

COMP 371 - Project - CSG

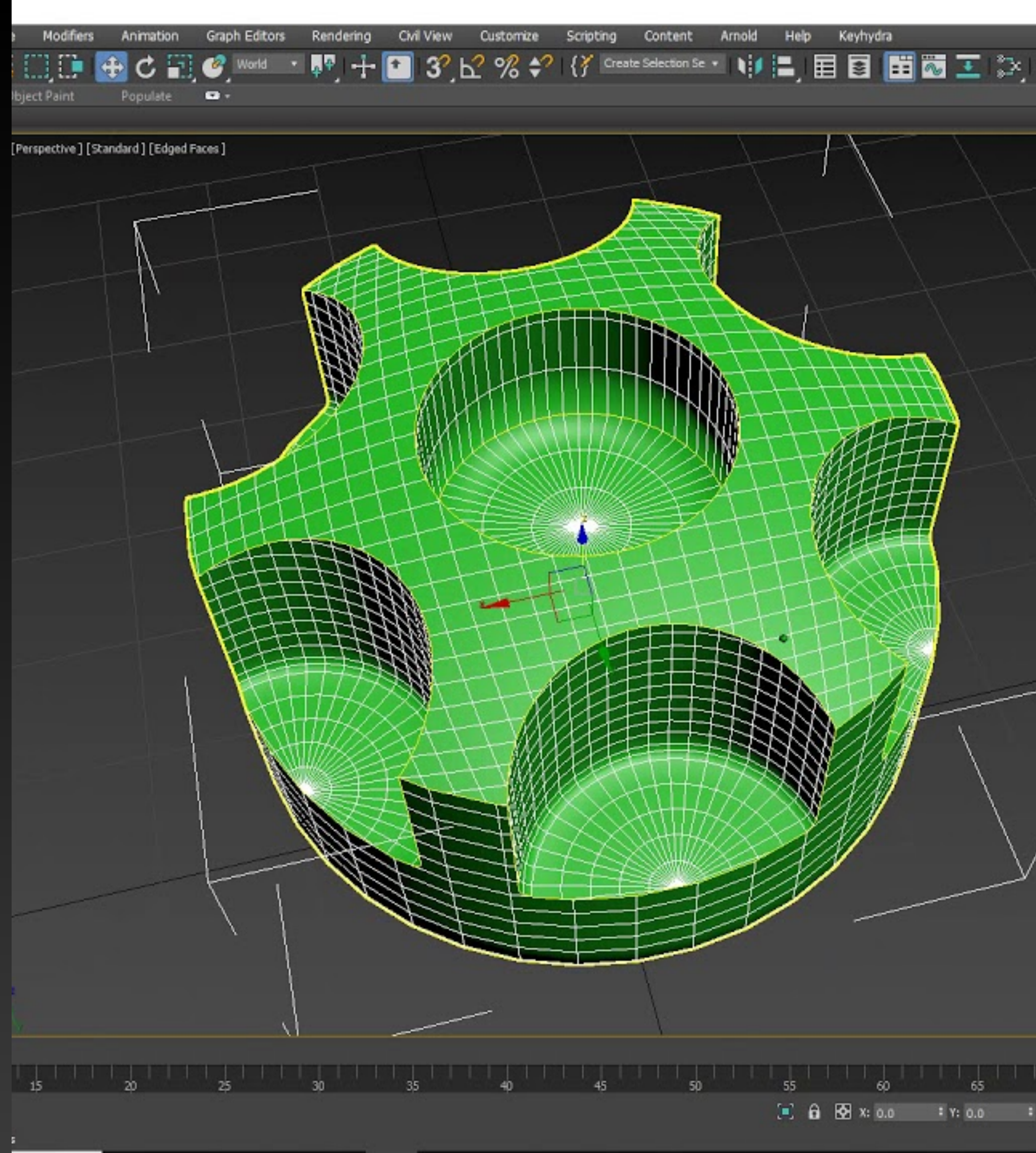
Constructive Solid Geometry in OpenGL

Owen Hellum, 2023

What is CSG?

