CS671 - Deep Learning and its Applications

Programming Assignment 2

Group - 20

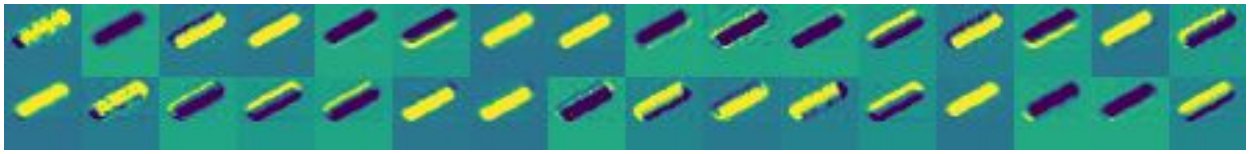
Problem Statement

Part-1 : Visualizing Intermediate Layer Activations

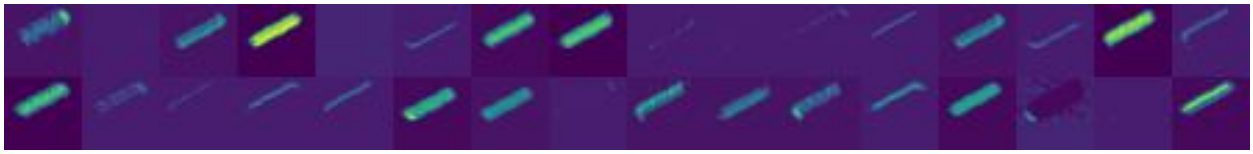
Intermediate layer activations are the outputs of intermediate layers of the neural network. You are required to plot the intermediate activations of the layers of the neural networks made in section 1&2 for at least 6 images.

