Assignment 3

(Since my computer system doesn't support VS code and the browser can't visualize the obj file of the html file either, so I use pdf with multiple perspectives to show the results at this time.)

NeRF

Project and Algorithms:

After I installed NerfStudio, first, I use my phone camera to get a video (about 30 seconds), and use the command **"ns-process-data video --data mahjong.mp4 --output-dir mahjong_output"** to generate the inputs for NeRF (frames and the camera poses from COLMAP). Actually I tried to capture the video (and choose a proper scene) about 6 to 7 times to get one valid video (for the failed attempts, the COLMAP will say "No images with matches found in the database, failed to create sparse model"). Since I tried multiple times, it took me several hours.

And then I run "**ns-train nerfacto --data mahjong_output/**" to train the NeRF. And I got some results as below. And I export the mesh to asset/mahjong_poisson_mesh.ply .

Visualization:

Here I show the results in multiple views. The video I captured (as input for Nerf Studio) is just cross the scene in one direction (see the image with the train cameras), but after training, I can drag the view direction even to the directions that I didn't capture before. So this is the magic of NeRF.


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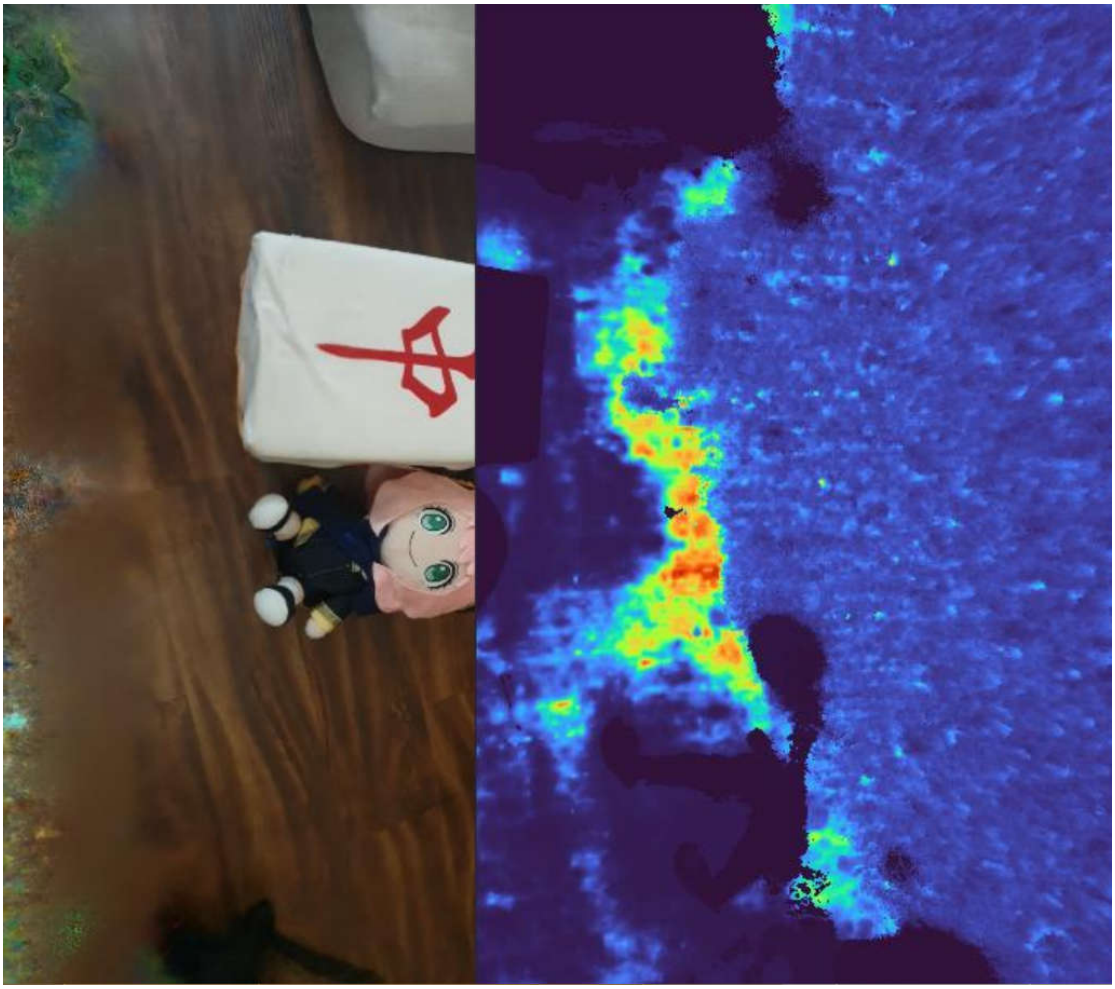
Here shows the train cameras.

Also, I show the depth map here:



Extra Credit:

Present results with your own captured data. (not very sure whether it is exact the meaning that I think of)