Coding test

Write code in python with either the pytorch or tensorflow libraries in a **single** jupyter notebook to solve the 2 tasks below. Submit the HTML version of the already run notebook (so that I do not have to retrain it from scratch).

Your code should define and train the neural networks. It should also demonstrate the performance of the trained model on images from a test set. Also it should show a (quantitative) measure of performance during training. Explain how the tuning and the final performance evaluation are done. Write comments in the notebook that explain your reasoning and what each function does. I will look at how you formulate the task and how you implement the ideas. The evaluation is not about coding style. Also, you are not expected to perform demanding training. Use COLAB if you do not have access to GPUs.

Task # 1

Build an autoencoder (with at least 4 encoding layers) for a dataset of 500 grayscale natural images of size 600×600.

Task # 2

Take 1000 images from CIFAR10. Then, given a pair of images from CIFAR10 x_1 and x_2, build a network that can return both images given their average $\frac{x_1+x_2}{2}$ as the only input. The design of the architecture and of the input-output mapping is your choice.