Weekly Report

4/16

1. Summary of Weekly Progress

- Learn about image alignment
- Find a way to do image alignment
- Complete the entire process for basic image alignment use SIFT
- Try to use the method discussed in the last meeting
- Do subtraction of two images on latent space

2. Task Assignments and Contributions

Team Member	Assigned Tasks	Completion Status
徐浩哲(01157030)	1. learn about image alignment 2. try out ORB image alignment	Complete
翁子翔(01157048)	1. Complete the entire process for basic image alignment 2. Process the latent space using the method discussed in the last meeting	1. Complete 2. In progress
蔡豐蔚(01157010)	1. Manipulating the latent space vectors 2. Deal with the latent space problem	1. In progress 2. In progress

2.1. Comments

Comments
keep studying about latent space vector ,also learn about image alignment. try out ORB and find out that it’s not competive as SIFT.In result I recommend to use SuperGlue+superPoint or simply use SIFT
Using the steps of keypoint detection and description, feature matching, match filtering, geometric transformation estimation, and image transformation, I attempted to create the first version of image alignment. Although it's not perfect, the alignment is roughly accurate. I also tried implementing the image transition discussed in last week's meeting, but the results were not satisfactory.
I tried to solve the problem of image generation, so I chose to operate the latent space, but the problem did not get a good answer. The latent space difference between images is not as simple as subtraction.

3. Challenges and Issues Faced

- The latent space subtraction did not provide good results
- To fulfill SuperPoint（Feature extraction） + SuperGlue（feature matching）we may need to conquer some challenges like convert algo to code, version mangement since it also use deep learning , also need to fine-tune the model
- Unlike word embeddings, it's hard to define vectors like "age" or "smile".
- Latents don't map cleanly to specific prompt semantics.
- Some thresholds need to be adjusted for better image alignment
- I'm not sure if the current image alignment result is acceptable
- After trying the method discussed in the last meeting, I found that when the video reaches a certain length, noticeable artifacts or defects start to appear

4. Next Steps and Goals for Next Week

- May explore other operations on latent space vectors
- try to convertDiscover interpretable "directions" in the latent space by PCA / GANSpace style semantic direction
- Consider tuning the parameters or adopting a more advanced image alignment method

5. Additional Notes/Comments

The latent space vectors are still the problem