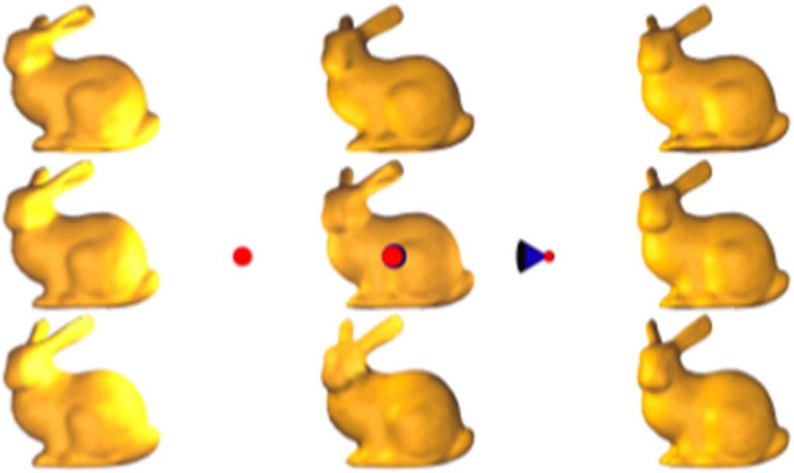
Computer Graphics



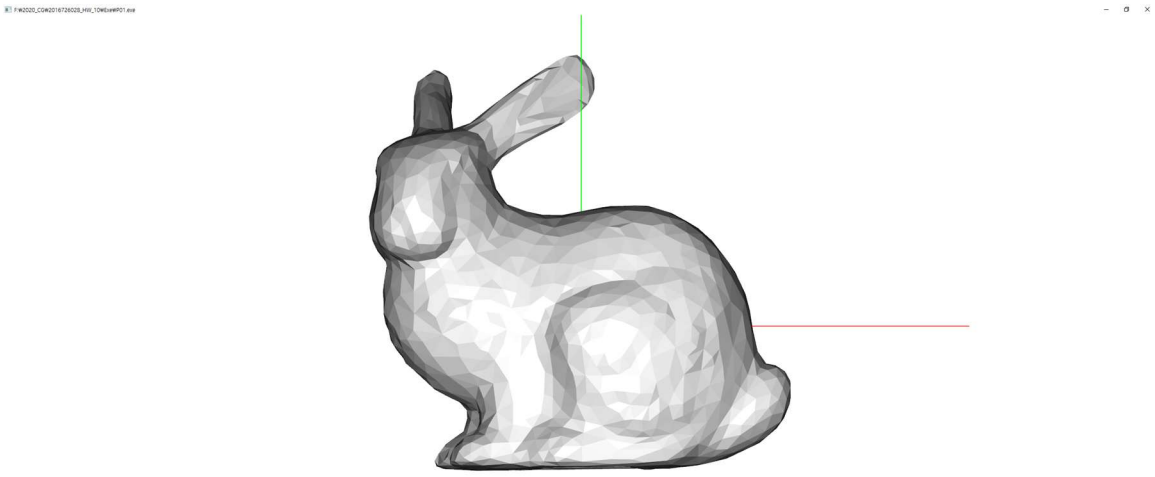
Vewing

이민재 | Computer Graphics [심화전공실습 1] | 2020/11/08

