RGB-D Camera in Unity Quick Start

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Getting started

Step1: RGB3D Camera

- Uncompress “ReleasedToolKit_MiroRGB3DCameraV6”
- Create a new Unity3D Project
- Import RGB3D Camera Package and Test 3D Model custom packages(Assets -> Import Package -> Custom Package…)
  - … “Released_MiroRGB3DCameraV6.unitypackage”
  - … “Miaomiao.unitypackage”
  - … “JapaneseTorii.unitypackage”
- Drag “RGB3DCameraV6” Prefab inside the scene
- Drag “Torii” Prefab inside the scene
- Drag “cat” Prefab inside the scene
- Save the scene

Step2: Setup 3D object

- Select “cat/cat” in the scene
- Add Mesh Collider in Inspector
- Find the mesh for the ‘cat’ object in “Project/RGB_Test_Miaomiao/Models/cat/cat”, and drag it into the ‘cat’ objects in the scene -> Inspector -> Mesh Collider -> Mesh

REMEMBER TO:

- Add ‘Mesh Collider’ to the objects inside the scene
- Enable ‘Texture’ material on your object ‘Read/Write Enabled’ in the Inspector

Capture, Save and Visualize Point Cloud

Step3: Capture and Save the Point Cloud

- Run the game
- Select ‘RGB3DCameraV6’ in the ‘Hierarchy’
- Tick the RGB Enabler(if you want to add RGB info in your point cloud) on the ‘Inspector’
- Tune the ‘noise setting’(if you want to add different noises in you point cloud)) on the ‘Inspector’
- Click on ‘Capture Points’ on the ‘Inspector’
- Click on ‘Save Last Captured Points’ on the ‘Inspector’ to save the point cloud into ‘.pcd’ format

Step4: Visualize Point Cloud

Option 1: Python + open3d package(open3d installation: http://www.open3d.org/docs/release/introduction.html

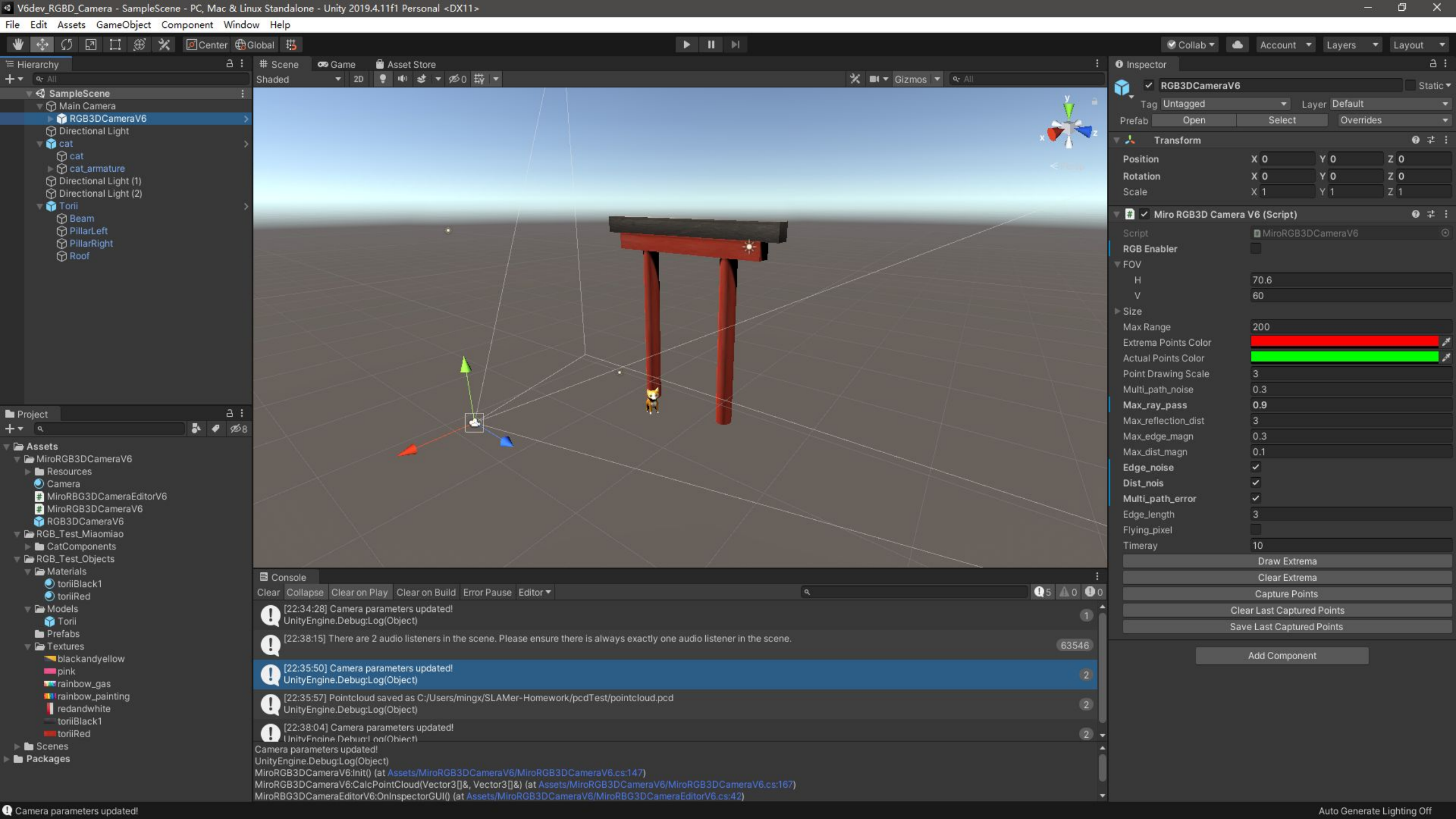
- Open the Python file ‘pcdVisualizer.py’
- Change the path of the ‘.pcd’ file you want to visualize

