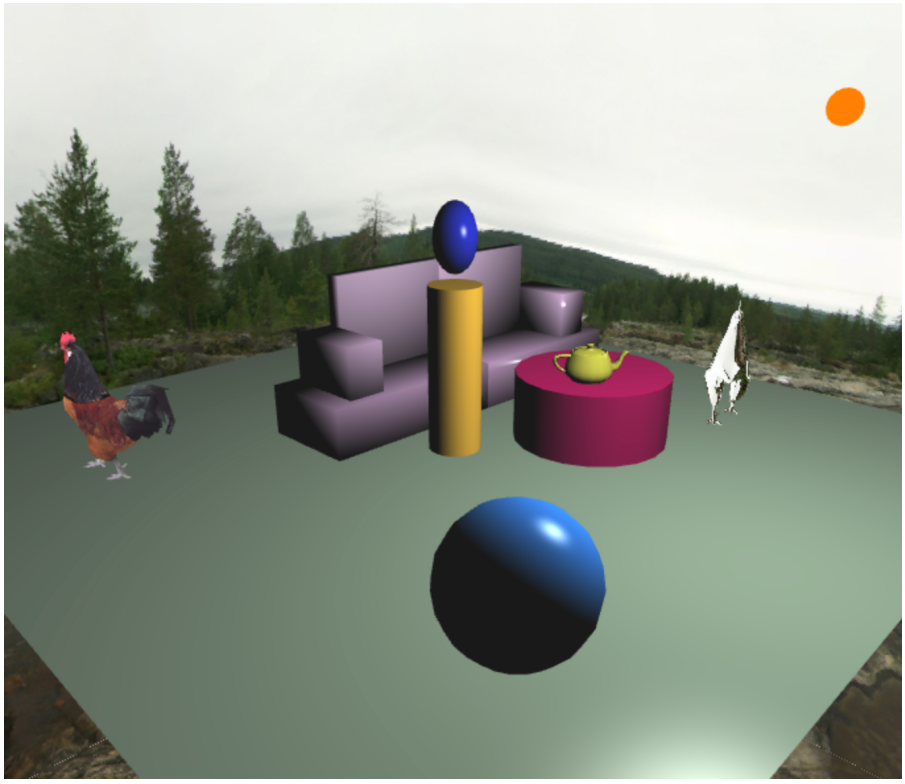
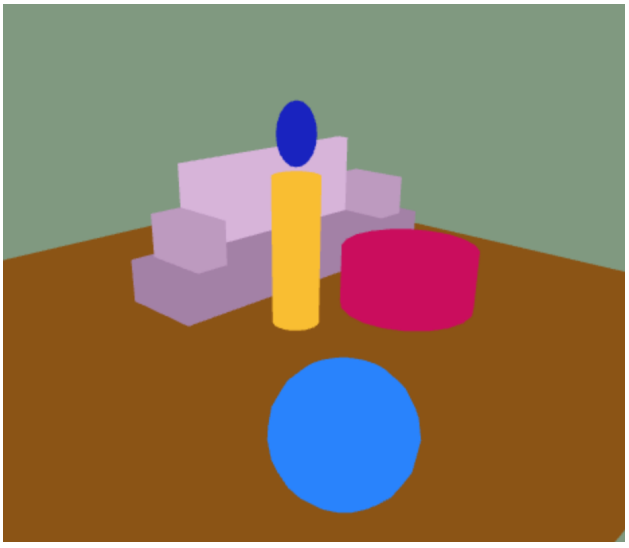
Rooster Living Room: An Exploration in WebGL

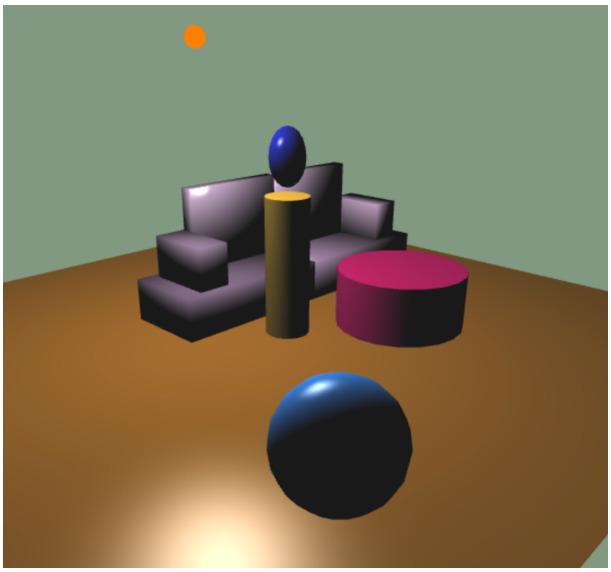


Real-Time Rendering, WebGl, Matrix Transformations, User Controls, Html, JavaScript

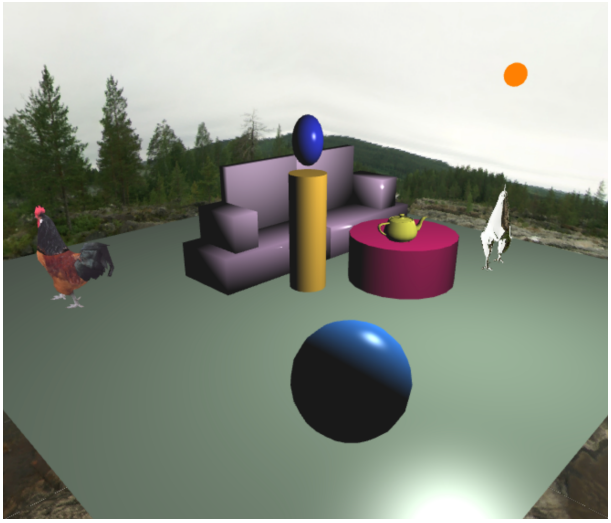
A dystopian virtual living room implemented with WebGL using real-time rendering techniques. The scene consists of a sofa, a humanoid, a coffee table, a teapot, a sphere, two roosters, an outdoor cube map, and a global light source. Various elements in the scene are interactive, including the position of the humanoid, the orientation of the camera, and the coordinates of the light source. The teapot is animated, continually rotating on the coffee table.



First a basic 3D scene was created using geometric primitives like a sphere. There is a base instance of each primitive that is parameterized so that multiple objects of different sizes can be created from it. The user can move the humanoid using the WASD keys which trigger transformation matrix multiplication. The camera roll, pitch and yaw can be controlled using r/R, y/Y, and p/P keys.



Then, the scene was enhanced with Phong per-fragment shaders to create a global illumination effect. The orange sphere represents the light and can be controlled using the z, x, c, v, b, and n keys.



Finally, more complex shape models from outside sources were imported into the project. The teapot was shaded in a similar manner to the furniture, while the roosters are texture mapped. In addition, the teapot is animated so that it rotates on the coffee table. An environment cube mapping was used to create the background and make one of the roosters reflective.