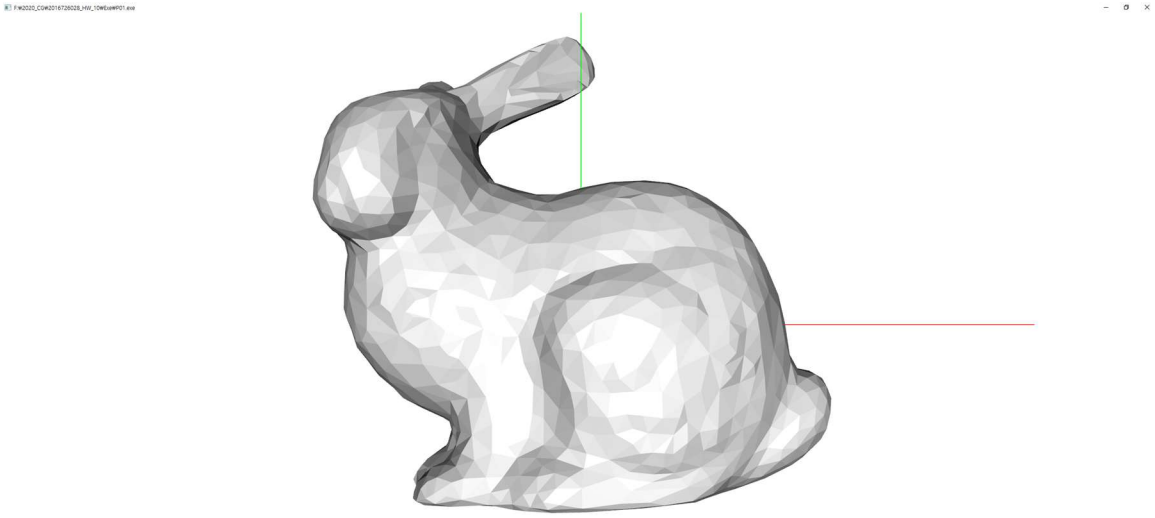
	P01	P02	E01	E02	Total
SCORE	1	1	1	1	4

P01 (ORTHOGRAPHIC AND PERSPECTIVE PROJECTION)
