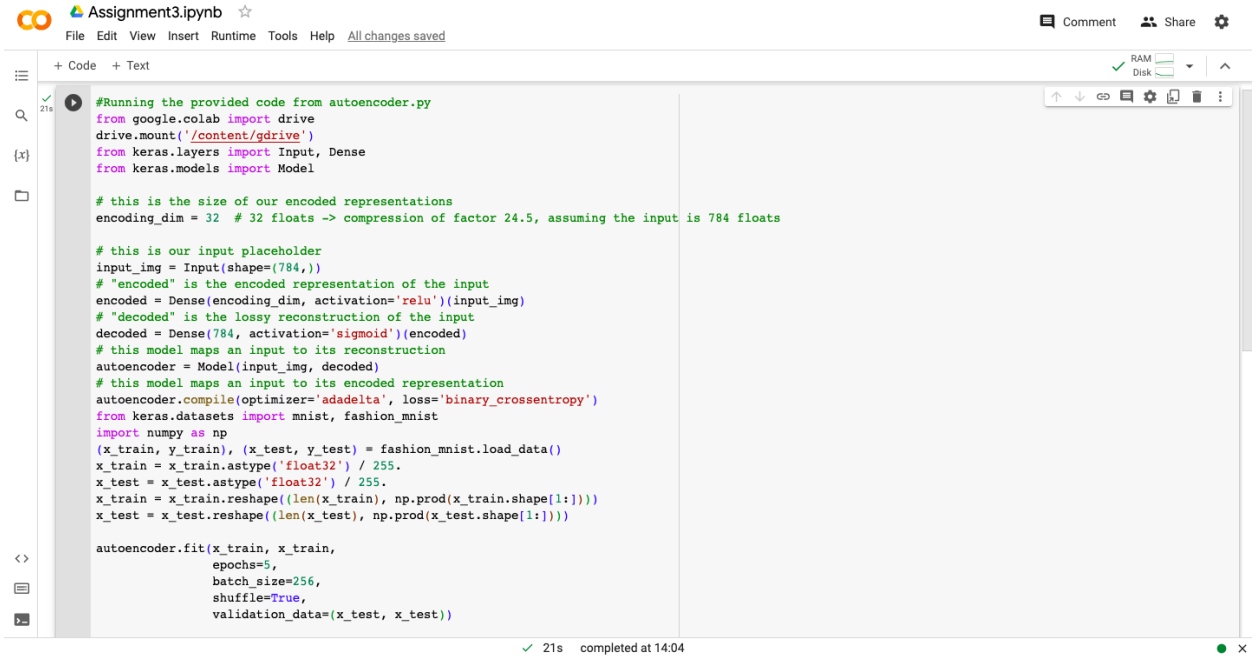
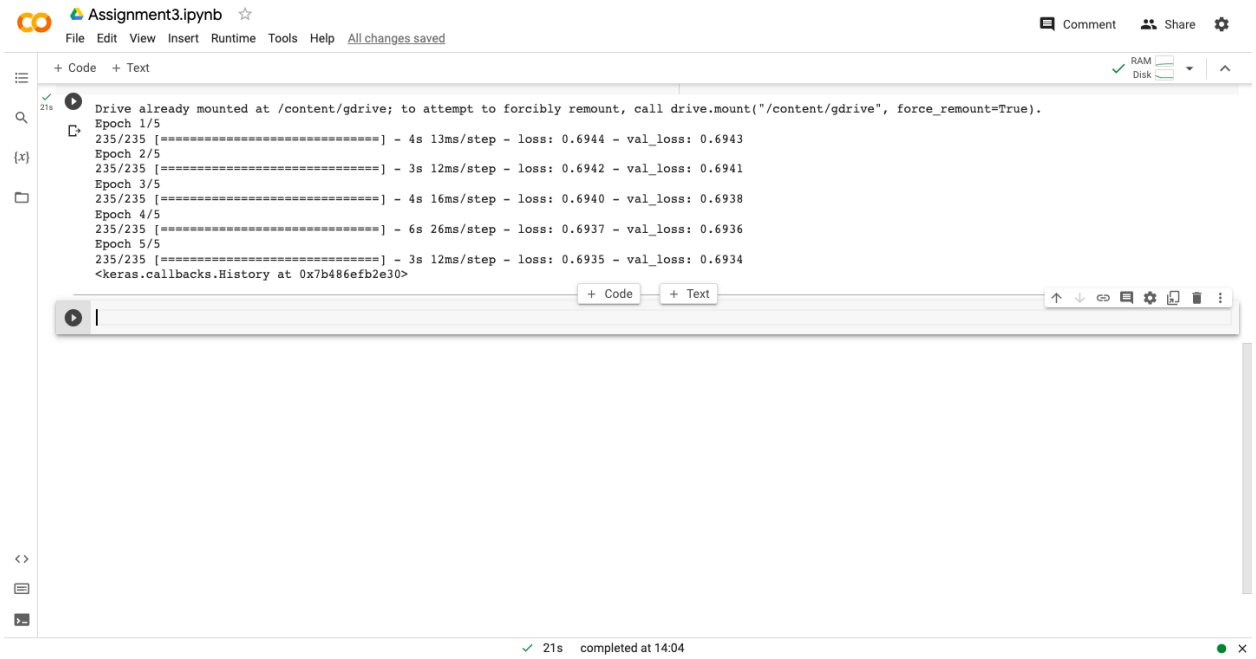
NN&DeepLearning_Lesson: Autoencoders

