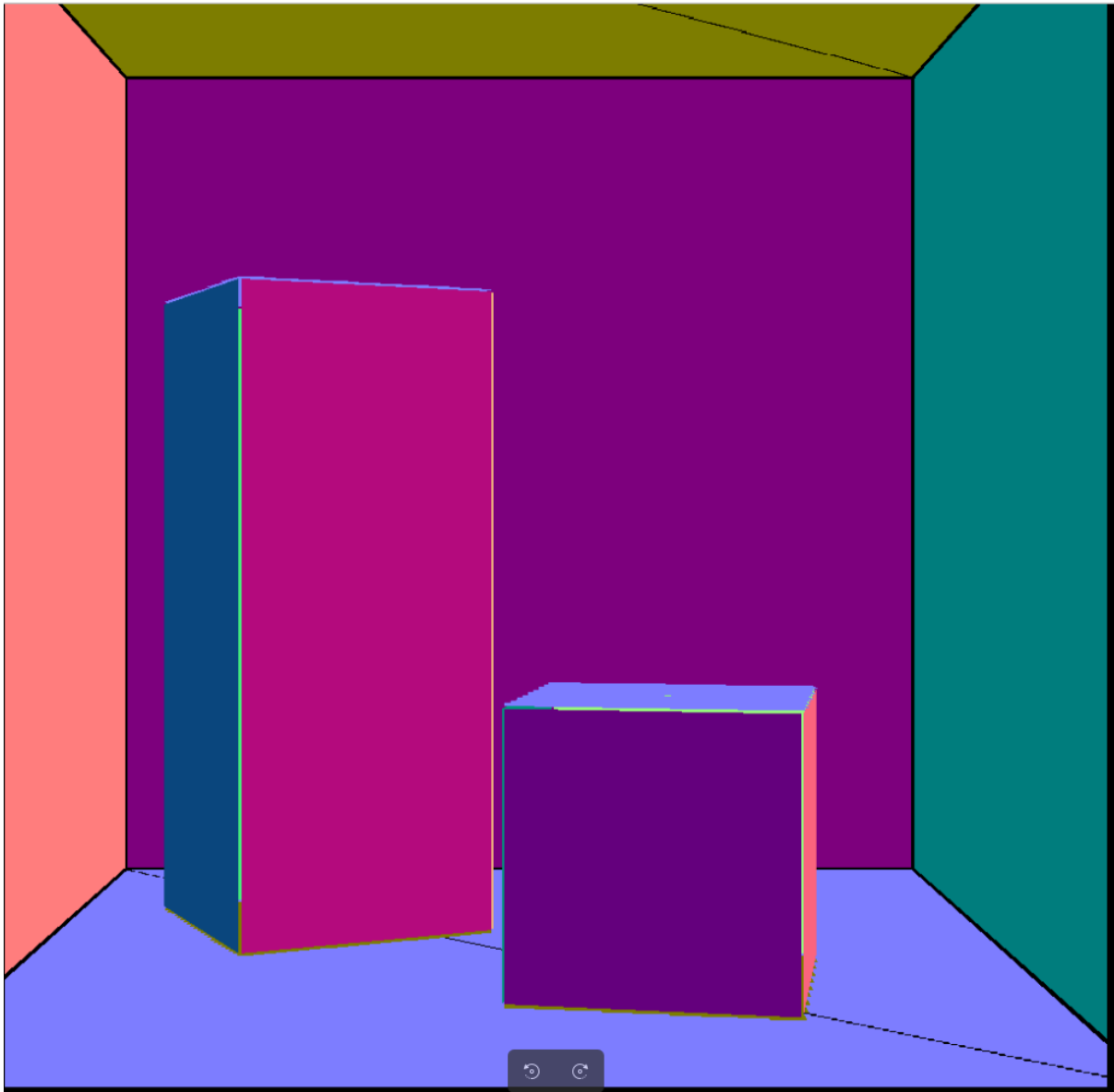


Question 1

Fix: In the generateRay function in camera.cpp, I accounted for the error correction before normalizing pixelCenter, by subtracting this->from from pixelCenter outside of the Normalize function call and not inside of it.

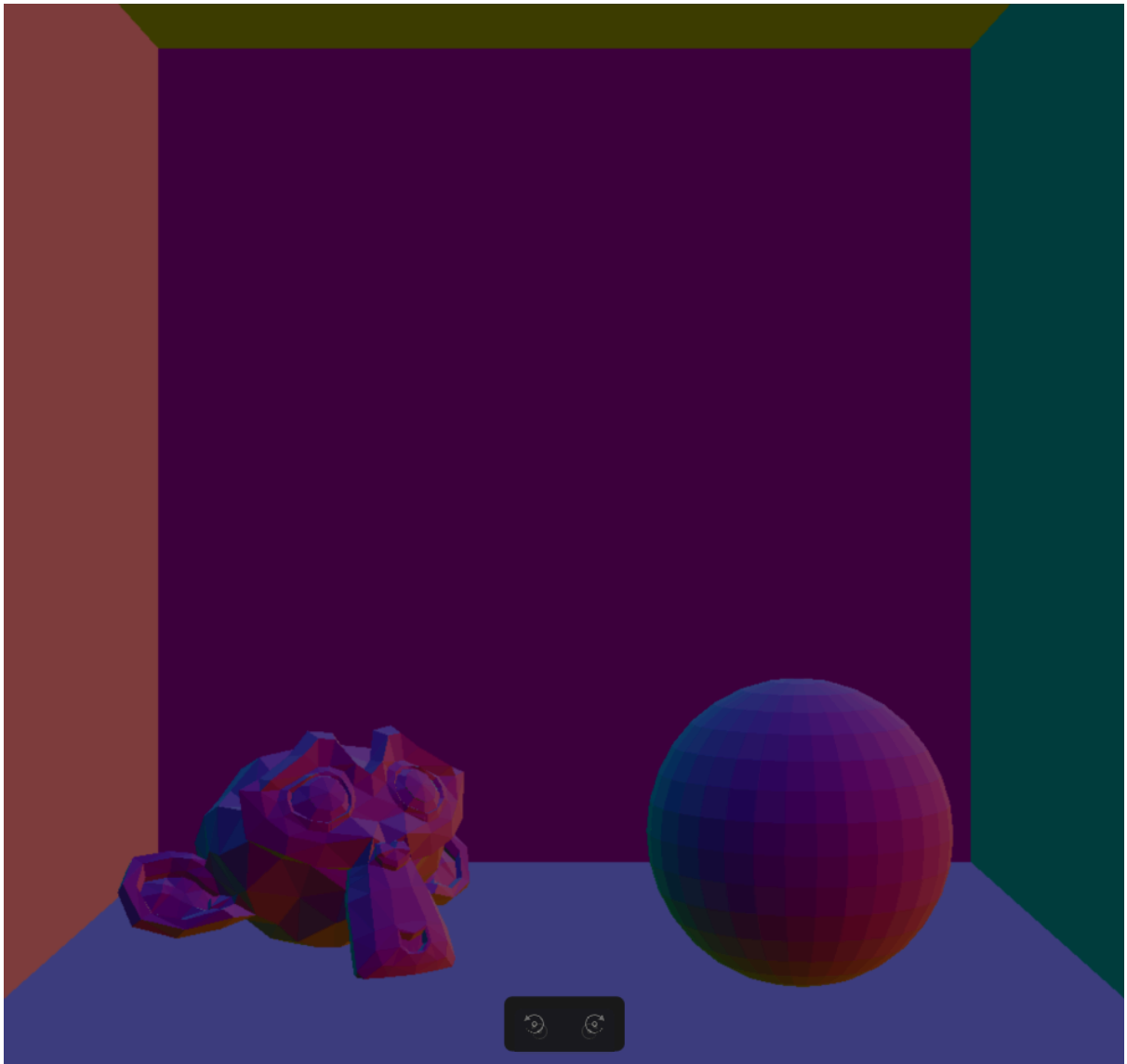
Reasoning: It is given that all of the objects and the camera are shifted by 1000000 units along all X, Y, and Z coordinates. We are shifting the pixelCenter vector by these very large values (this->from is the camera position vector) and so when the shift occurs in the local coordinate system (in the normalize function), there is a loss of precision. We are doing the shifting in the world coordinate system before normalization in order to reduce the risk of such issues in precision.