<SNAPSHOT>

ORTHO

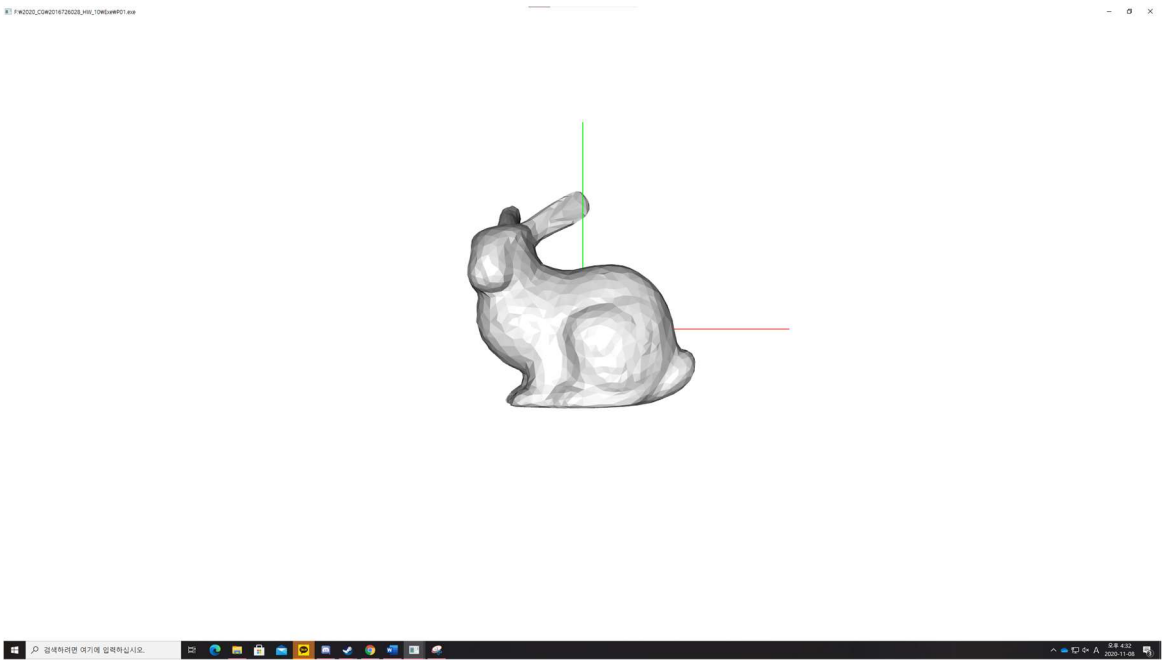


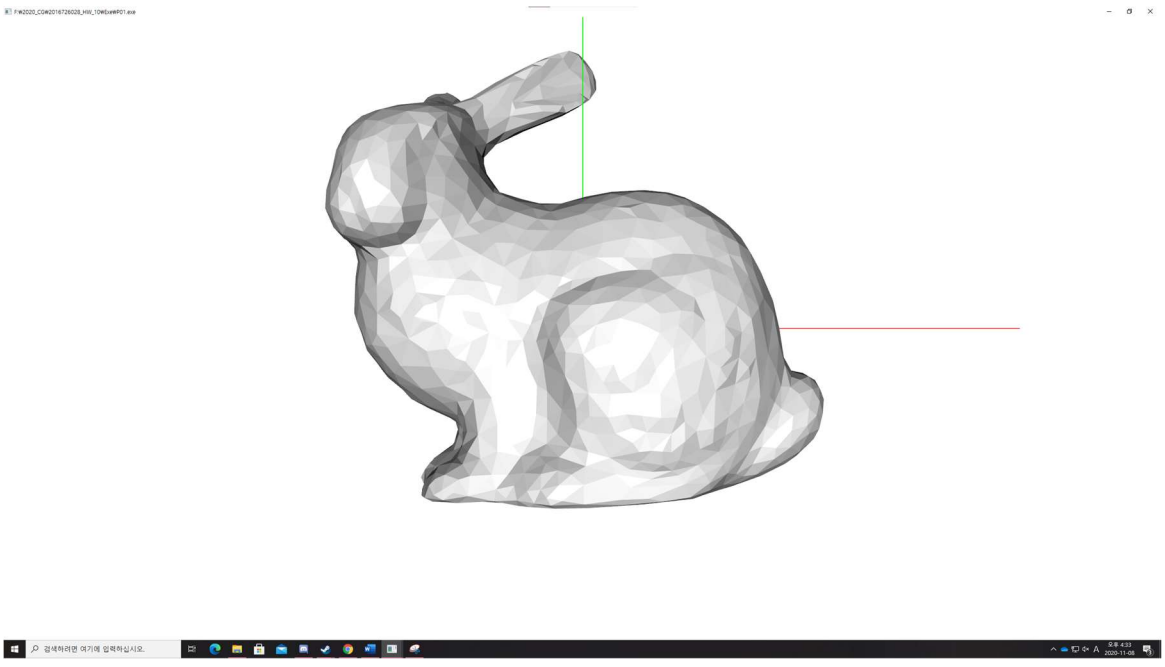
PERSPECTIVE

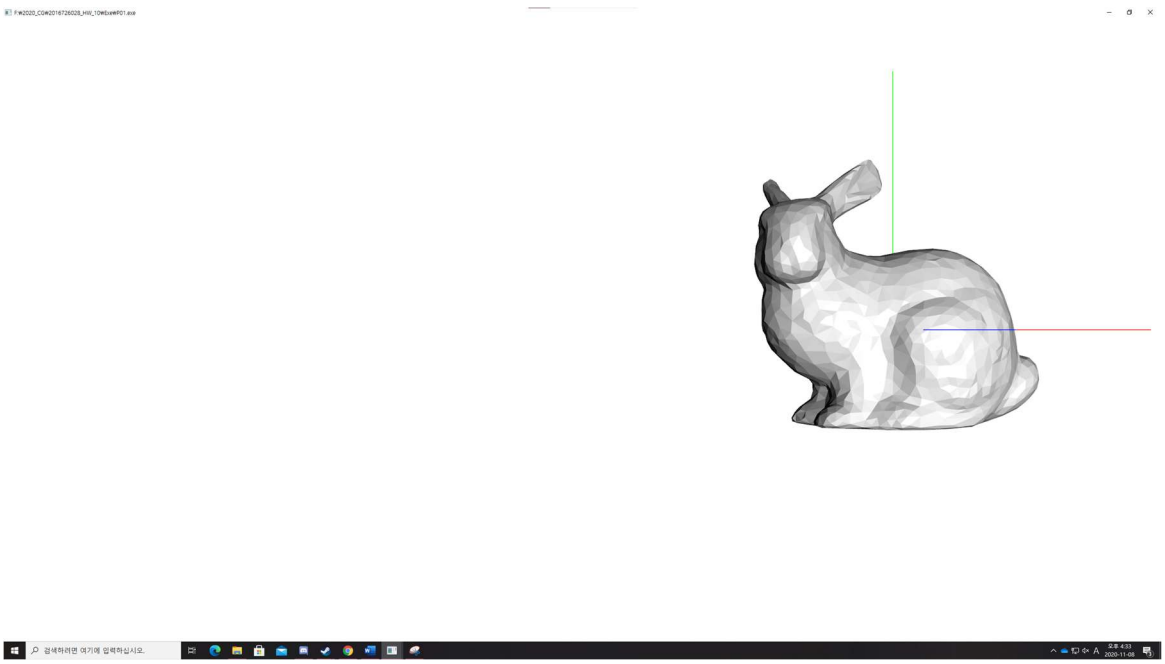