Running the provided autoencoder.py code

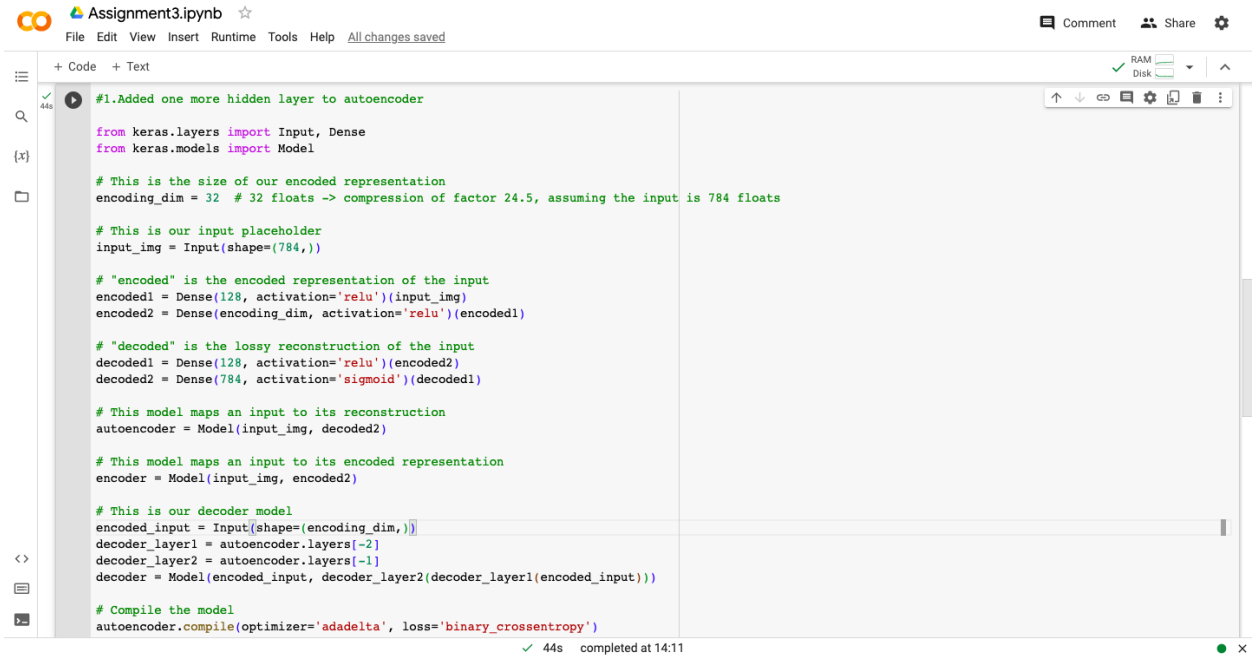


Output of the code is



1. Add one more hidden layer to autoencoder

Ans : Code after adding the hidden layer is



Output is :

2. Do the prediction on the test data and then visualize one of the reconstructed version of that test data. Also, visualize the same test data before reconstruction using Matplotlib.