Network Visualisations

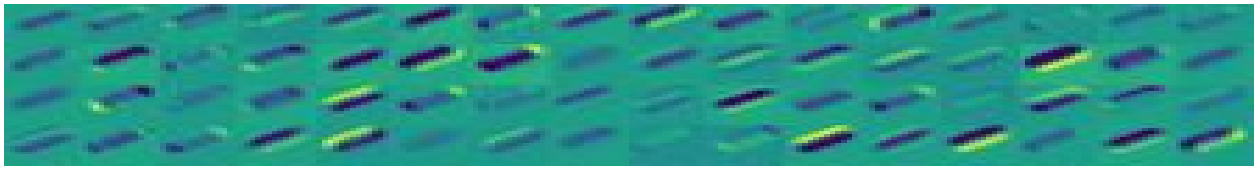
Model for Line_dataset in question 1



Convolutional Layer 1

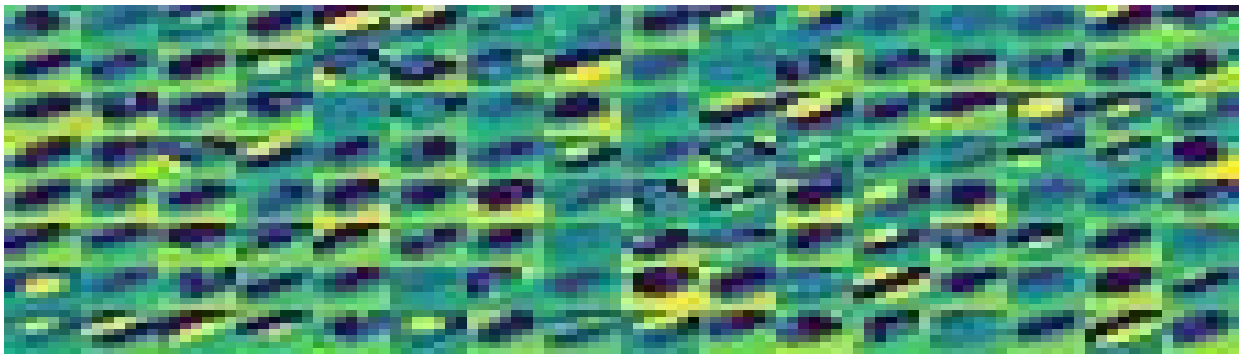


Activation Layer 1



Convolutional Layer 2

Activation Layer 2

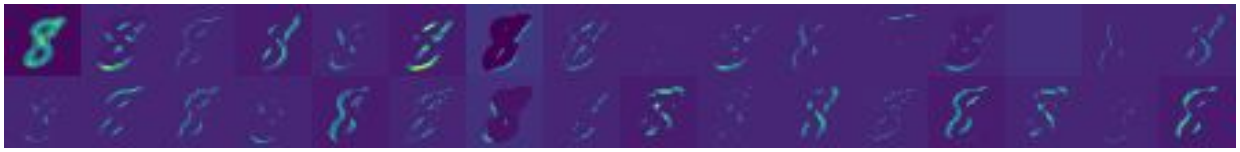


Convolutional Layer 3

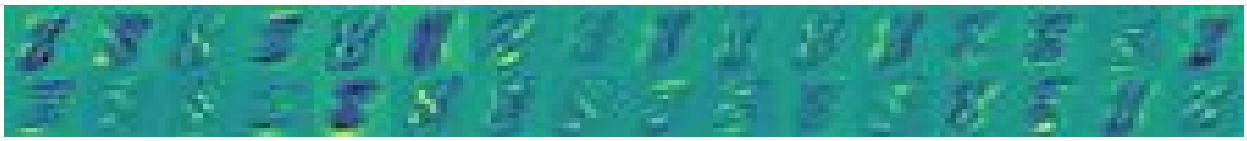
Activation Layer 3

Model for MNIST_dataset in question 1

Convolutional Layer 1



Activation Layer 1



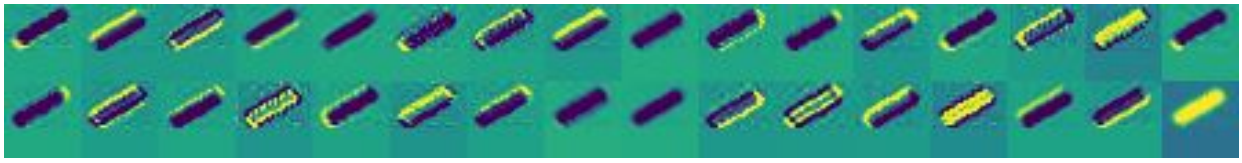
