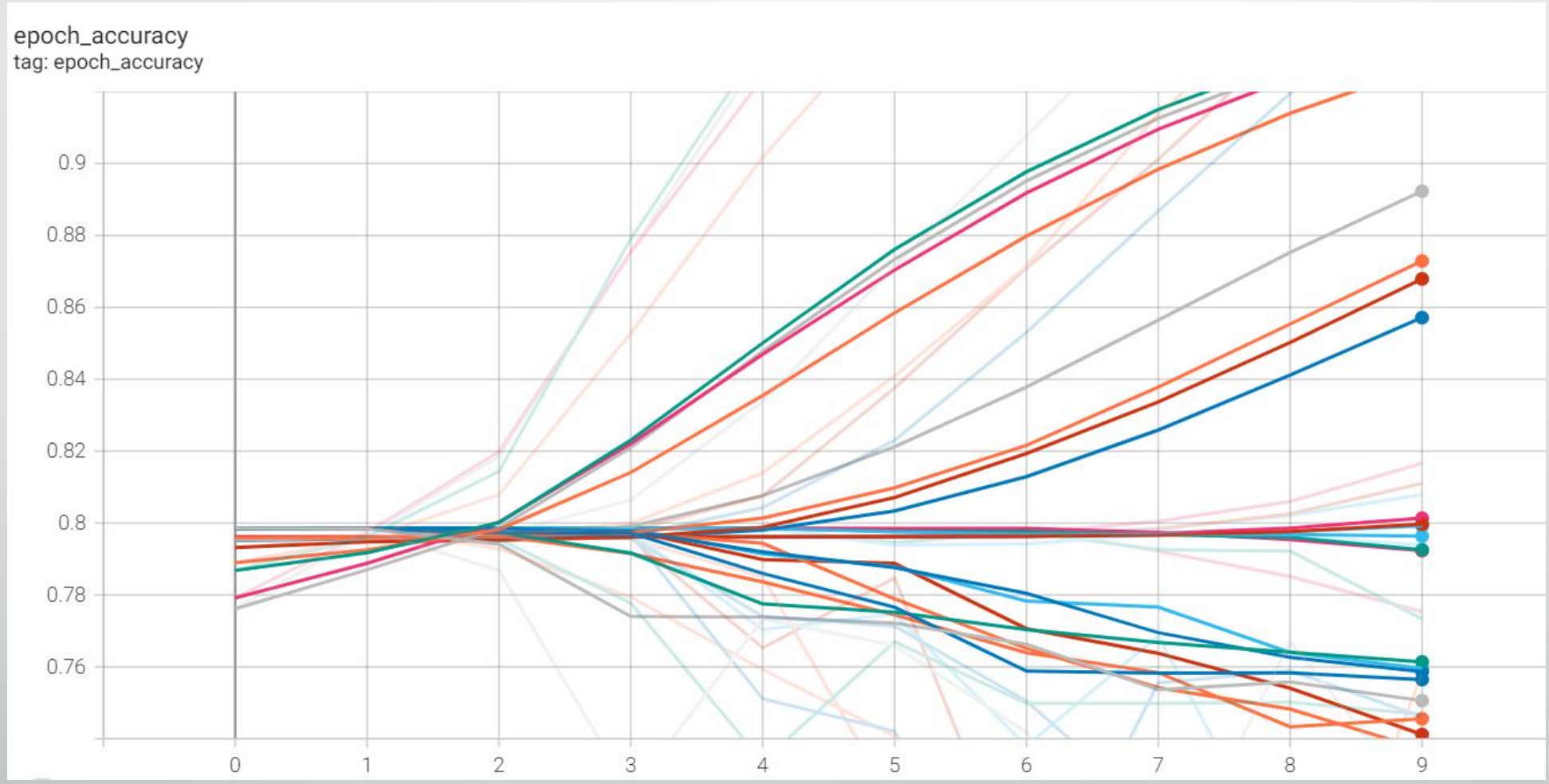
  Validation – 30%

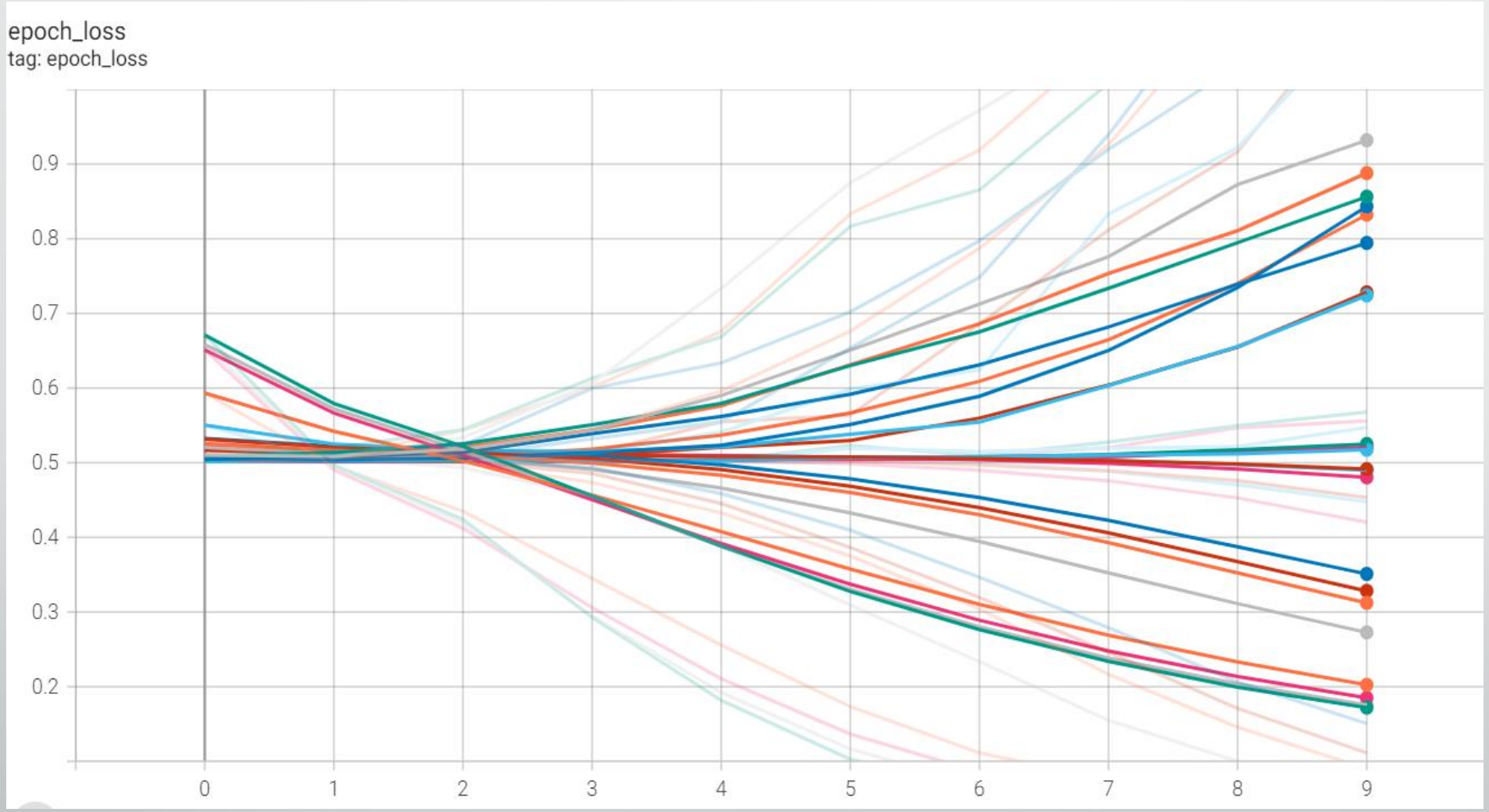
  Number of Convolution Layers – 3

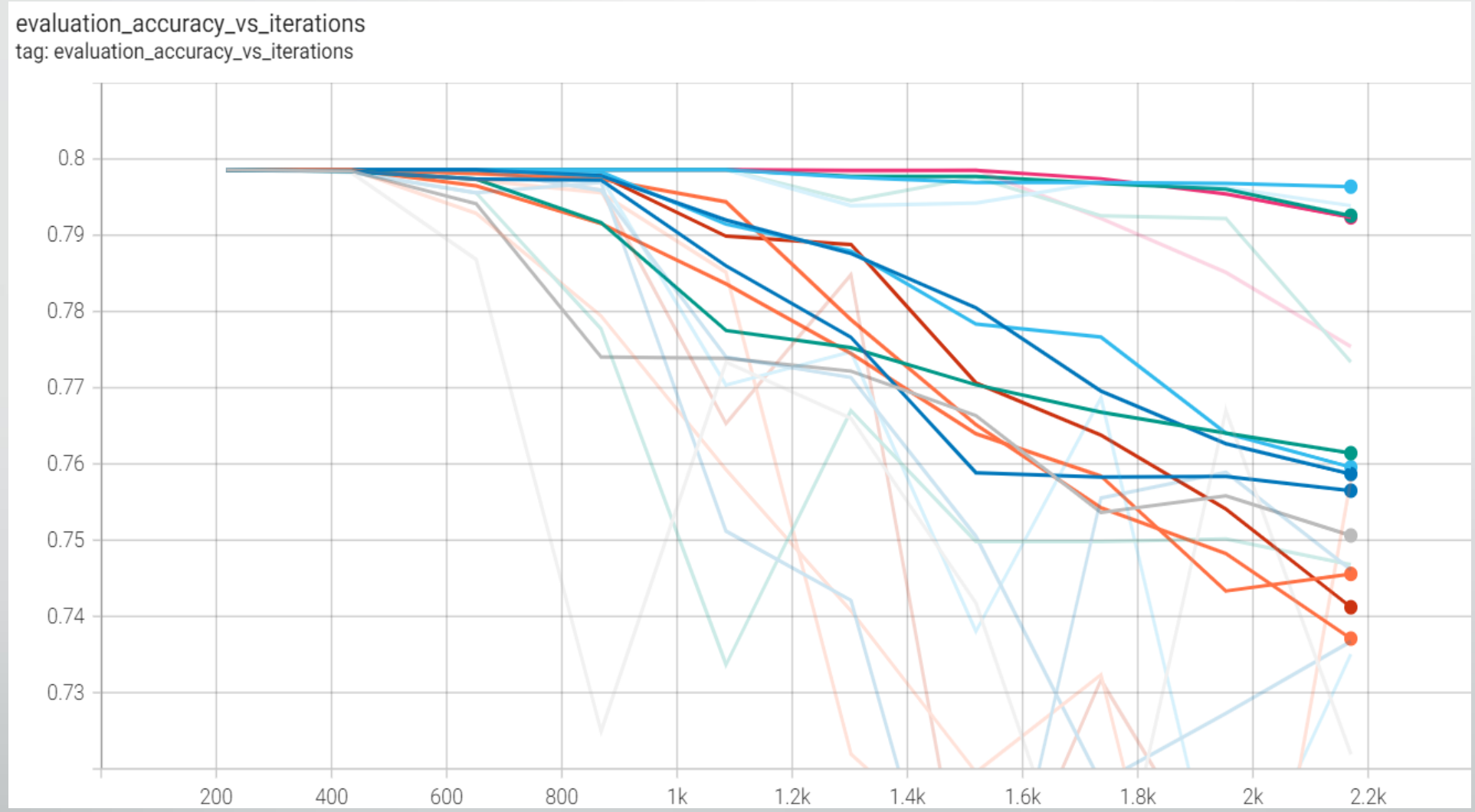
  Number of nodes in layers – 128

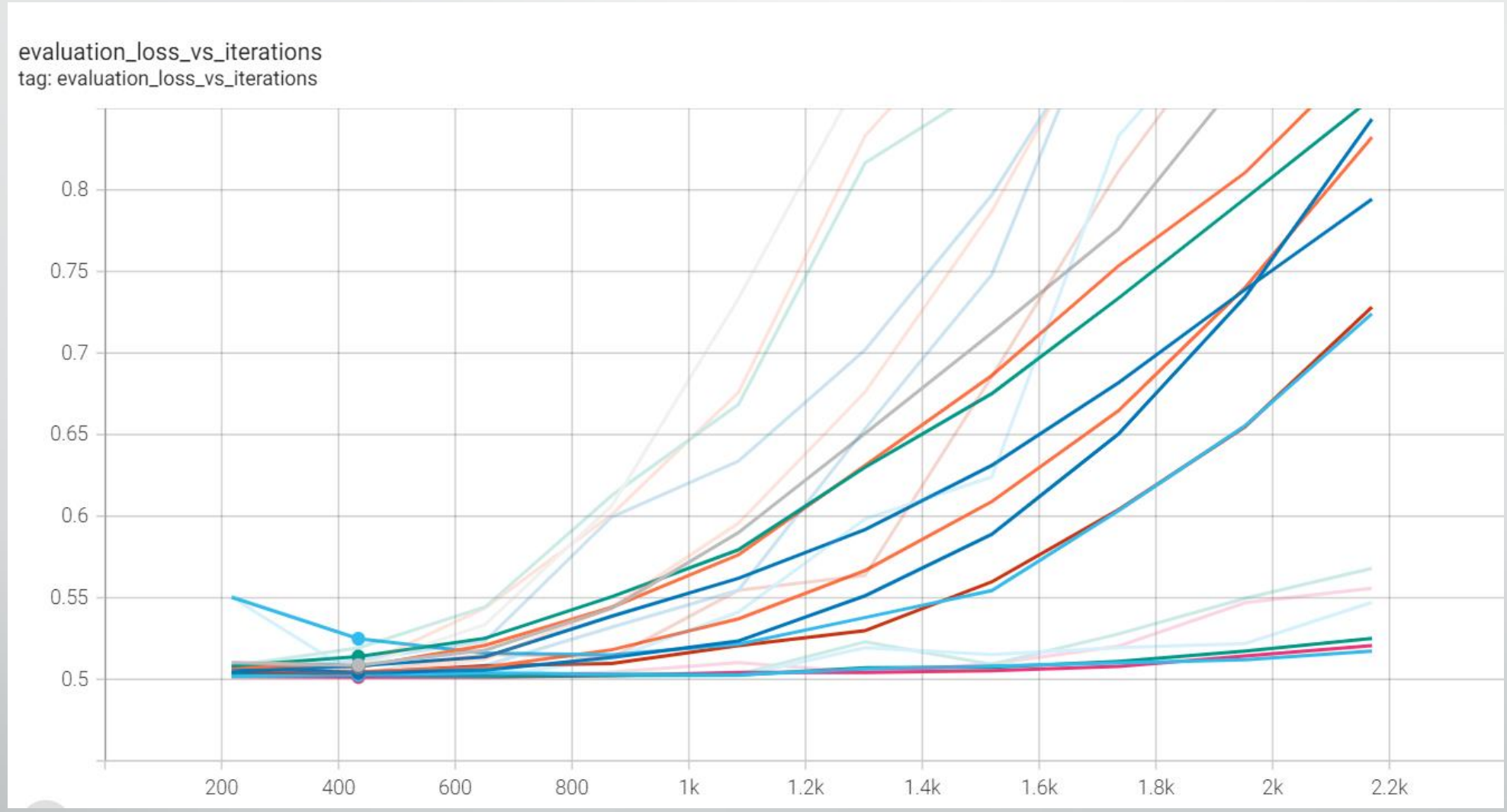
  Number of dense layers- 0

  Accuracy achieved – 82%


epoch_accuracy
tag: epoch_accuracy
0.9
0.88
0.86
0.84
0.82
0.8
0.78
0.76
0
1
2
3
4
5
6
7
8
9


epoch_loss
tag: epoch_loss
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0
1
2
3
4
5
6
7
8
9


evaluation_accuracy_vs_iterations
tag: evaluation_accuracy_vs_iterations
0.8
0.79
0.78
0.77
0.76
0.75
0.74
0.73
200
400
600
800
1k
1.2k
1.4k
1.6k
1.8k
2k
2.2k


evaluation_loss_vs_iterations
tag: evaluation_loss_vs_iterations
0.8
0.75
0.7
0.65
0.6
0.55
0.5
200
400
600
800
1k
1.2k
1.4k
1.6k
1.8k
2k
2.2k

FUTURE WORK

- Need to test the model on test images collected.
- Work on ranking the images based on how good they are.
- Change more hyperparameters for achieving higher accuracy.

QUESTIONS ?