Ans:

Assignment3.ipynb

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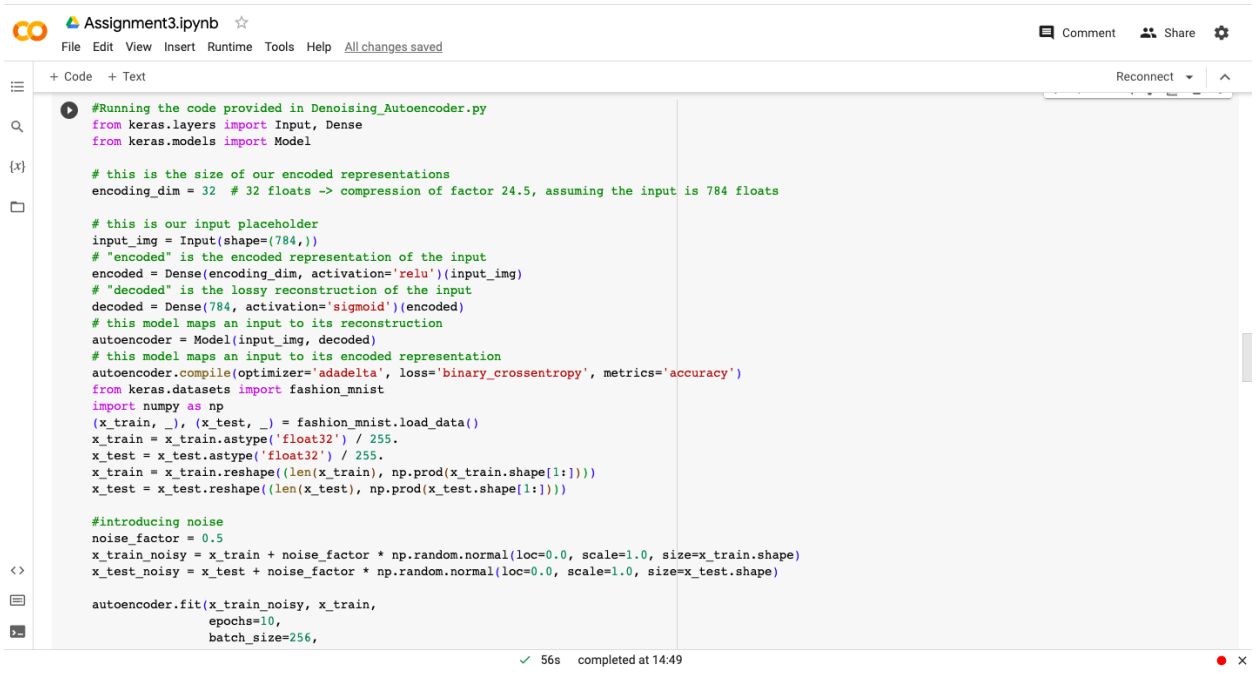
```
#2.Do the prediction on the test data and then visualize one of the reconstructed version of that test data.
#Also, visualize the same test data before reconstruction using Matplotlib


import matplotlib.pyplot as plt

# Get the reconstructed images for the test set
reconstructed_imgs = autoencoder.predict(x_test)

# Choose a random image from the test set
n = 10  # index of the image to be plotted
plt.figure(figsize=(10, 5))

# Plot the original image
ax = plt.subplot(1, 2, 1)
plt.imshow(x_test[n].reshape(28, 28))
plt.gray()
ax.get_xaxis().set_visible(False)
ax.get_yaxis().set_visible(False)
ax.set_title("Original Image")

# Plot the reconstructed image
ax = plt.subplot(1, 2, 2)
plt.imshow(reconstructed_imgs[n].reshape(28, 28))
plt.gray()
ax.get_xaxis().set_visible(False)
ax.get_yaxis().set_visible(False)
ax.set_title("Reconstructed Image")

plt.show()
```

Output is:

3. Repeat the question 2 on the denoisening autoencoder

Running the code provided in Denoising_Autoencoder.py followed by the output :