Convolutional Layer 2

Activation Layer 2

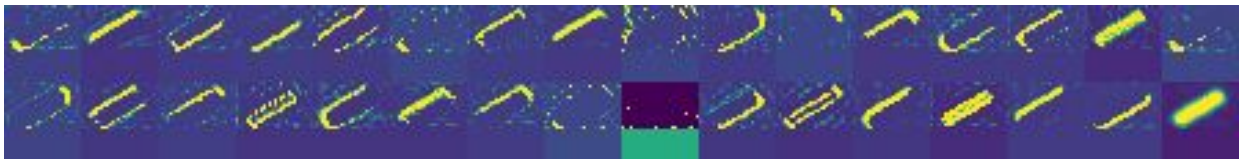
Convolutional Layer 3

Activational Layer 3

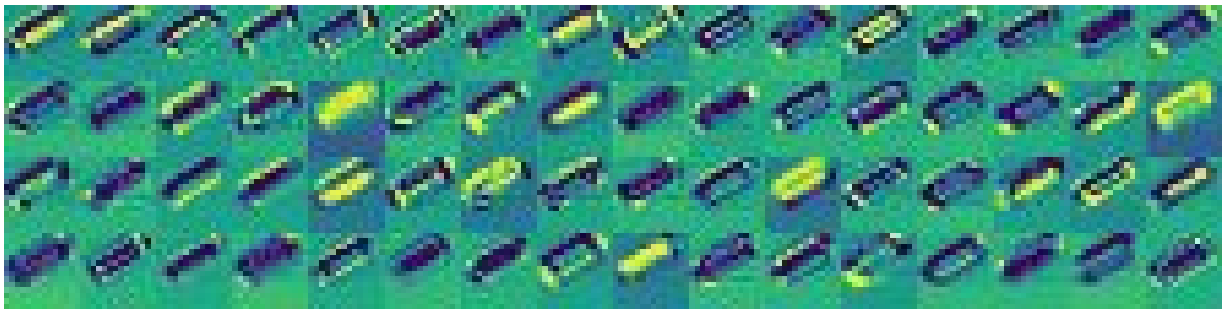
Multihead classification model



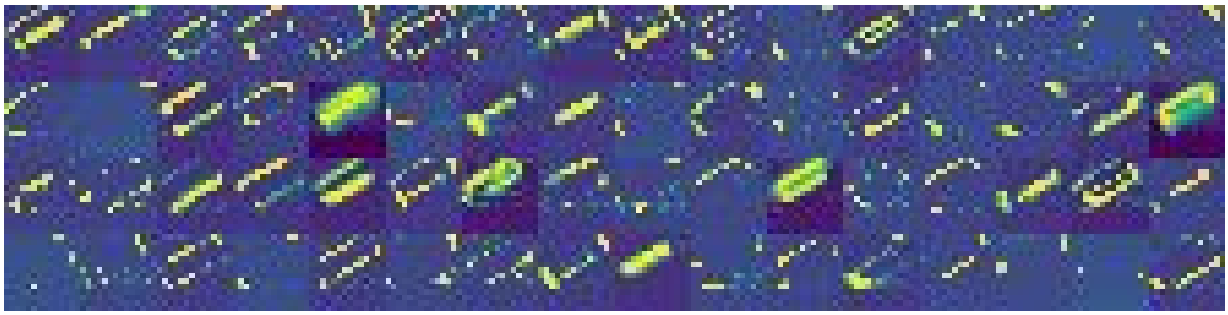
Convolutional Layer 1



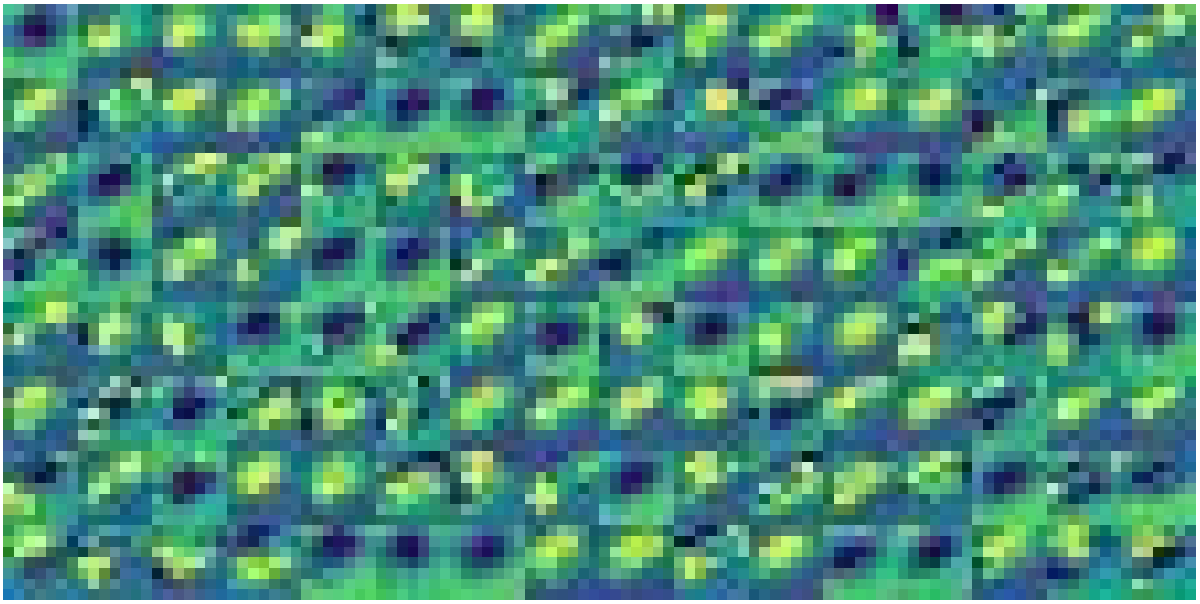
Activation Layer 1



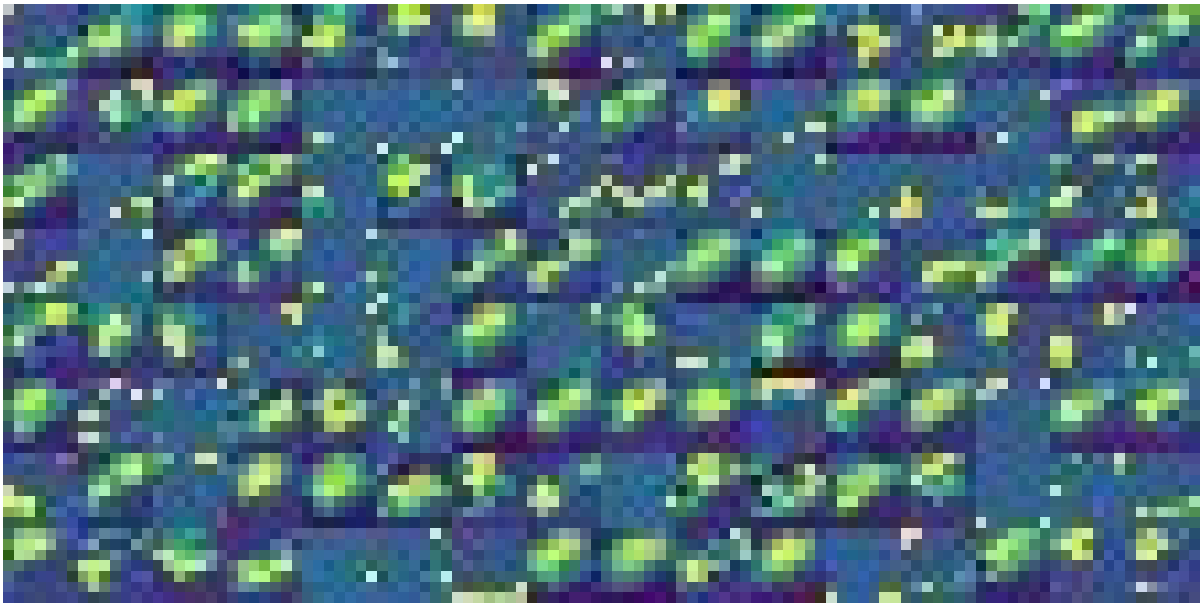
Convolutional Layer 2



Activation Layer 2



Convolution Layer 3