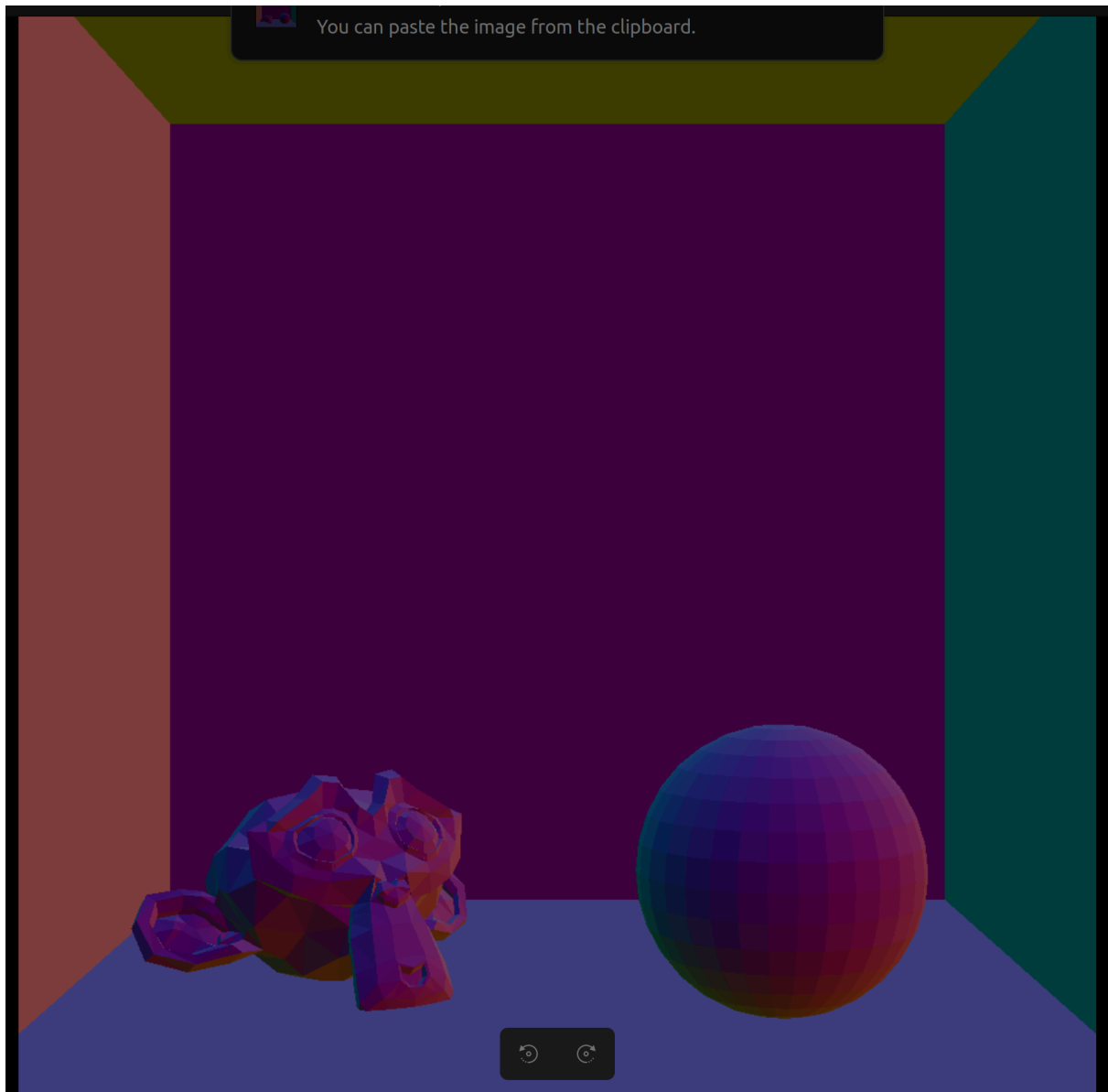
Question 2

LOW POLY:

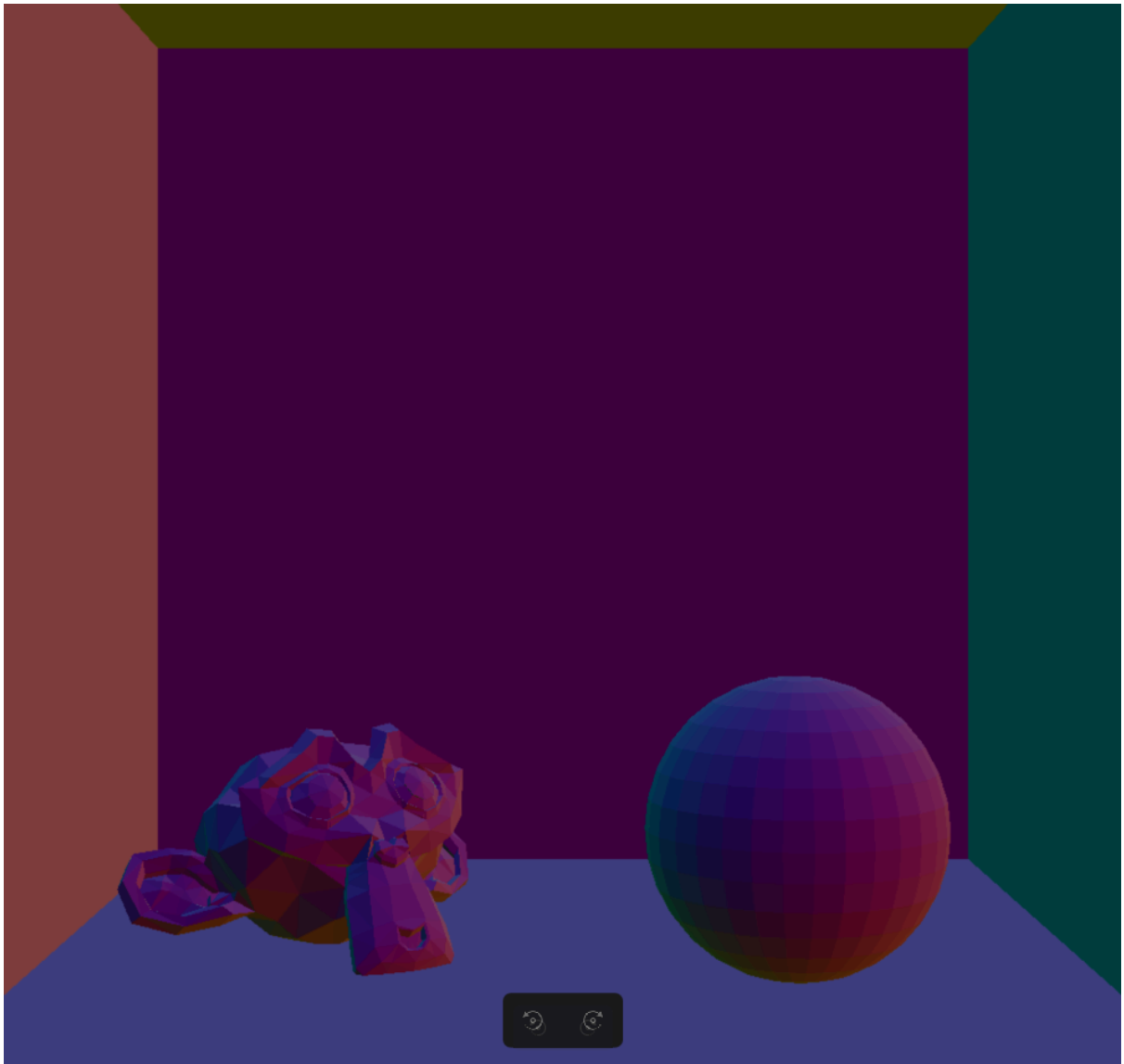
Intersection variant 0: 89732.28125ms



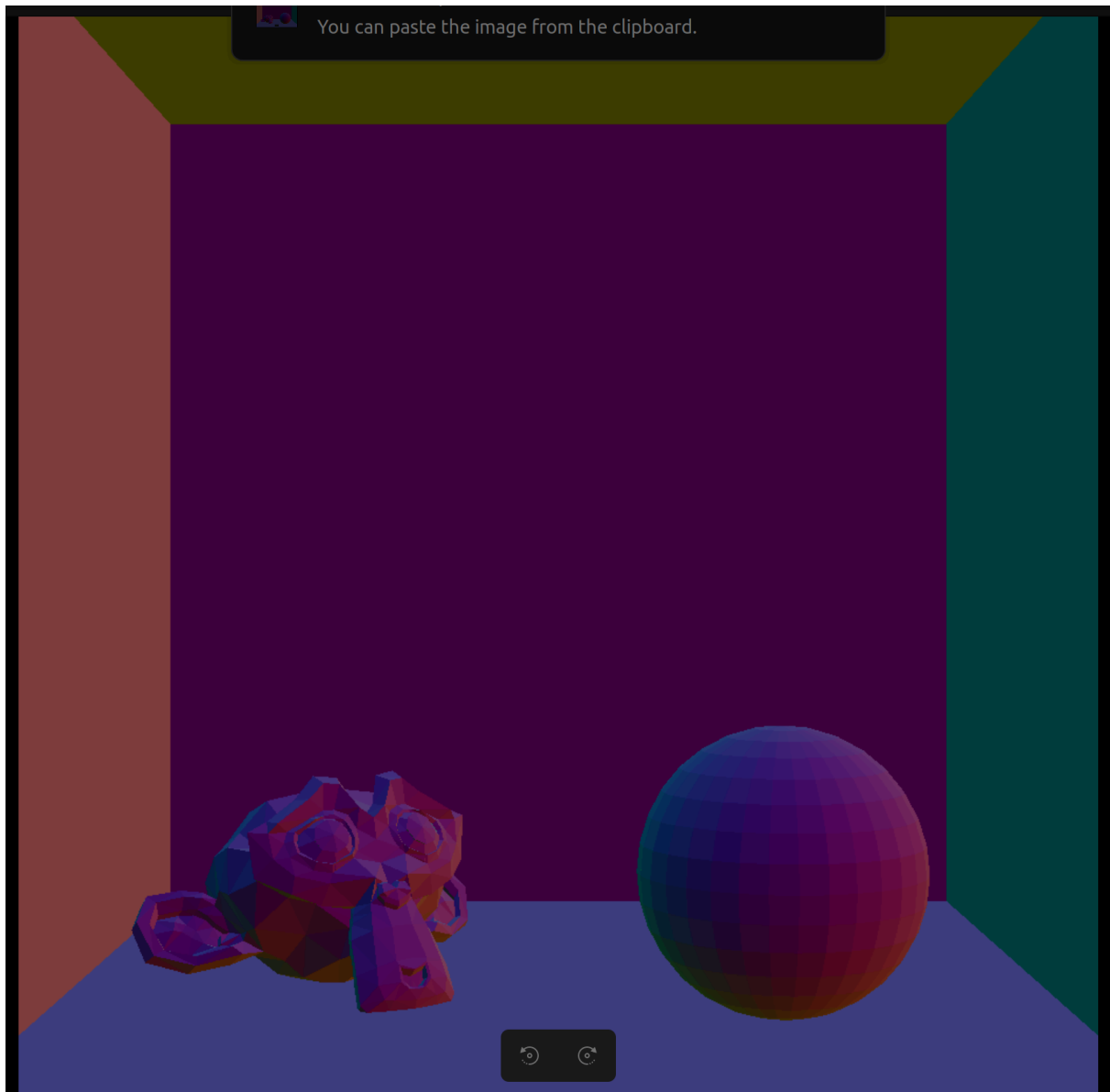
Intersection variant 1: 27208.689453ms