Ans: Now repeating all the steps from question 2 on the denoisening autoencoder

Assignment3.ipynb

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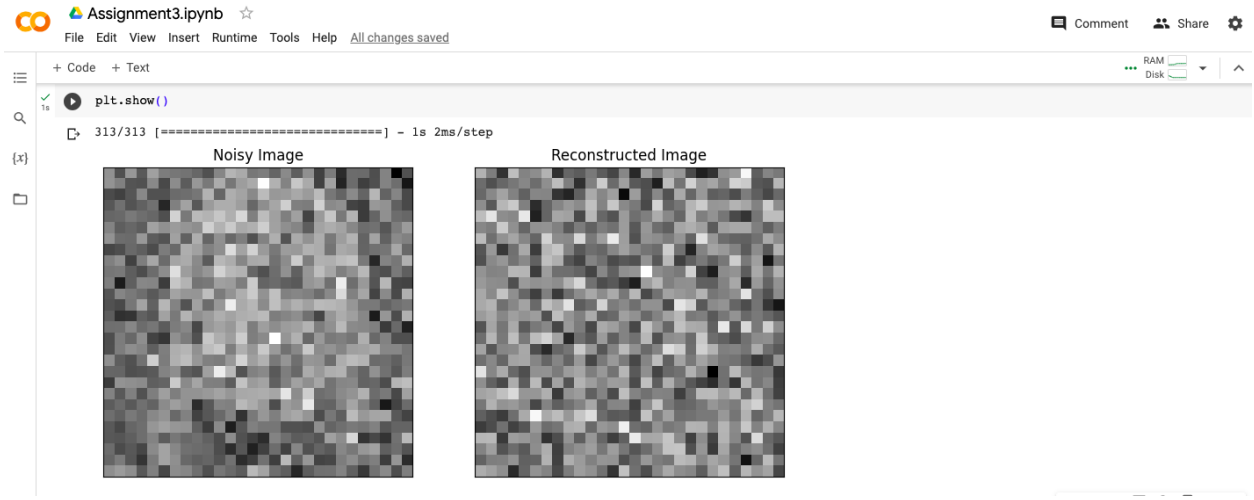
```
#3.Repeat the question 2 on the denoisening autoencoder

import matplotlib.pyplot as plt

# Get the reconstructed images for the test set
reconstructed_imgs = autoencoder.predict(x_test_noisy)

# Choose a random image from the test set
n = 10  # index of the image to be plotted
plt.figure(figsize=(10, 5))

# Plot the original noisy image
ax = plt.subplot(1, 2, 1)
plt.imshow(x_test_noisy[n].reshape(28, 28))
plt.gray()
ax.get_xaxis().set_visible(False)
ax.get_yaxis().set_visible(False)
ax.set_title("Noisy Image")

# Plot the reconstructed image
ax = plt.subplot(1, 2, 2)
plt.imshow(reconstructed_imgs[n].reshape(28, 28))
plt.gray()
ax.get_xaxis().set_visible(False)
ax.get_yaxis().set_visible(False)
ax.set_title("Reconstructed Image")

plt.show()
```

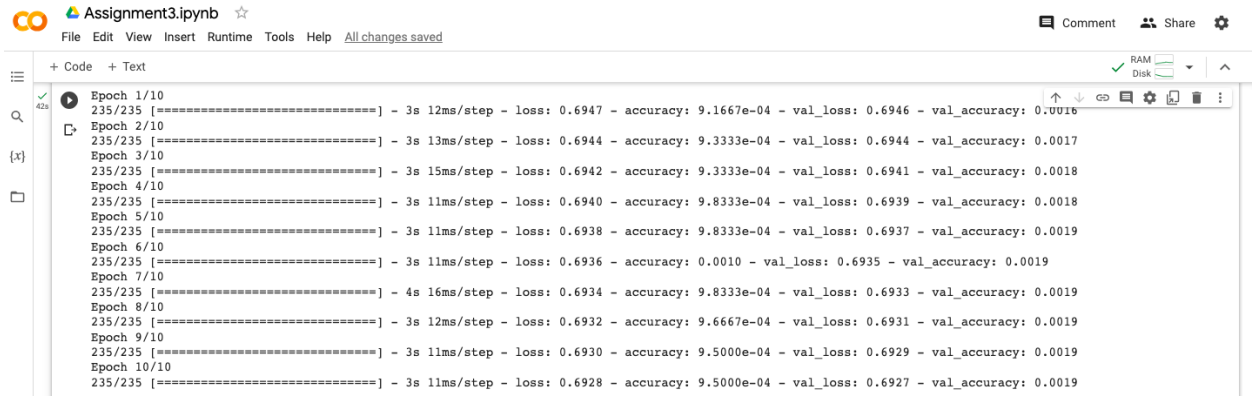
Output:



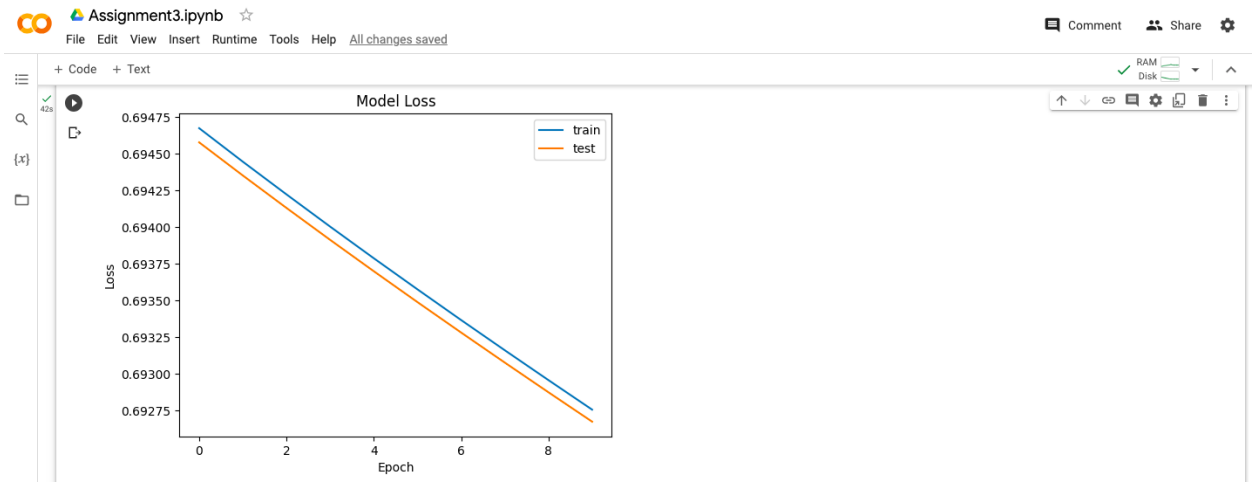
4. Plot loss and accuracy using the history object

Ans: Code is

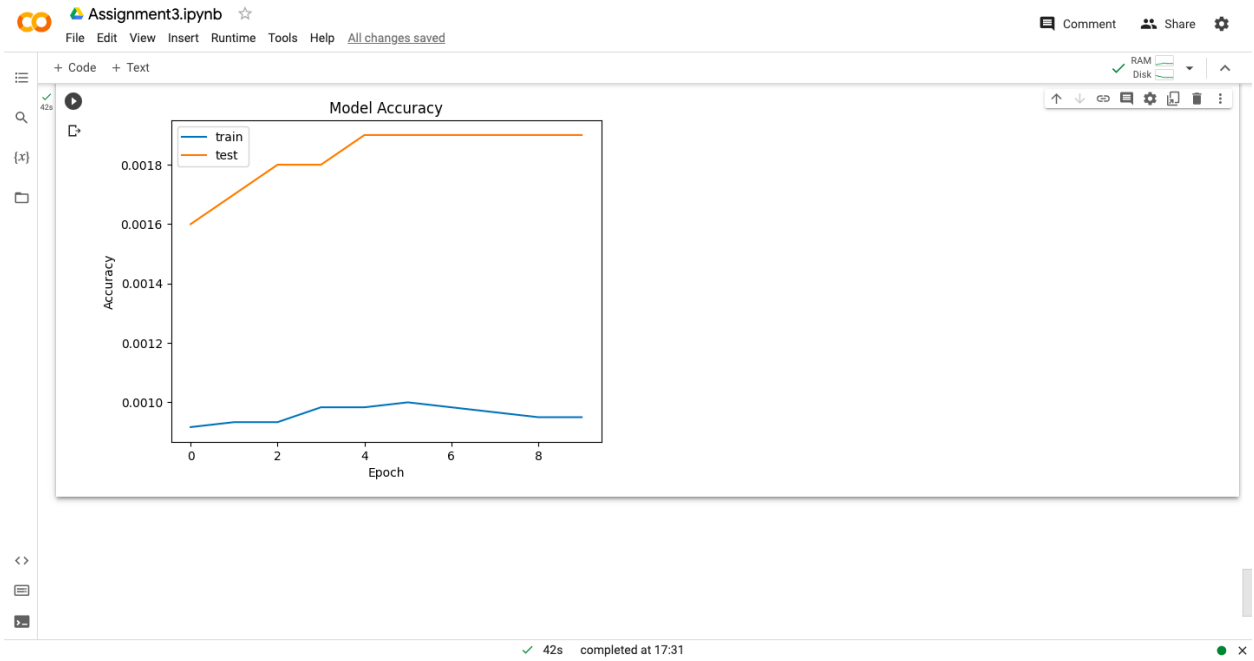
Output:



Model Loss Plot:



Model Accuracy plot:



Github repo link:

https://github.com/LahariKollipara/NNDL_Assignment4