Assignment 03 Report

(Latent Diffusion Model Experiment Results)

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I am working to reproduce results as shown in paper for latent diffusion model. I have used google colab to support this experiment and used GPU to reproduce the results.

I have used pretrained models to reproduce the results as training autoencoder and latent diffusion models requires high GPU power which is not available.

Since original source code have some obsolete package which I had to update in my own repo like pytorch_lightning.utilities.rank_zero etc. So, I have forked original GitHub repository and created my own branch as below:

Original repo: https://github.com/CompVis/latent-diffusion

Assignment repo: https://github.com/amitpanwarIndia/latent-diffusion

GitHub colab file: https://github.com/amitpanwarIndia/latent-diffusion/blob/main/AML_Assignment_03_0_2.ipynb

I also needed to use another repo for experiments and changes were needed in that to remove obsolete package, so I have also created fork of that repo as well.

Original repo: https://github.com/CompVis/taming-transformers

Modified repo: https://github.com/amitpanwarIndia/taming-transformers

I have used https://ommer-lab.com/files/latent-diffusion/nitro/cin/model.ckpt pretrained model created at certain checkpoint so using to reproduce results for unconditional image synthesis.

After running all scripts and command I can generate expected output for 4 classes as defined in the script and 6 sample images for each class are generated for them.

Working demo can be seen in GitHub ipynb files as result.

There are several other tasks which can also be achieved using latent diffusion model like class conditioning. There has been some advancement done on LDMs as stable Diffusion model which can also be used from Diffusers library as an efficient way of doing it.