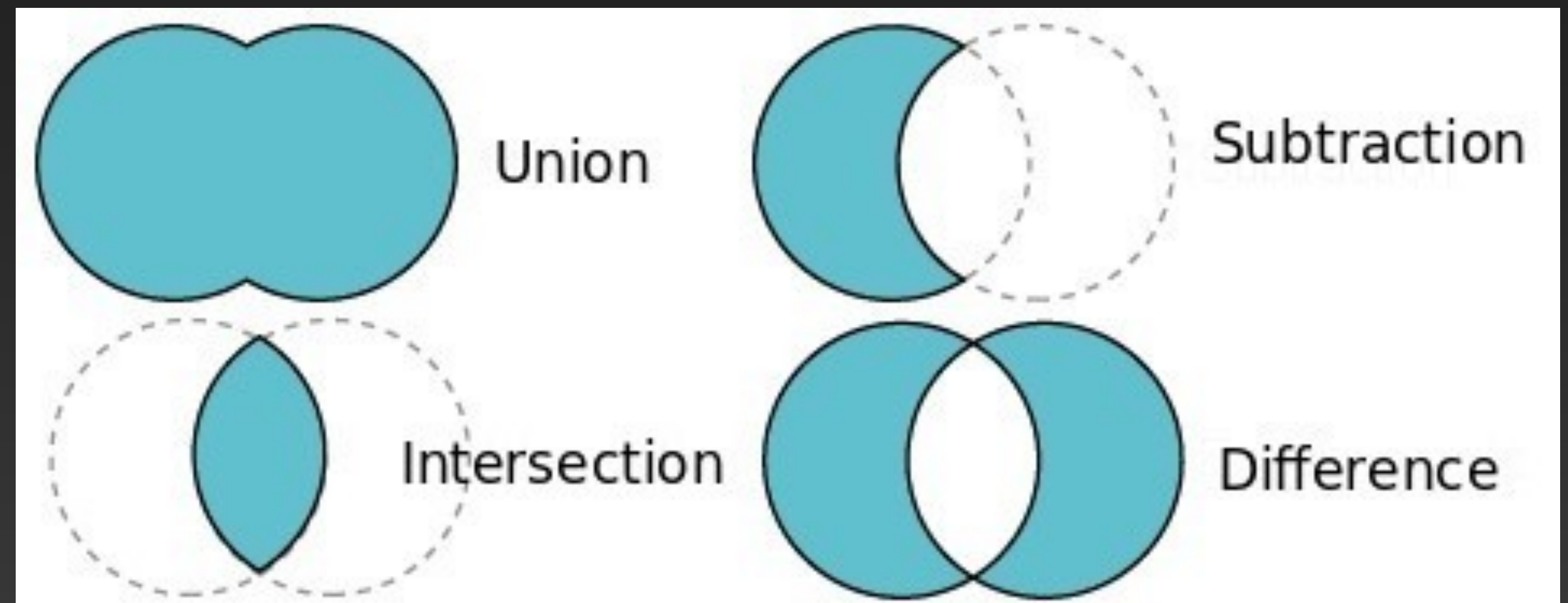
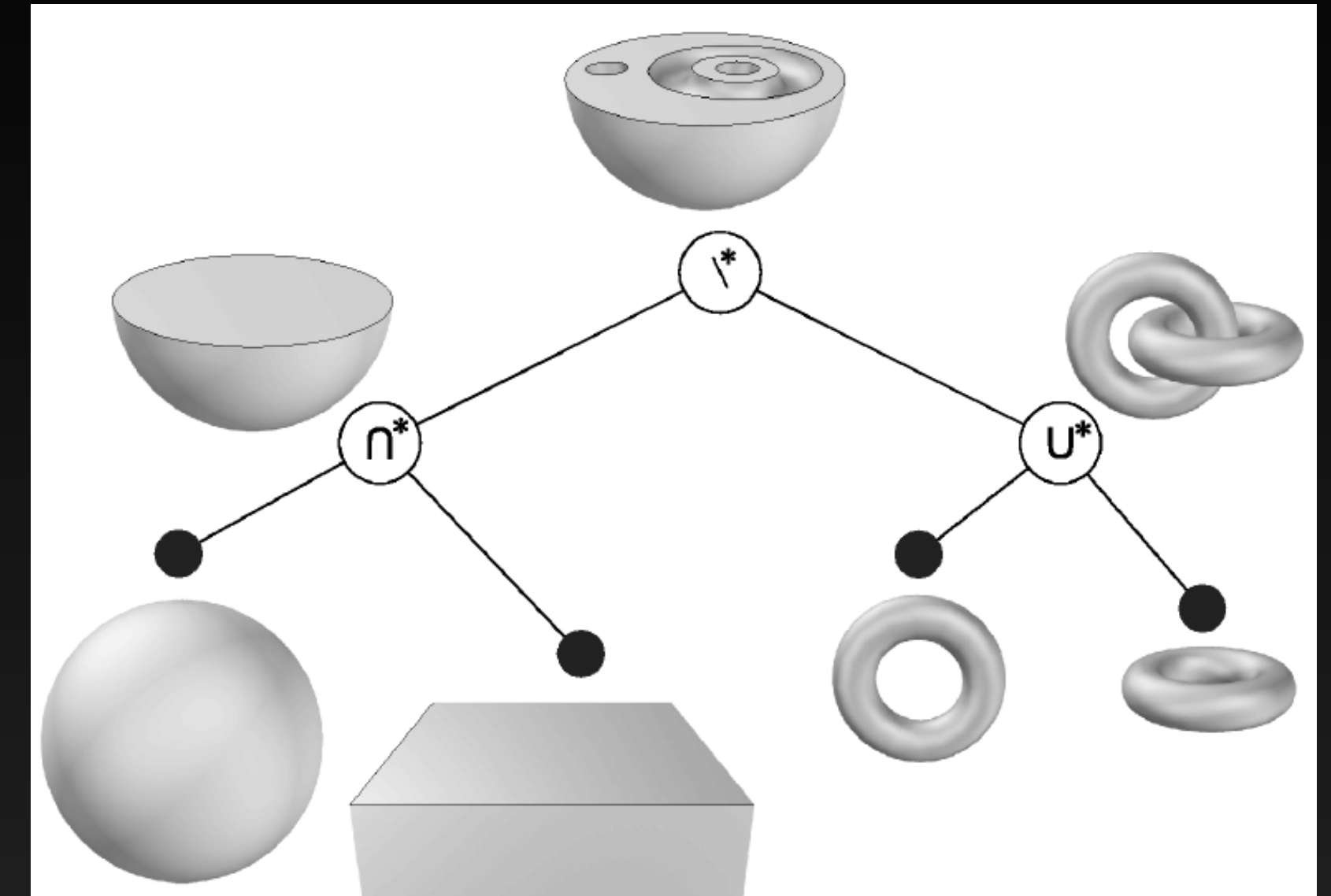
Building on building blocks