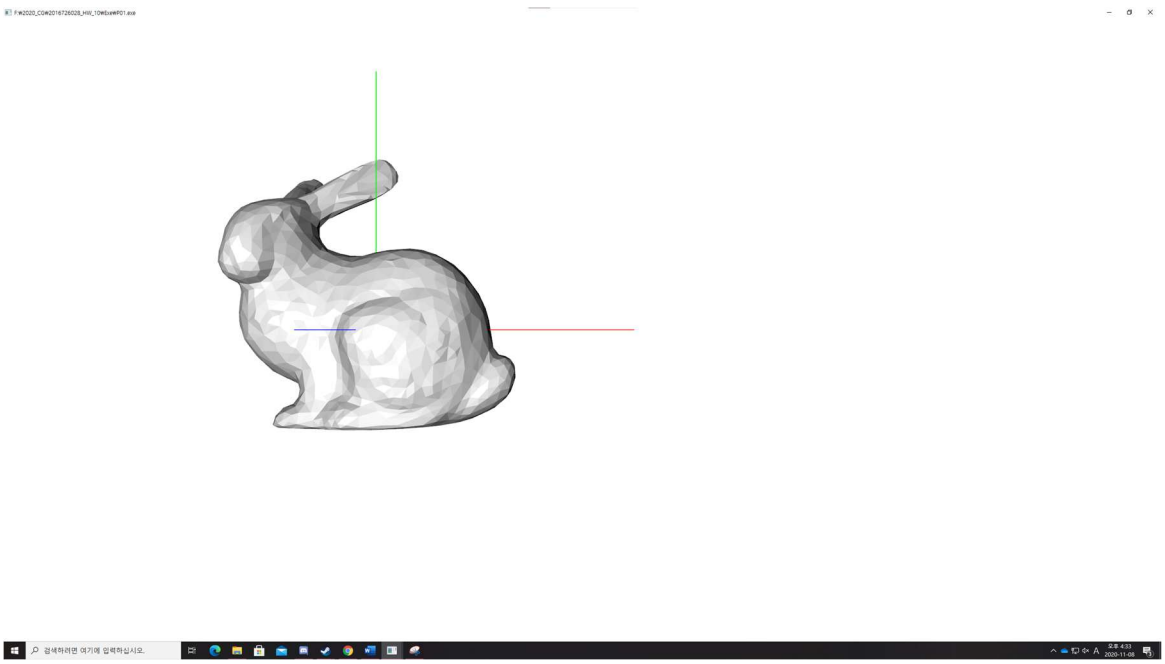
P02 (Interactive navigation with the arrow keys: forward, backward, left, right)