Intersection variant 2: 9075.347656ms

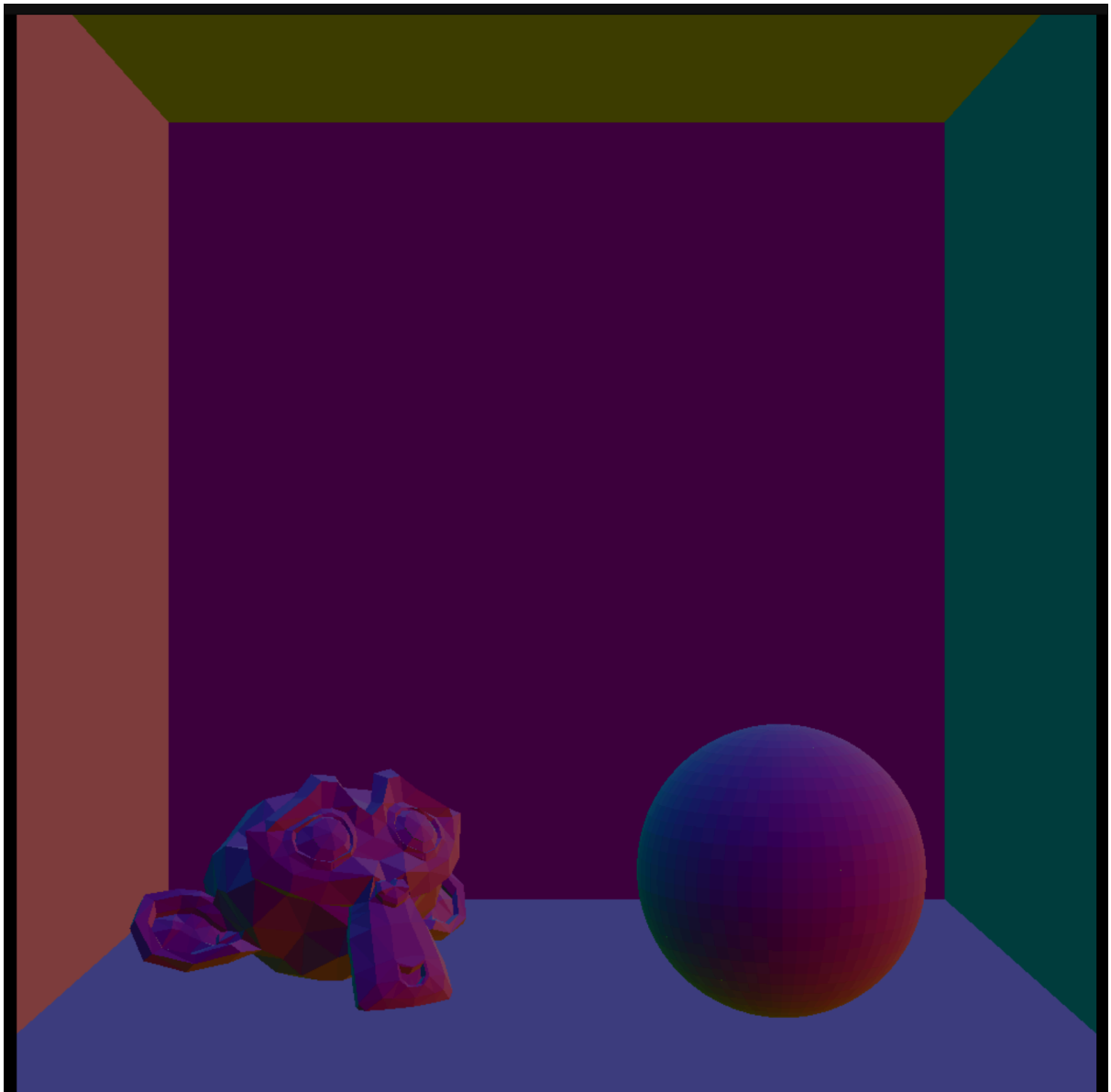


Intersection variant 3: 1556.468018ms

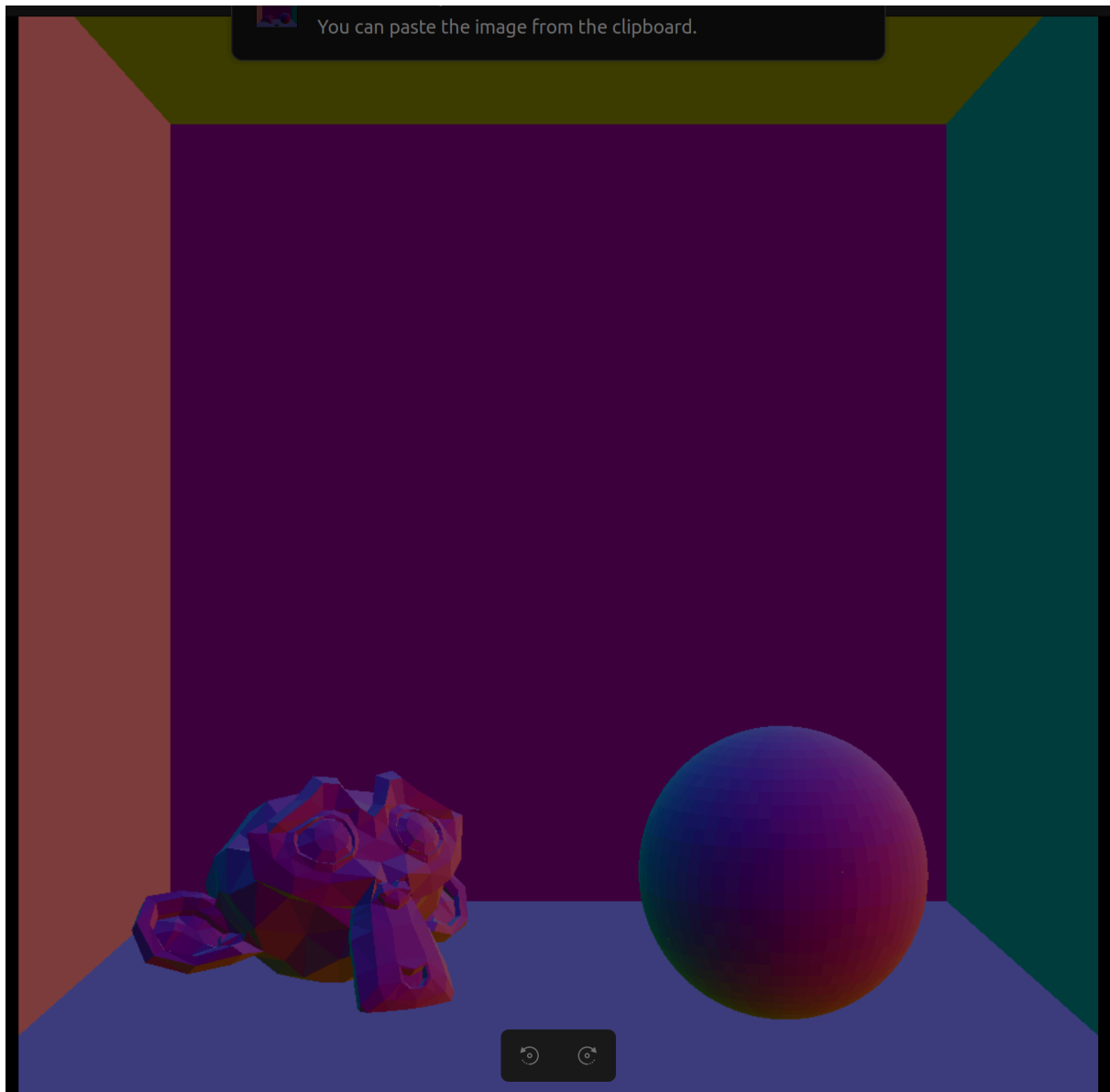


HIGH POLY:

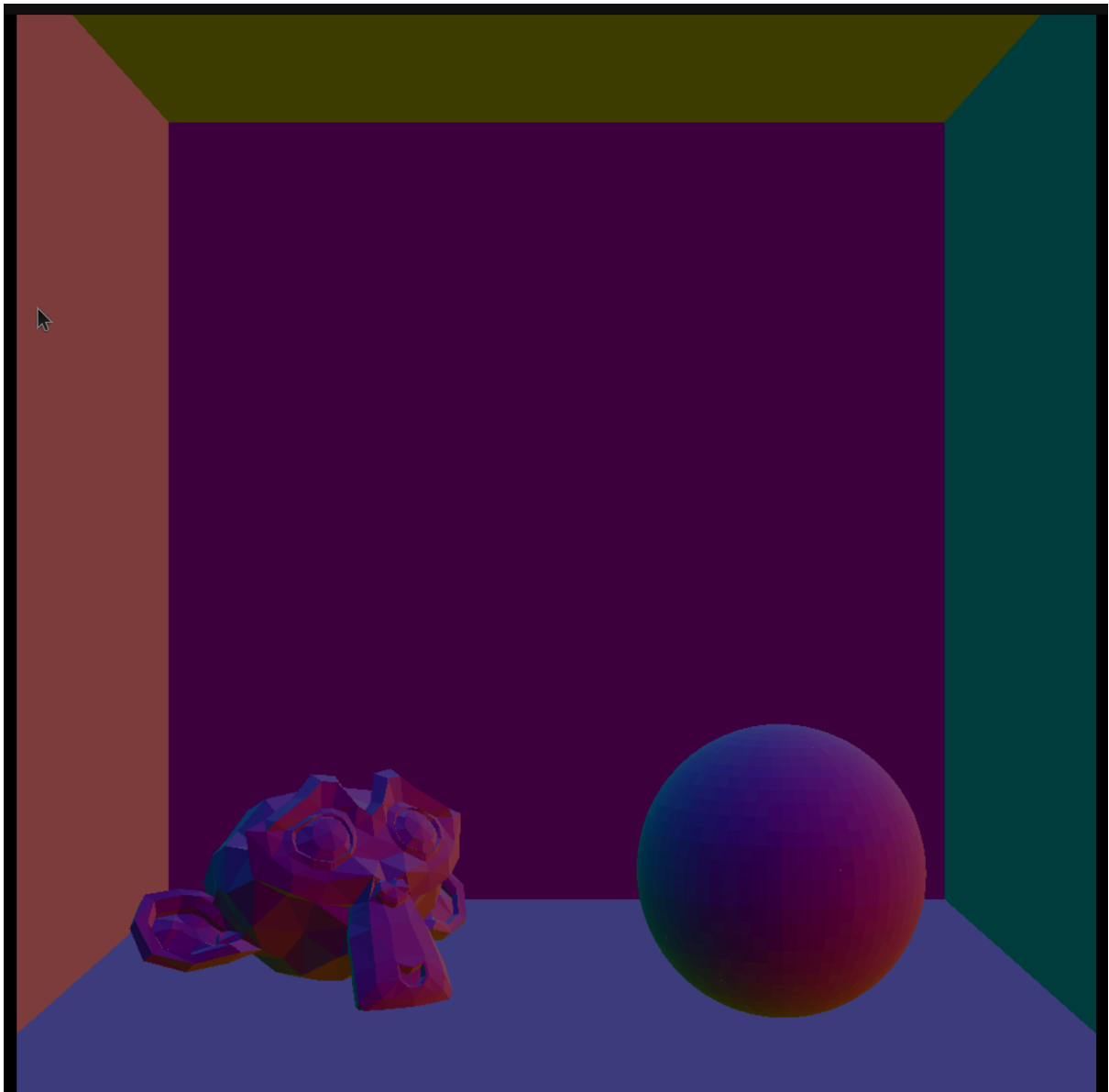
Intersection variant 0: 356230.875ms



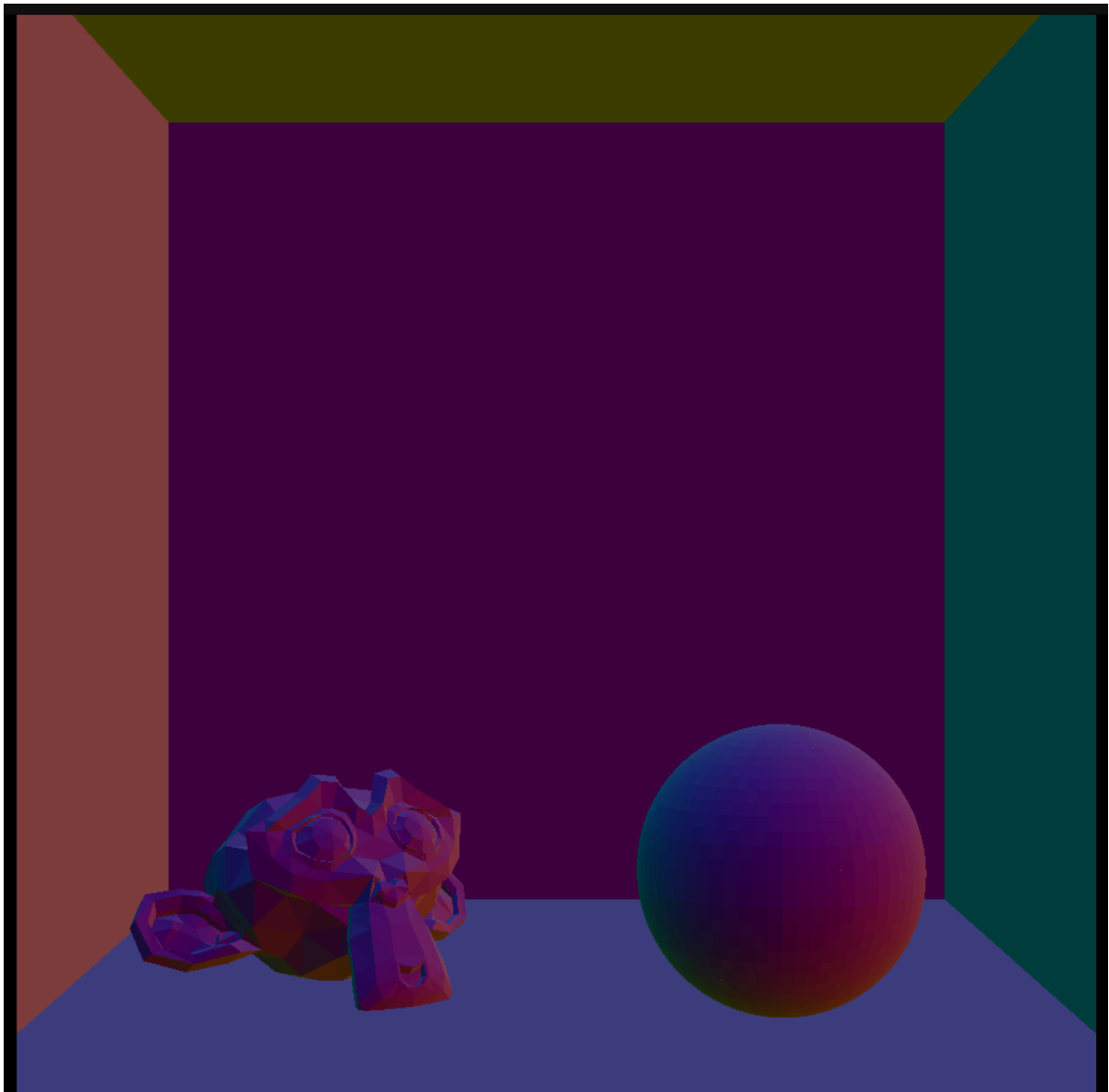
Intersection variant 1: 45080.738281ms