Activation Layer 3

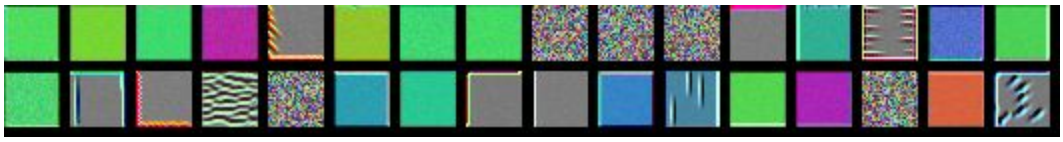
Part 2: Visualizing Convnet Filters

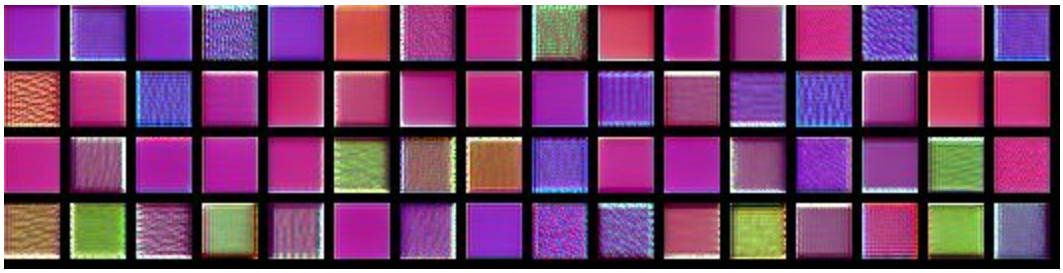
In this part you have to visualize the filters in the convolutional neural network. This can be done by running Gradient Descent on the value of a convnet so as to maximize the response of a specific filter, starting from a blank input image. You are required to plot the filters of the layers of the neural networks made in section 1&2.