<SNAPSHOT>



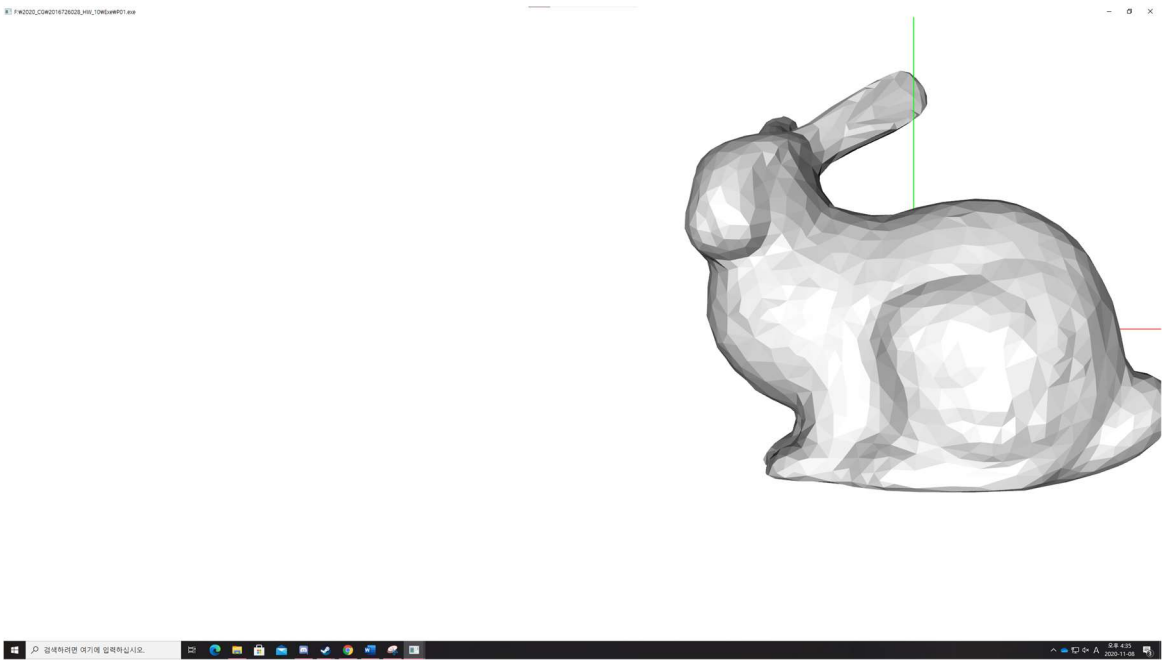


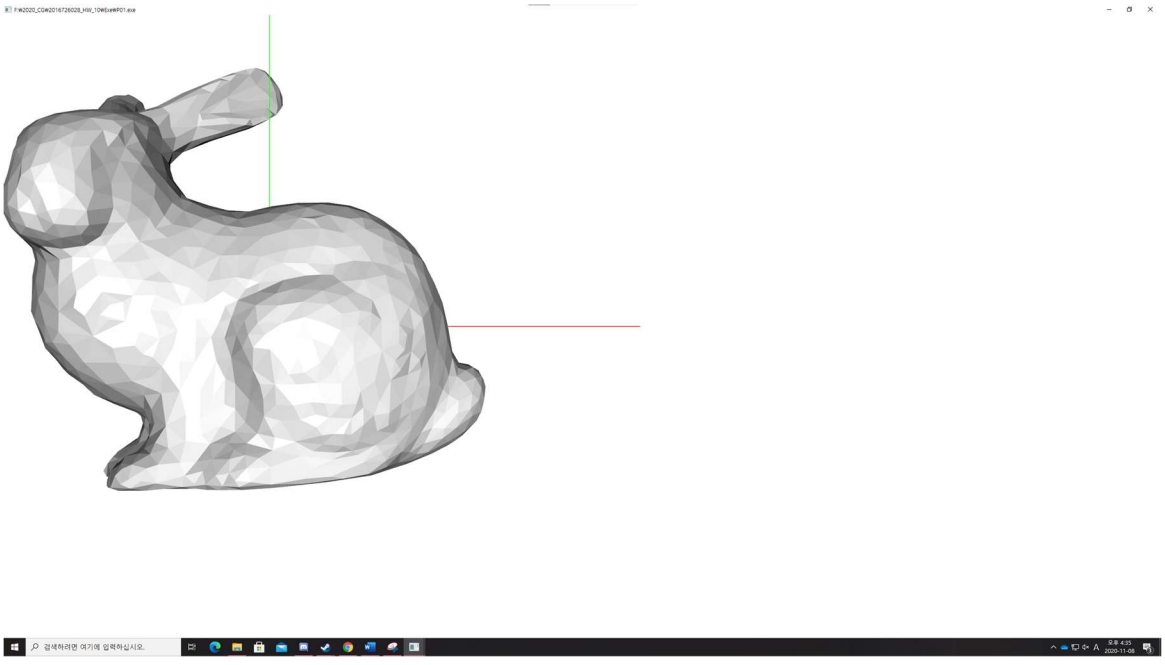




E01 (Turn left/right with the arrow and modifier keys)

