

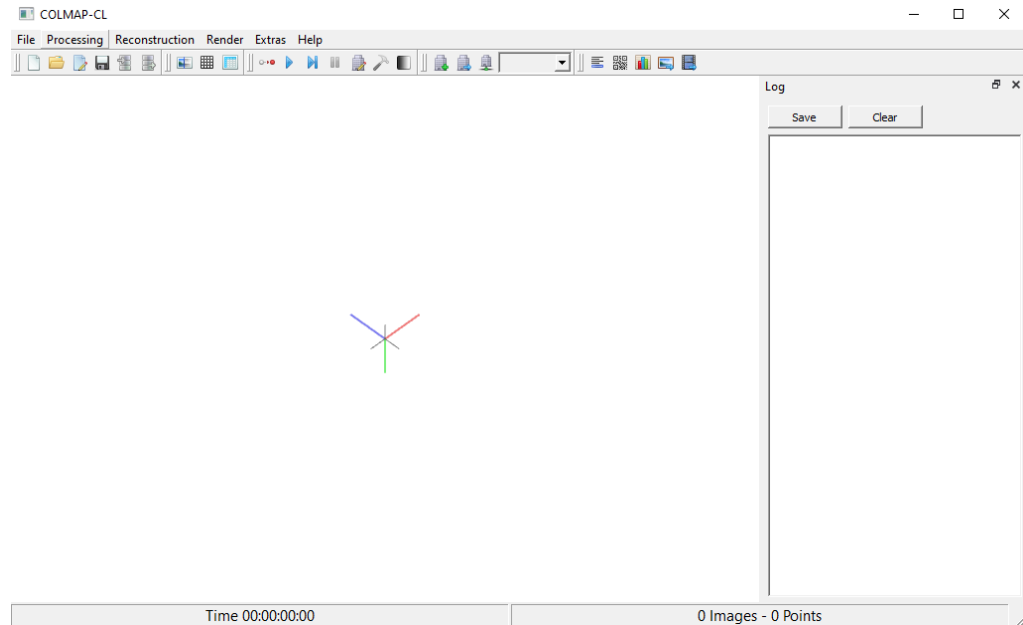
## NeRF Bible - Instructions on using NeRF software within Google Colab

### **Required programs/software & instructions:**

- Google Colab (online) -> to train NeRF
- Visual Studio Code (used for running code to create blender synthetic images, much better than using blender's coding nightmare interface)
  - Blender extension
- JPL's Small Body Mapping Tool -> to obtain asteroid model
  - Follow the instructions for downloading and exporting asteroid model from the website: <https://sbmt.jhuapl.edu/index.php#overview>
- Blender -> to create synthetic views for training
- COLMAP -> obtain camera transforms from blender images

### **Running your first asteroid nerf:**

1. Import asteroid model from Small Body Mapping Tool into a Blender scene using blender (save the scene)
  - a. If doesn't work at first keep trying different file types, I'm pretty sure I used .obj
  - b. Export as high as quality as you can
2. Setup visual studio code with blender extension
  - a. Install blender extension, titled "Blender Development" by Jacques Lucke
  - b. Pip install `pip install fake-bpy-module-latest`
  - c. <https://www.youtube.com/watch?v=YUytEtaVrrc> for setup reference
  - d. Copy github library <https://github.com/TheBurntWaffl3/AstroNeRF> in visual studio code
3. Create synthetic images
  - a. After adjusting parameters in RotateCam.py, go to the command palette and click "Blender: Start", select your Blender from the dropdown, and then open the scene with the asteroid when blender runs.
  - b. Next, use "Blender: Build" to build
  - c. Finally, use "Blender: Run Script" from the command palette to generate images
    - i. Make sure the image location is set to where you want it to be
4. Obtain camera transforms
  - a. Open up the Colmap interface



- b.
- c. Select “Reconstruction,” followed by automatic reconstruction and select the workspace folder and image folder - watch the magic happen
- d. Now you should have a sparse folder and database file within your selected workspace
  - i. Before exiting out, make sure to export your reconstruction as .txt files so the whole thing can be imported into NeRF
  - ii. This is very simple, go to “File: export as txt”, and create a new folder titled “1” within the sparse folder where these exported txt files can go.
- e. Now open up the command prompt and navigate to your respective folder, using the following command, configured to your respective folders, you can write the transforms.json file: “python colmap2nerf.py —colmap\_matcher exhaustive —colmap\_db database.db —images test\_images\_football —text sparse/1” in terminal to compute transforms.json MAKE SURE TO USE “- -” (2 dashes)
- f. Congrats! Now you can go ahead and upload the folder containing everything to google drive and import it into google colab nerf to begin Nerfin