Network Visualisations

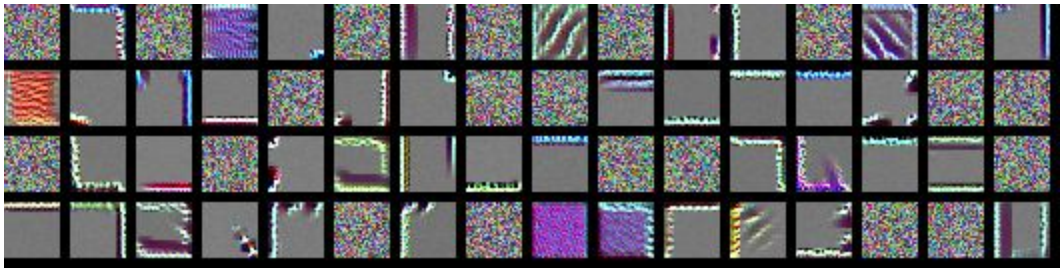
Model for Line_dataset in question 1

Convolutional Layer 1

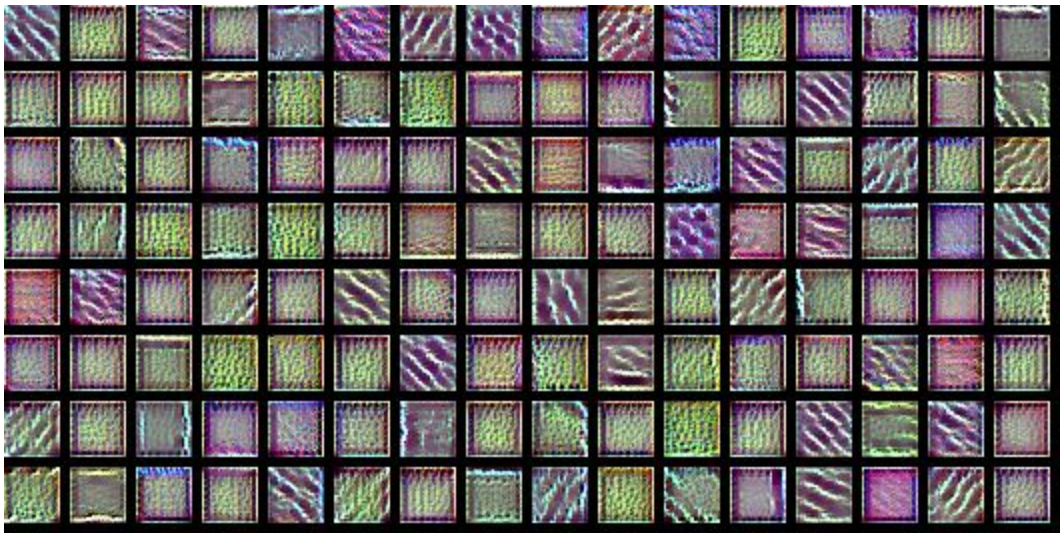




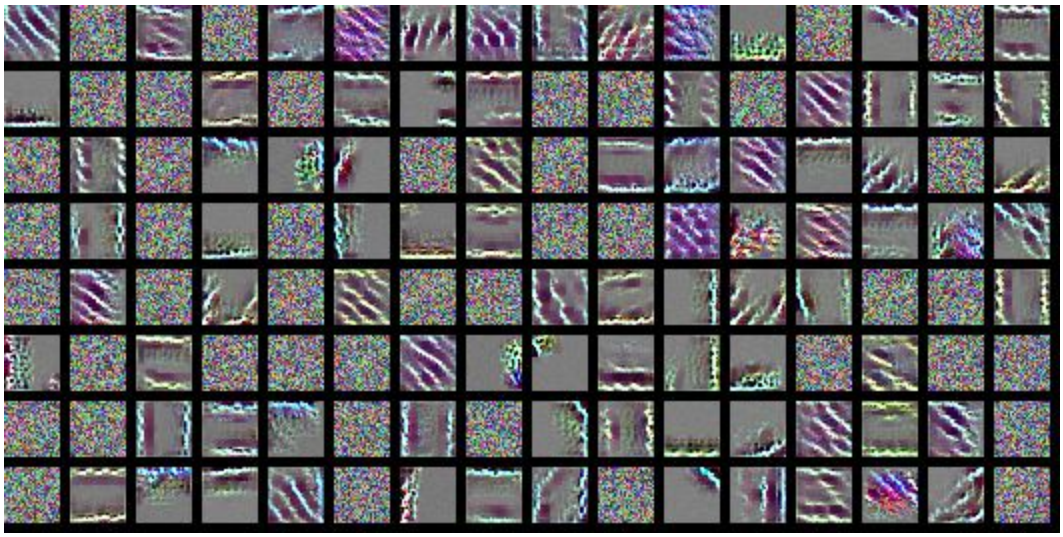
Convolutional Layer 2



Activation Layer 2

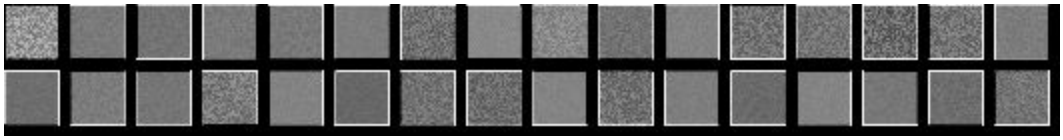


Convolutional Layer 3

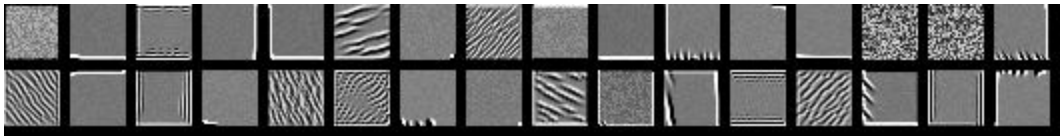