<SNAPSHOT>





<EXPLANATION>

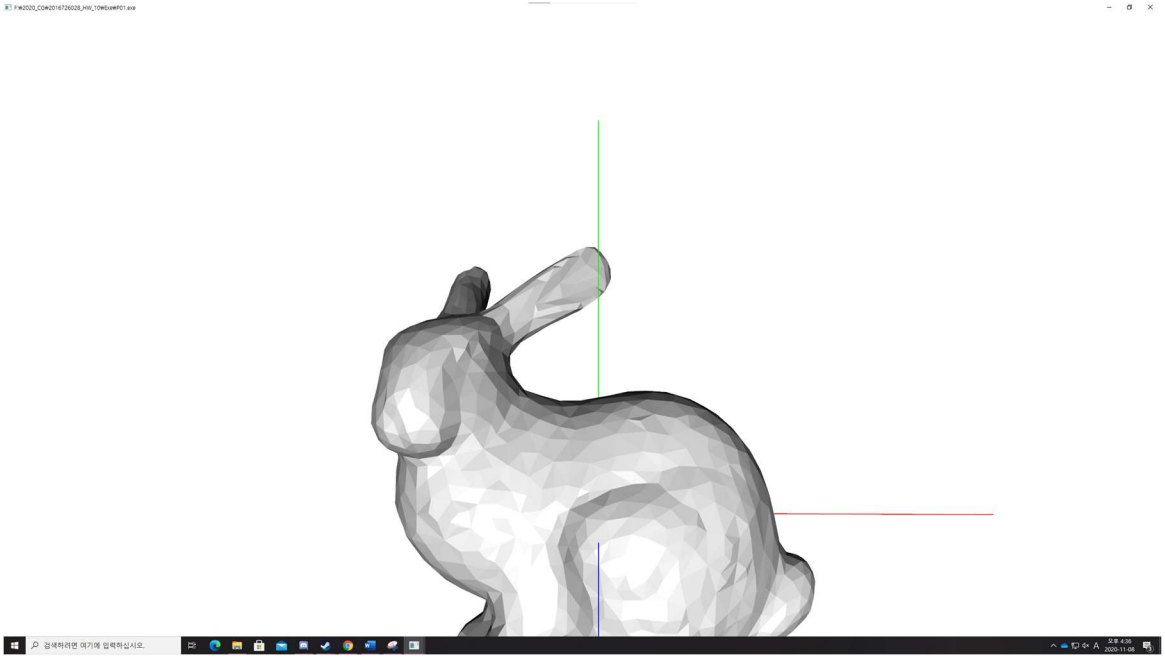
At / right 벡터를 회전시키기 위하여 glm transformation 함수들을 이용한 translate-rotate- translate 과정을 거쳐 각 벡터를 회전시켰다.

