

# NeRF project

## Exercise 5

### Advanced Deep Learning in Computer Vision

September 2023

In this exercise, you are asked to build a [NeRF](#) model and analyze its performance. Next week you should make a report about exercise 5 and 6. Here you can see some example scenes:



Figure 1: The rendered objects that you will be working with in the exercise.

**You tasks are as follows:**

1. Sample linearly between `near` and `far` at the function `sample_stratified`.  
(See files `nerf_helpers.py` and `playground.py`)
2. Complete the implementation of the `Embedder` module.  
(See files `model.py` and `playground.py`)
3. Implement the forward function of the NeRF model and render a video using a pre-trained model.  
(See files `model.py` and `playground.py`)

4. Render a video with a constant viewing direction. Are the results the same?  
(See files `nerf_helpers.py` and `playground.py`)
5. Complete the training loop and train your own Nerf model at a different scene(s).  
(See the file `train.py`)

**Notes:**

- If the rendering process takes too long, reduce the `TARGET_SIZE` (line 75 `playground.py`)
- You will train with images  $50 \times 50$  and a smaller network. Therefore, the results of the pre-trained model will be better.
- The default scene of `train.py` is 'chair'. To train on a different scene: `python train.py --scene-name <name>`. Each file in the `config` folder corresponds to a different scene.
- Do not change neither the names of the layers in the NeRF model nor the scene name in `playground.py`

If you desire a distraction consider listening to the [NeRF song](#) by Daniel Wedge.