Activation Layer 3

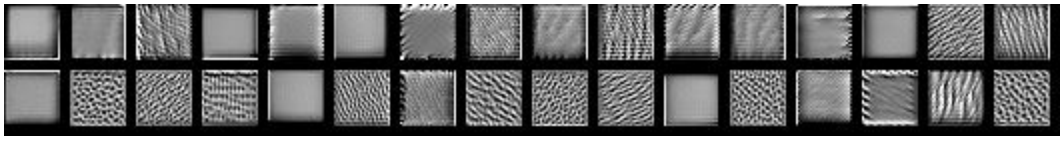
Model for MNIST dataset in question 1



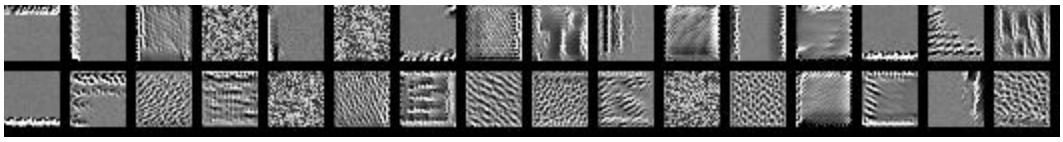
Convolutional Layer 1



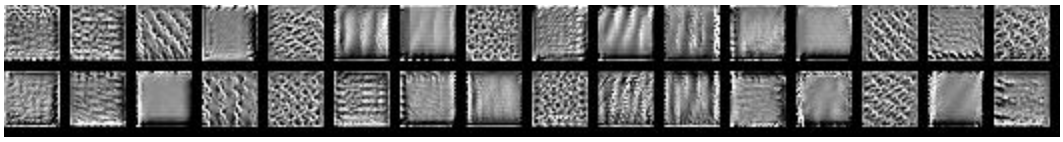
Activation Layer 1



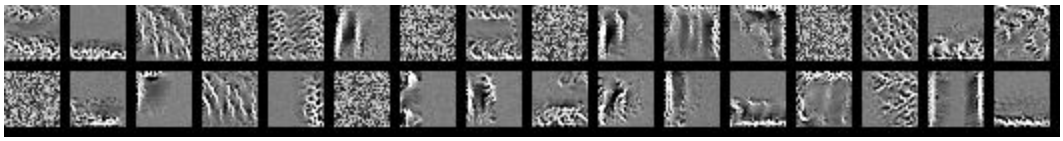
Convolutional Layer 2



Activation Layer 2



Convolutional Layer 3