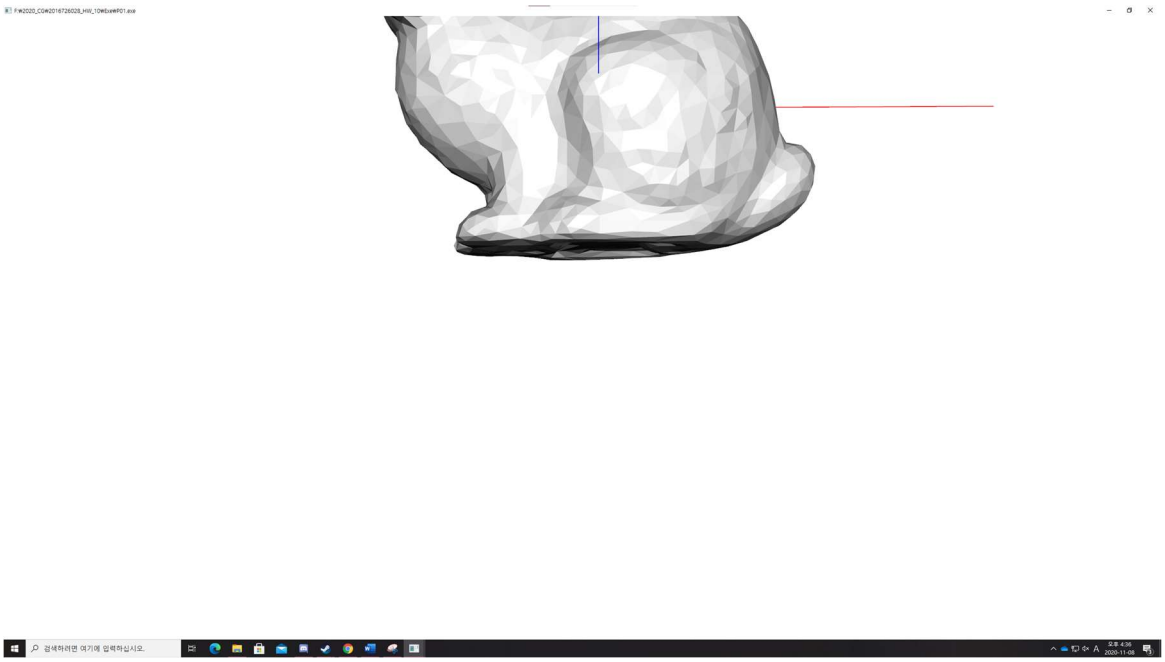
```
M = glm::translate(M, C.e);
  // M = M * rotate(angle, axis)
  M = glm::rotate(M, glm::radians(theta1), C.u); // Radians
  // M = M * translate(-pivot)
  M = glm::translate(M, -C.e);
```

이때 pivot 은 eye 의 위치, axis 벡터는 up 벡터가 된다. 행렬 M 을 각 C.a, C.r 에 곱해 회전시킨 좌표를 이용하여 카메라를 회전시켰다.

E02 (Move up/down with the arrow and modifier keys)

<SNAPSHOT>





<EXPLANATION>

카메라를 위, 아래로 움직이기 위해 right 와 forward 에 수직인(서로 cross 해서 나온 벡터) up 벡터 방향으로 eye 와 at 벡터를 더하고 빼주었다.

```
case GLFW_KEY_UP:
        C.e += 0.1f * C.u; C.a += 0.1f * C.u; break;

    case GLFW_KEY_DOWN:
        C.e -= 0.1f * C.u; C.a -= 0.1f * C.u; break;
```