**5/11/2024**

To:

*Things done:*

1. Understand freedom diffusion paper

2. Run Code (Experiments section of paper)

- Success:

1. Unconditional ImageNet Diffusion Model (Face GD)

2. Unconditional Human Face Diffusion Model (Face GD)

3. CNet

- Failure

1. SD (can’t run due to mismatch in Clip models parameters)

\* It is fine, the Face GD one is most important as there are all the conditions there

*Possible research areas:*

1. multi conditional control (now, only has 2 conditions)

* 1. Multi-condition control difficulties (dependent conditions, formula ineffective)

2. video transition (different style transitions, smooth transitions)

3. FreeDoM’s sampling time cost of still higher than the training-required methods because

* 1. each iteration adds a derivative operation for the energy function, and time-travel strategy introduces more sampling steps

4. Hail Mary: 2 paper integration

5. Add a new training-free condition

**16/12/2024**

Add experimented section (on weights)

Implement better multi conditional guidance formula improvement (correlation term gaussian kernel) and evaluate and see which performs the best (use metrics)

What problem you try to address, what solution and how it is used to address the problem, methodology –

TODO:

Gaussian kernel and try other methods (see gpt for prompts on how to handle)

assume a multi conditional energy function and these conditions are distance functions in different spaces, for example like clip distance or image mse distance, now i want to extend this energy functions based on all the conditions, how?