Final Project Progress Report

Team name: ***NeRF***
TA name: ***Professor Srinath Sridhar***

Note: when submitting this document to Gradescope, make sure to add all other team members to the submission. This can be done on the submission page after uploading.

Progress Report Instructions

Before writing your progress report, you should have met with your TA and talked through your progress.

Team contributions

We have generally setup the whole pipeline except for the main training loop, which includes implementing the volumetric rendering algorithm. For the train data, we are using the dataset used by the NeRF paper, both the synthetic dataset and the LLFF dataset. We reuse the code from the official implementation for data loading given that these operations are predefined and should not subject to any changes at all. The MLP model is fully implemented in an extensive way so we can play with different structures. We also notice that there is a discrepancy between the actual implementation and the equation in paper for positional encoding. We will try to verify the difference in performance when using different positional encoding later.

Please describe in one paragraph (3 - 4 sentences) per team member what each of you contributed to the project so far.

Jianxin Gu Read through the paper and the official release of NeRF codebase. Implemented the MLP model for NeRF in an extensive way so we can play with different network structures when actually running the model. Setup the basic dataset loading pipeline by reusing some of the code provided in the official code release. The next step would be working with the other team member solely focusing on the volumetric rendering pipeline, which includes generating and batching rays, and training the model with them.

Ning Li Read the original NeRF paper and explore the NeRF synthetic dataset. Implemented the Positional Encoding to map input coordinates to high dimensional space before passing into MLP, which will help to facilitate the model to optimize the parameters. The next step would be working with the other team member solely focusing on the volumetric rendering pipeline, which includes generating and batching rays, and training the model with them.