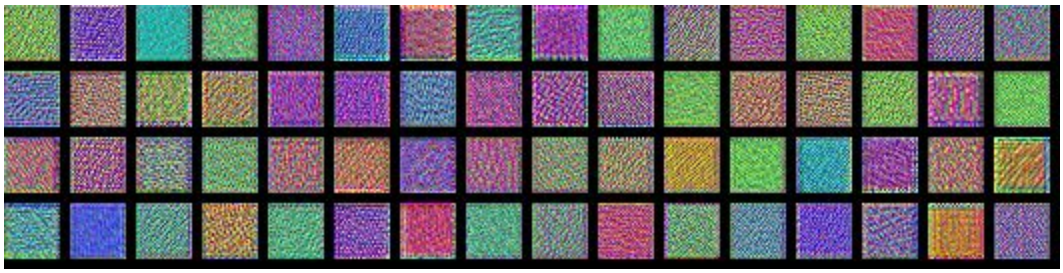


Activation Layer 3

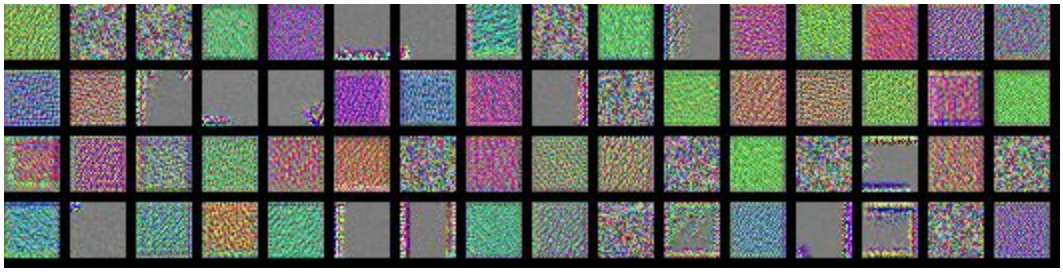
Multihead classification mode

Convolutional Layer 1

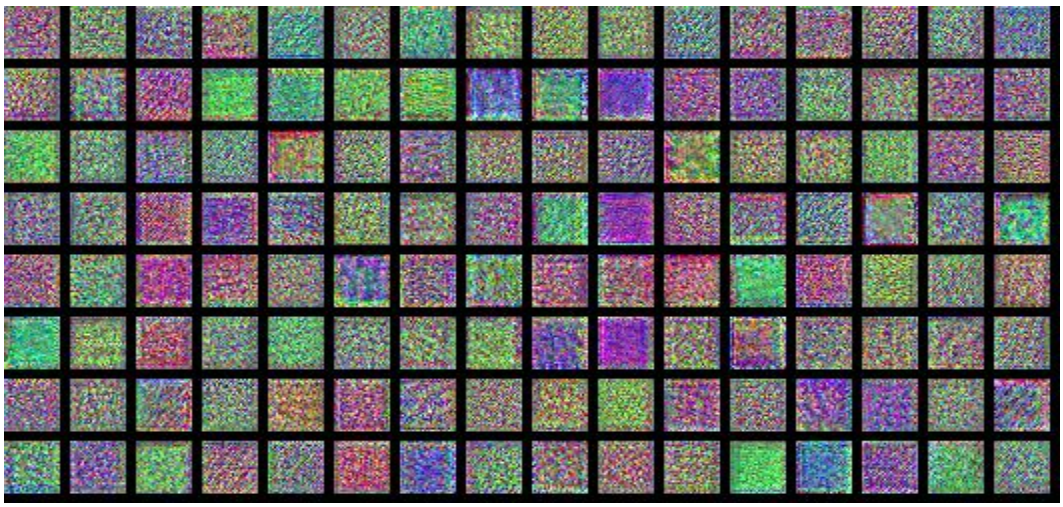
Activation Layer 1



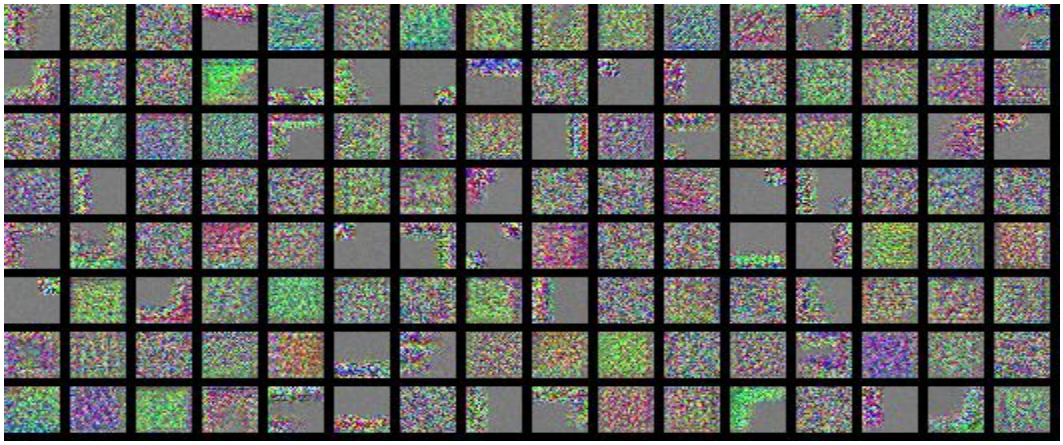
Convolutional Layer 2



Activation Layer 2



Convolution Layer 3



Activation Layer 3