Intersection variant 2: 15510.143555ms

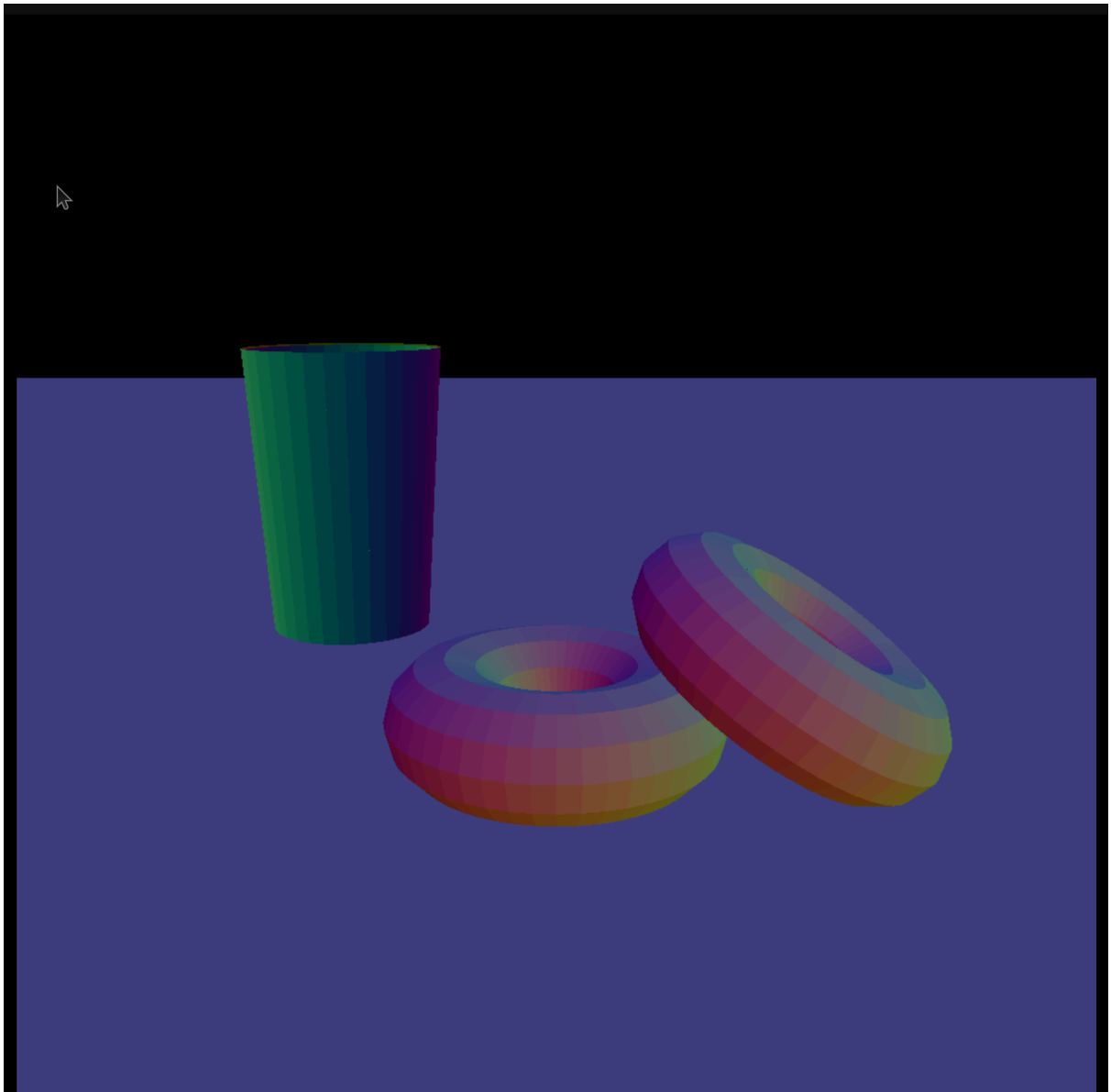


Intersection variant 3: 1328.409058ms

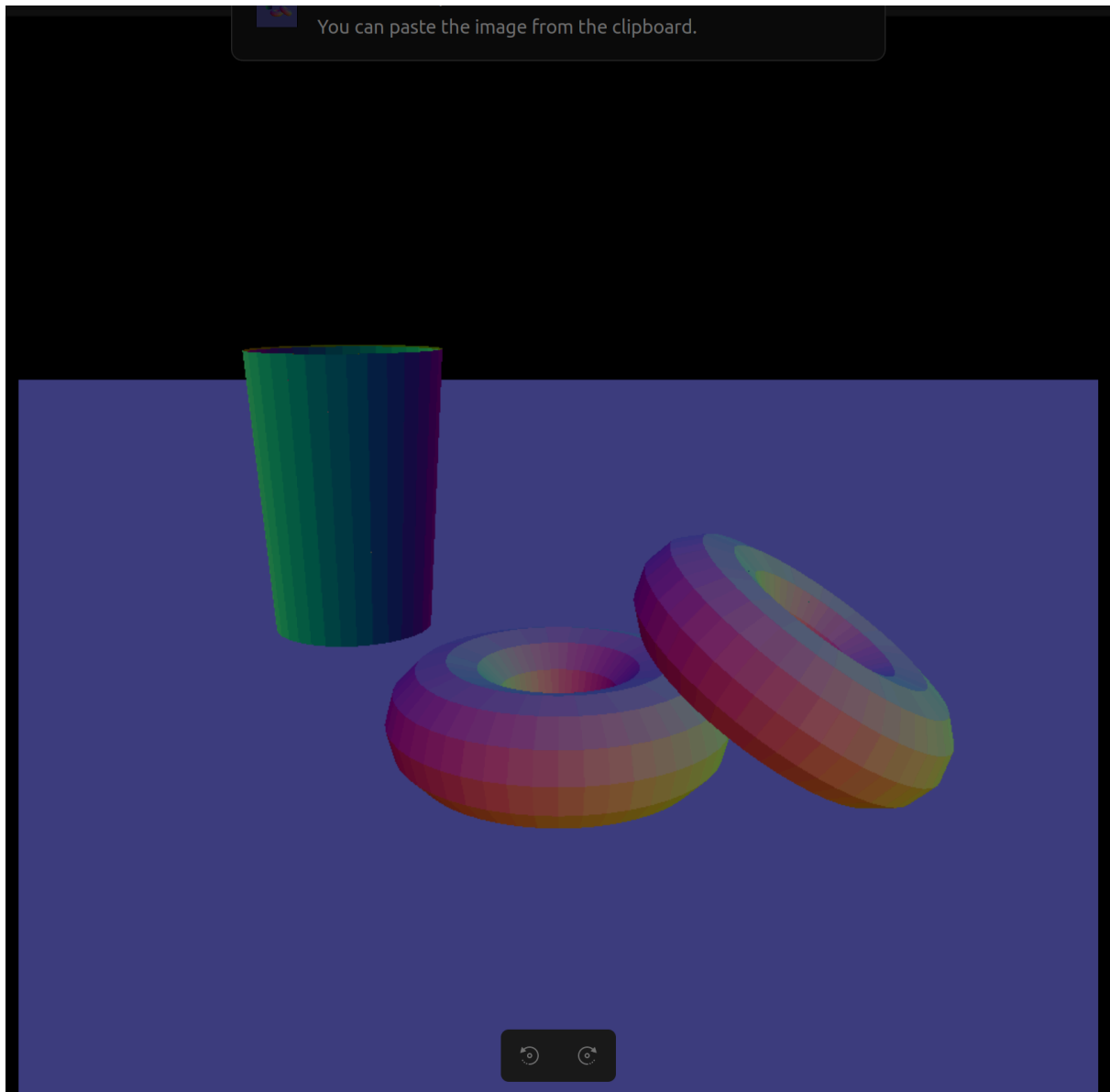


DONUTS:

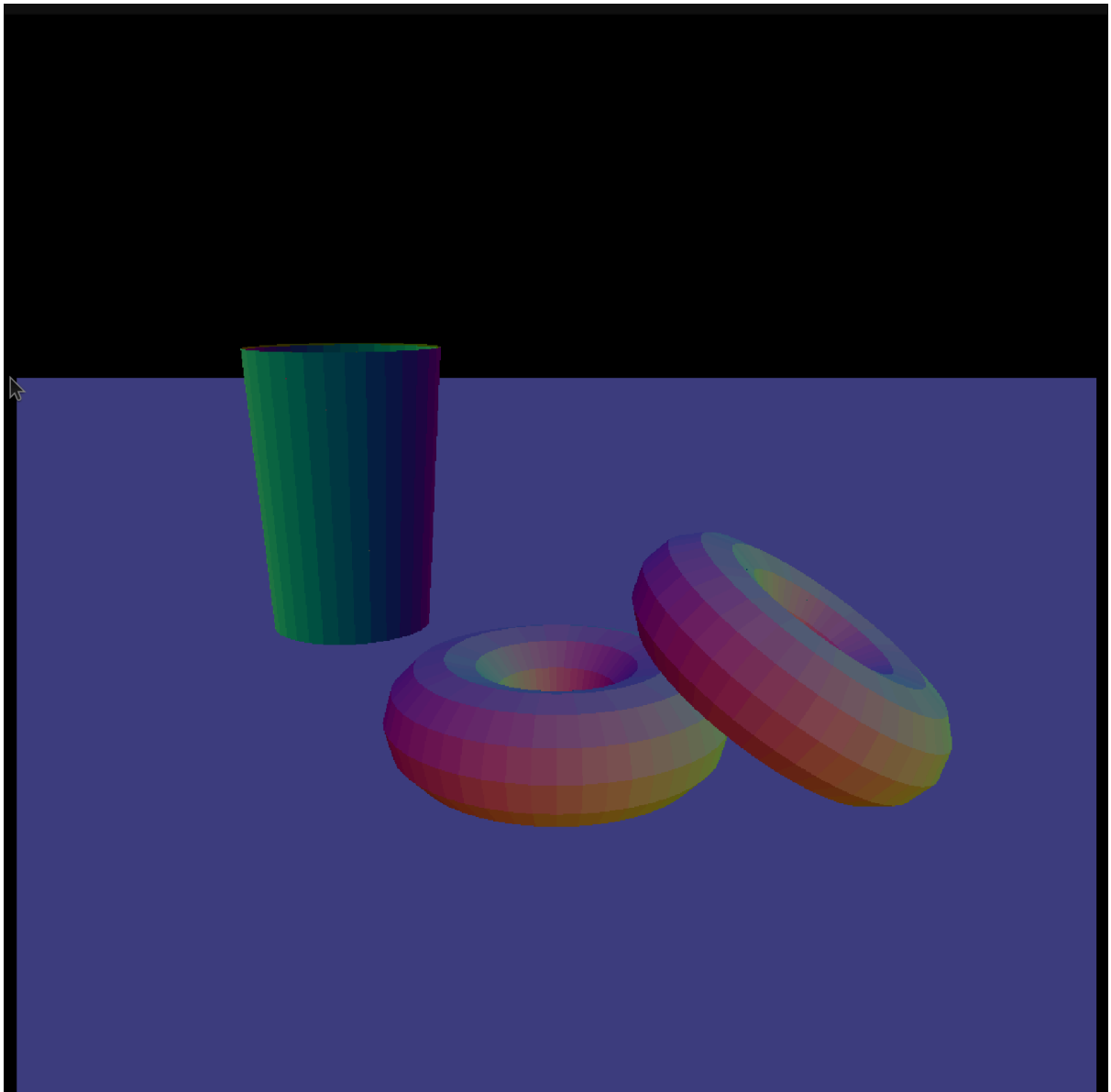
Intersection variant 0: 51429.265625ms



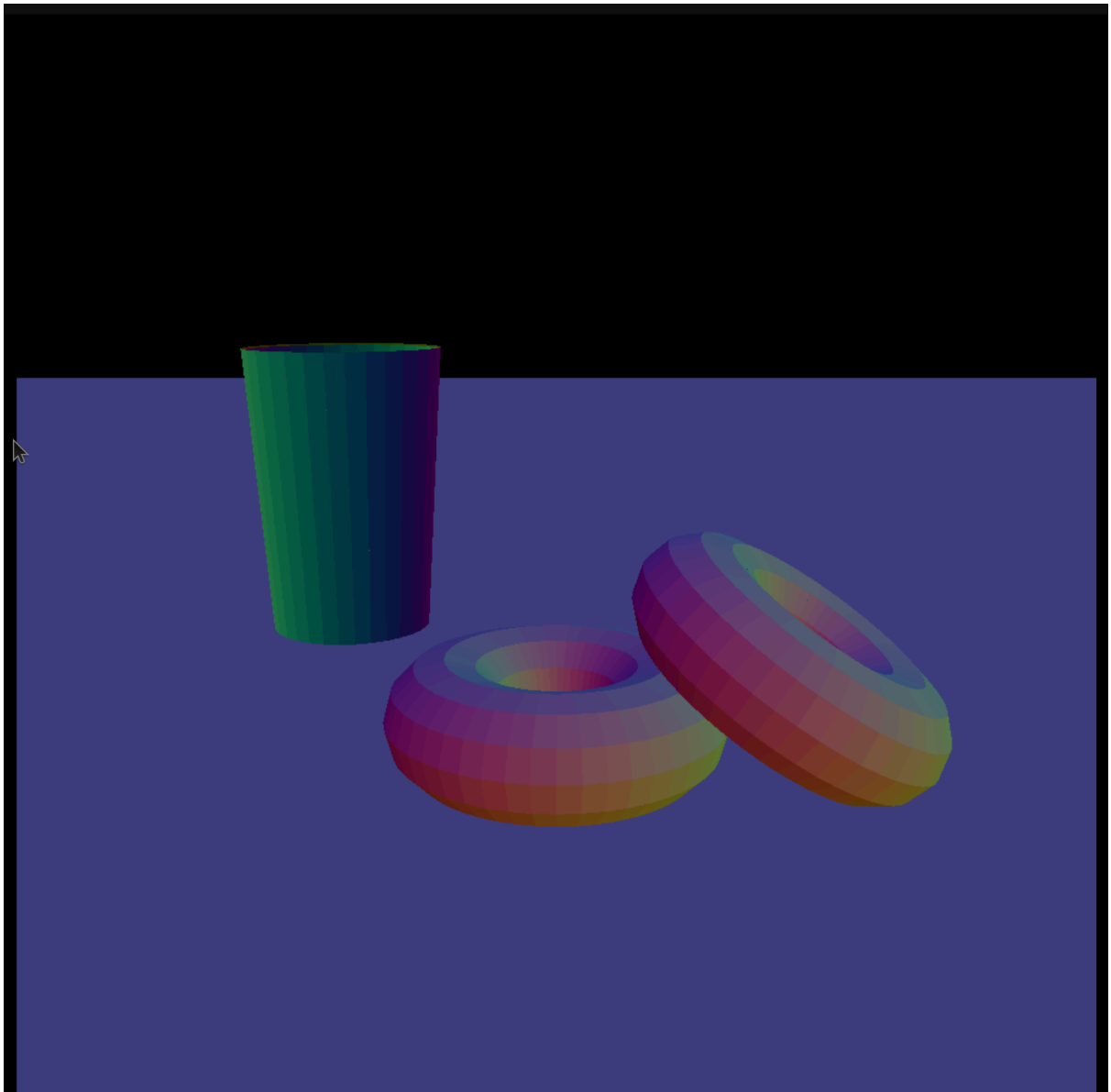
Intersection variant 1: 14999.484375ms



Intersection variant 2: 5331.797852ms

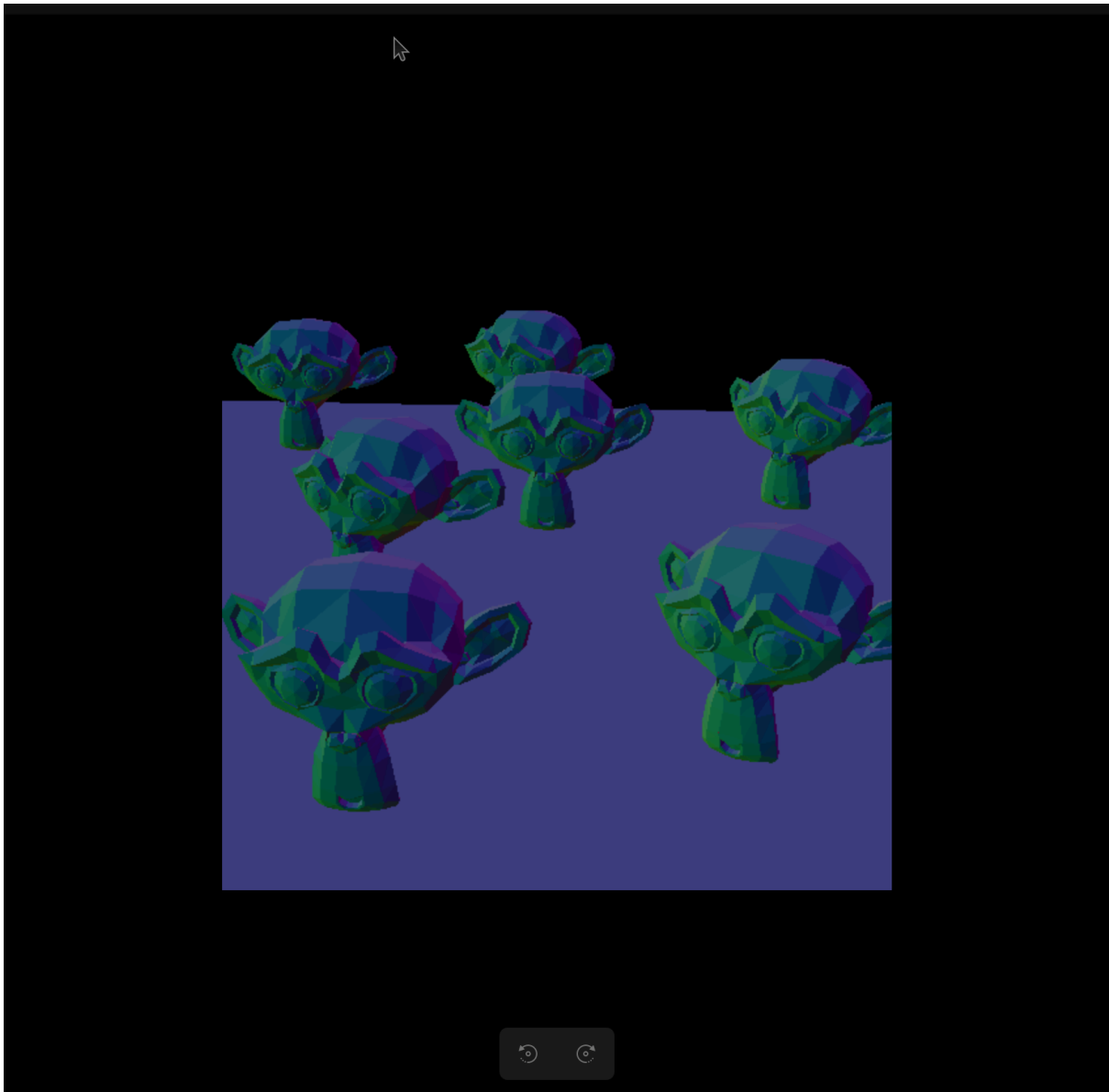


Intersection variant 3: 489.7269ms