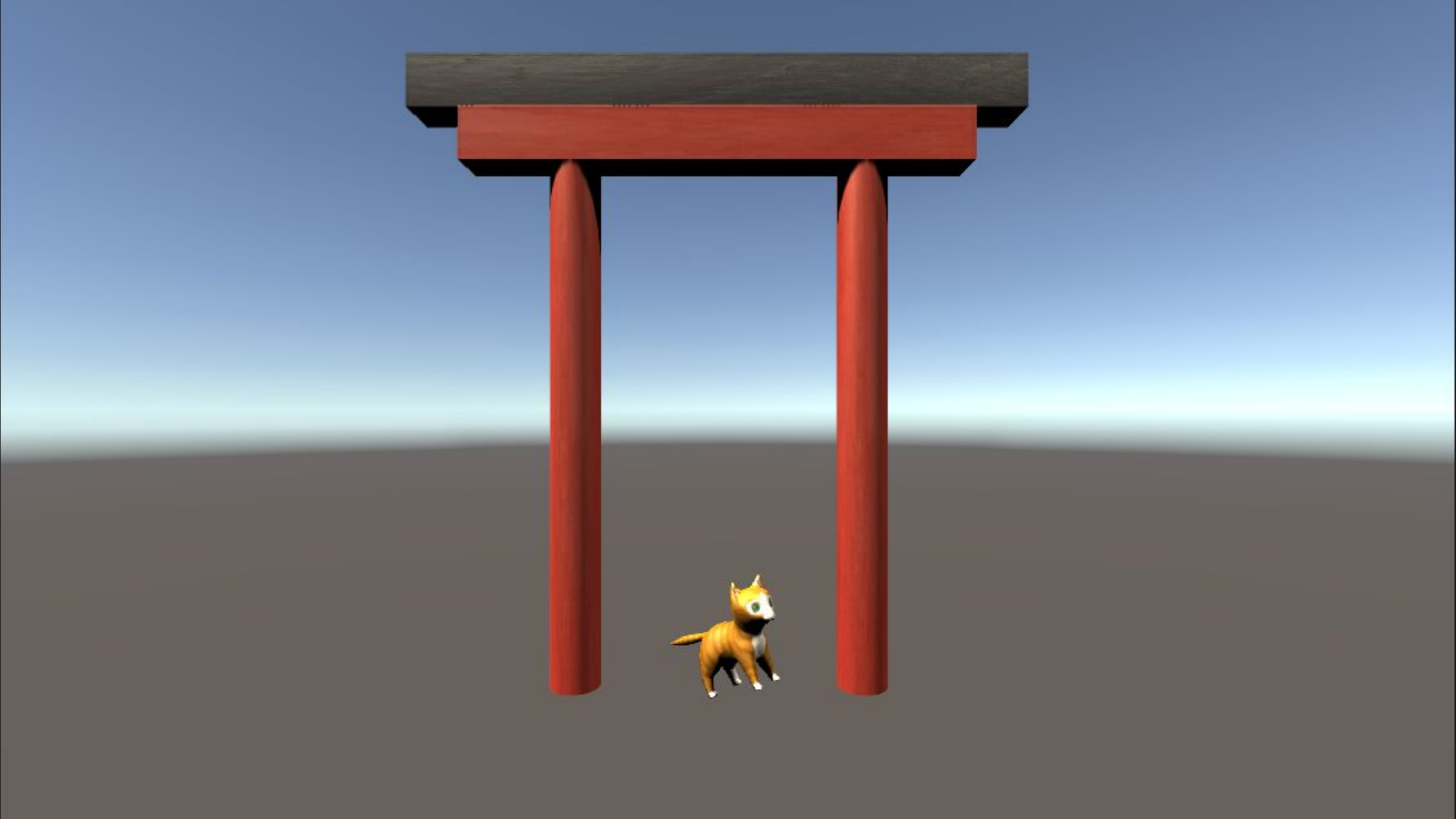
```
# read pcd file
pcd = o3d.io.read_point_cloud("pointcloud.pcd")
```