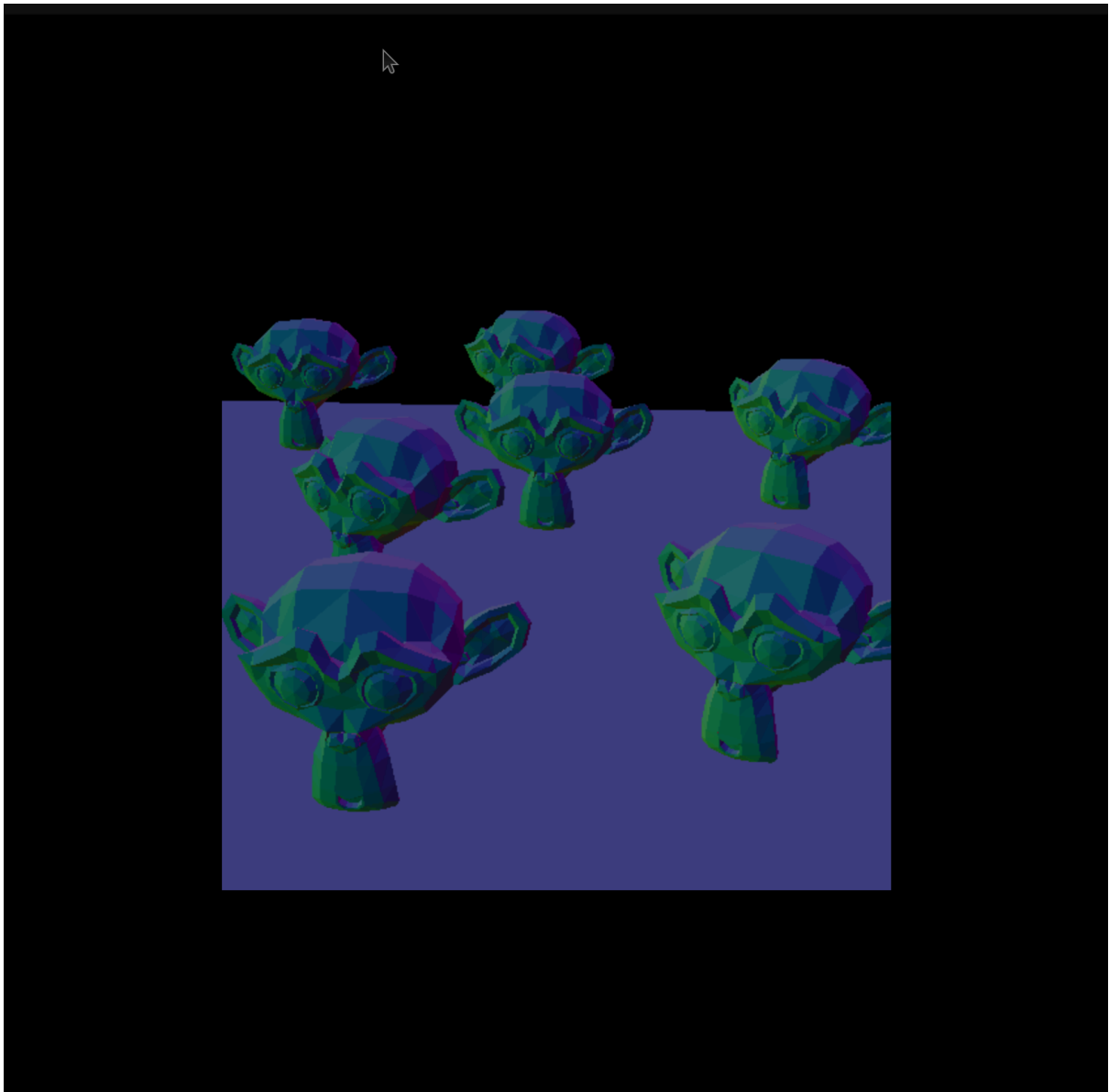


TABLETOP:

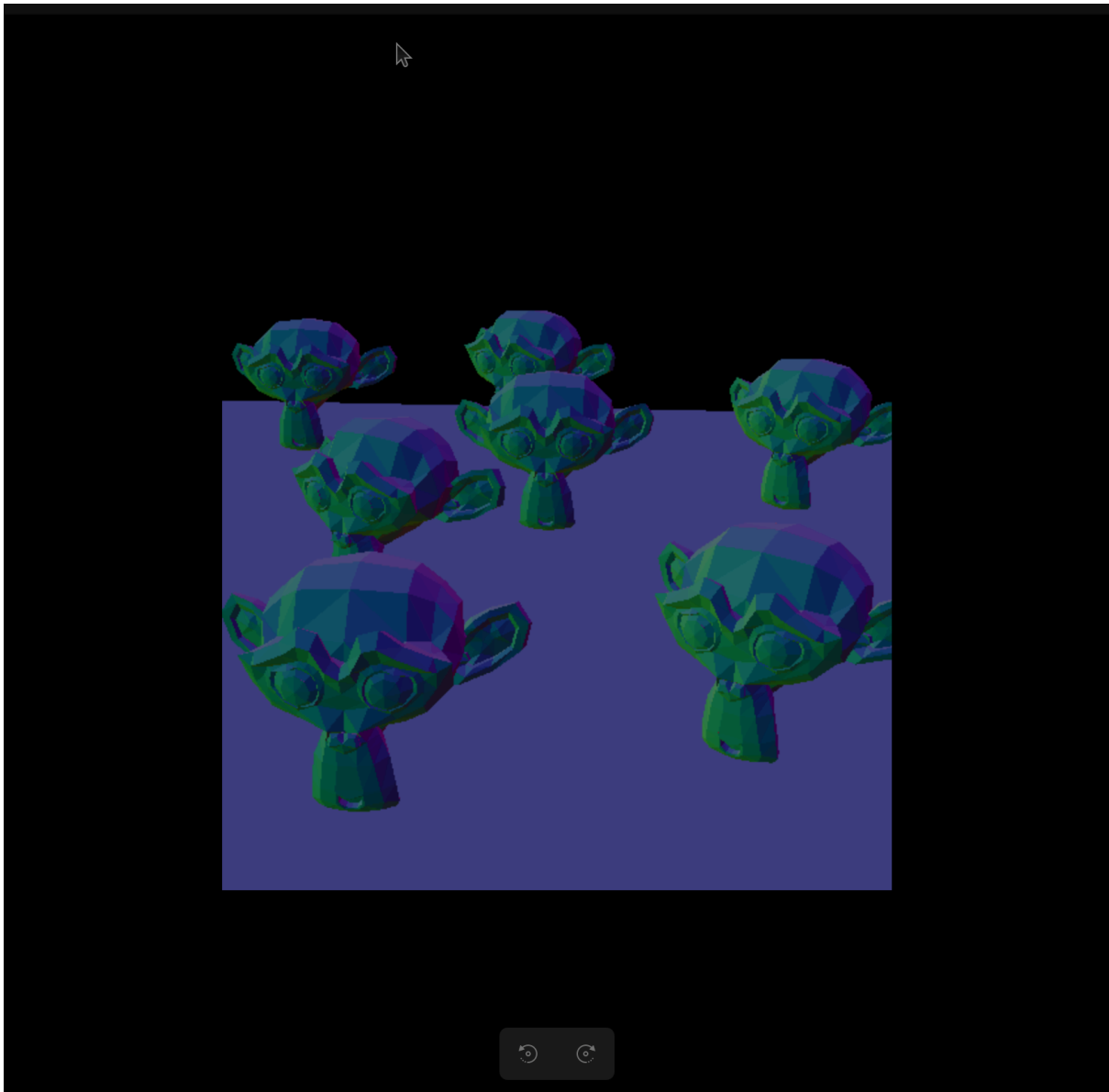
Intersection variant 0: 49690.054688ms



Intersection variant 1: 11483.212891ms



Intersection variant 2: 4206.297852ms



Intersection variant 3: 488.97699ms