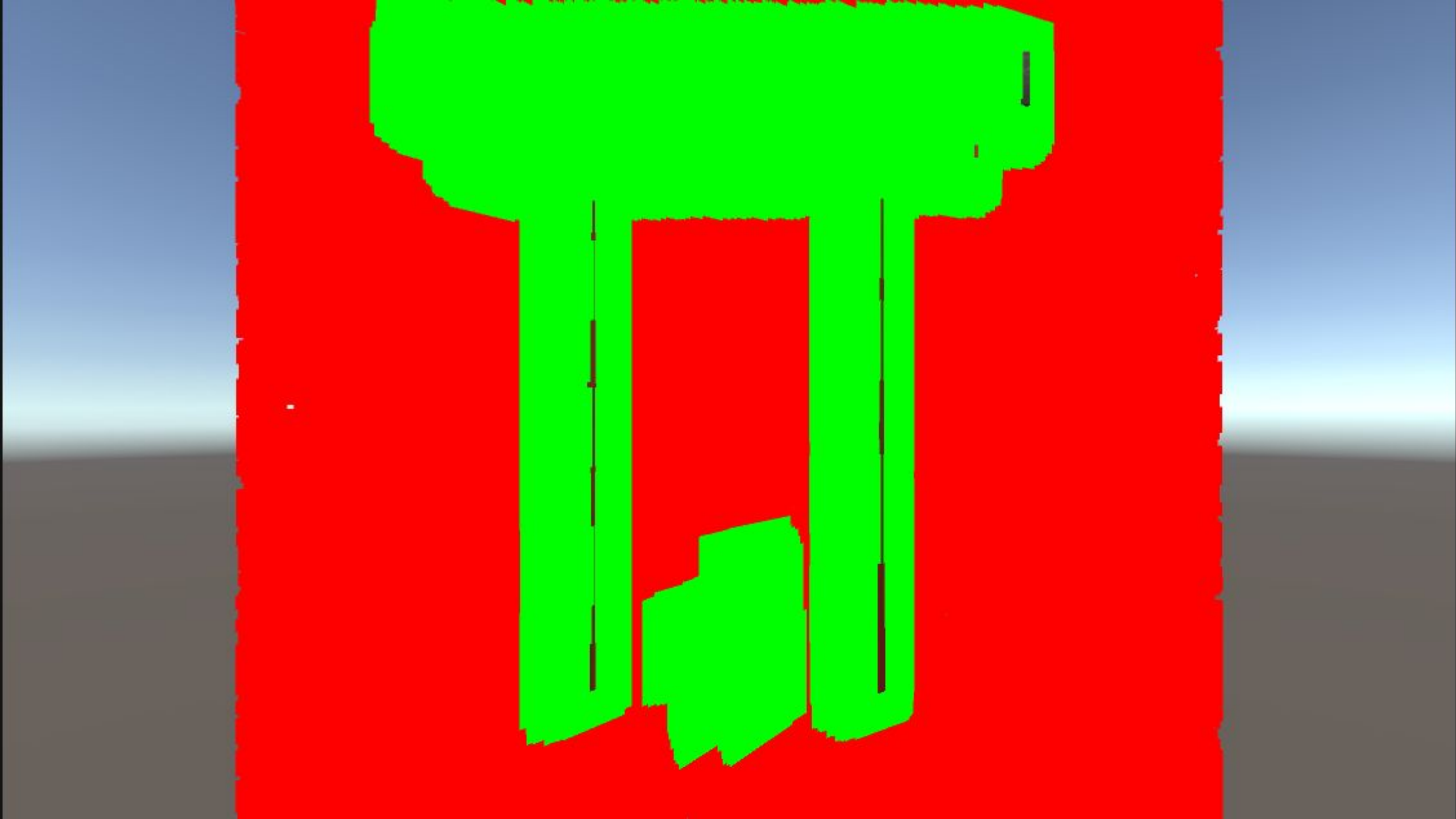
- Save the changed Python file
- Run the Python file ‘pcdVisualizer.py’ the way you like

Option 2: Matlab

- Open the Matlab file ‘pcd2fig.m’
- Change the path of the ‘.pcd’ file you want to visualize and save
- Run the script


V6dev_RGBD_Camera - SampleScene - PC, Mac & Linux Standalone - Unity 2019.4.11f1 Personal <DX11>
File Edit Assets GameObject Component Window Help
Center Global
Collab Account Layers Layout
Hierarchy
SampleScene
Main Camera
RGB3DCameraV6
Directional Light
cat
cat
cat_armature
Directional Light (1)
Directional Light (2)
Torii
Beam
PillarLeft
PillarRight
Roof
Scene Game Asset Store
Shaded 2D Gizmos
Project
Assets
MiroRGB3DCameraV6
Resources
Camera
MiroRBG3DCameraEditorV6
MiroRGB3DCameraV6
RGB3DCameraV6
RGB_Test_Miaomiao
CatComponents
RGB_Test_Objects
Materials
toriiBlack1
toriiRed
Models
Torii
Prefabs
Textures
blackandyellow
pink
rainbow_gas
rainbow_painting
redandwhite
toriiBlack1
toriiRed
Scenes
Packages
Console
Clear Collapse Clear on Play Clear on Build Error Pause Editor
[22:34:28] Camera parameters updated!
UnityEngine.Debug:Log(Object)
[22:38:15] There are 2 audio listeners in the scene. Please ensure there is always exactly one audio listener in the scene.
[22:35:50] Camera parameters updated!
UnityEngine.Debug:Log(Object)
[22:35:57] Pointcloud saved as C:/Users/mingx/SLAMer-Homework/pcdTest/pointcloud.pcd
UnityEngine.Debug:Log(Object)
[22:38:04] Camera parameters updated!
Camera parameters updated!
UnityEngine.Debug:Log(Object)
MiroRGB3DCameraV6:Init() (at Assets/MiroRGB3DCameraV6/MiroRGB3DCameraV6.cs:147)
MiroRGB3DCameraV6:CalcPointCloud(Vector3[]&, Vector3[]&) (at Assets/MiroRGB3DCameraV6/MiroRGB3DCameraV6.cs:167)
MiroRBG3DCameraEditorV6:OnInspectorGUI() (at Assets/MiroRBG3DCameraEditorV6.cs:42)
Inspector
RGB3DCameraV6
Static
Tag Untagged Layer Default
Prefab Open Select Overrides
Transform
Position X 0 Y 0 Z 0
Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1
Miro RGB3D Camera V6 (Script)
Script MiroRGB3DCameraV6
RGB Enabler
FOV
H 70.6
V 60
Size
Max Range 200
Extrema Points Color
Actual Points Color
Point Drawing Scale 3
Multi_path_noise 0.3
Max_ray_pass 0.9
Max_reflection_dist 3
Max_edge_magn 0.3
Max_dist_magn 0.1
Edge_noise
Dist_nois
Multi_path_error
Edge_length 3
Flying_pixel
Timeray 10
Draw Extrema
Clear Extrema
Capture Points
Clear Last Captured Points
Save Last Captured Points
Add Component
Camera parameters updated!
Auto Generate Lighting Off





“Demo: No RGB info + Noises”

“Demo: RGB info + Noises”

“Demo: RGB info, no noises”