- Technique for 3D modelling
- Generates complex objects with only a few primitives
- Crucial in hard surface modelling
- Plugins for most 3D softwares



Common CSG operations

Union
Subtraction
Intersection
Difference



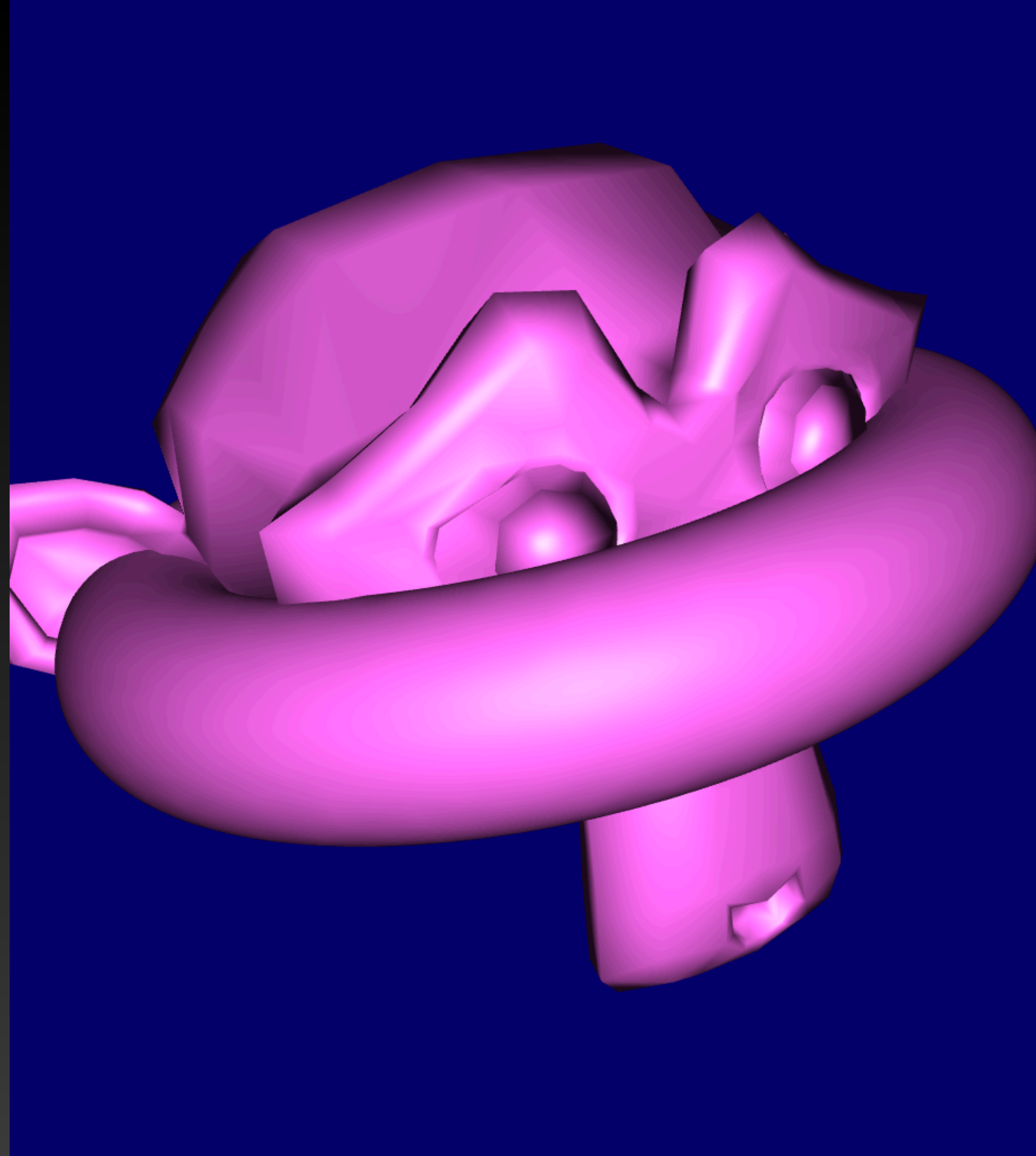
Project objectives

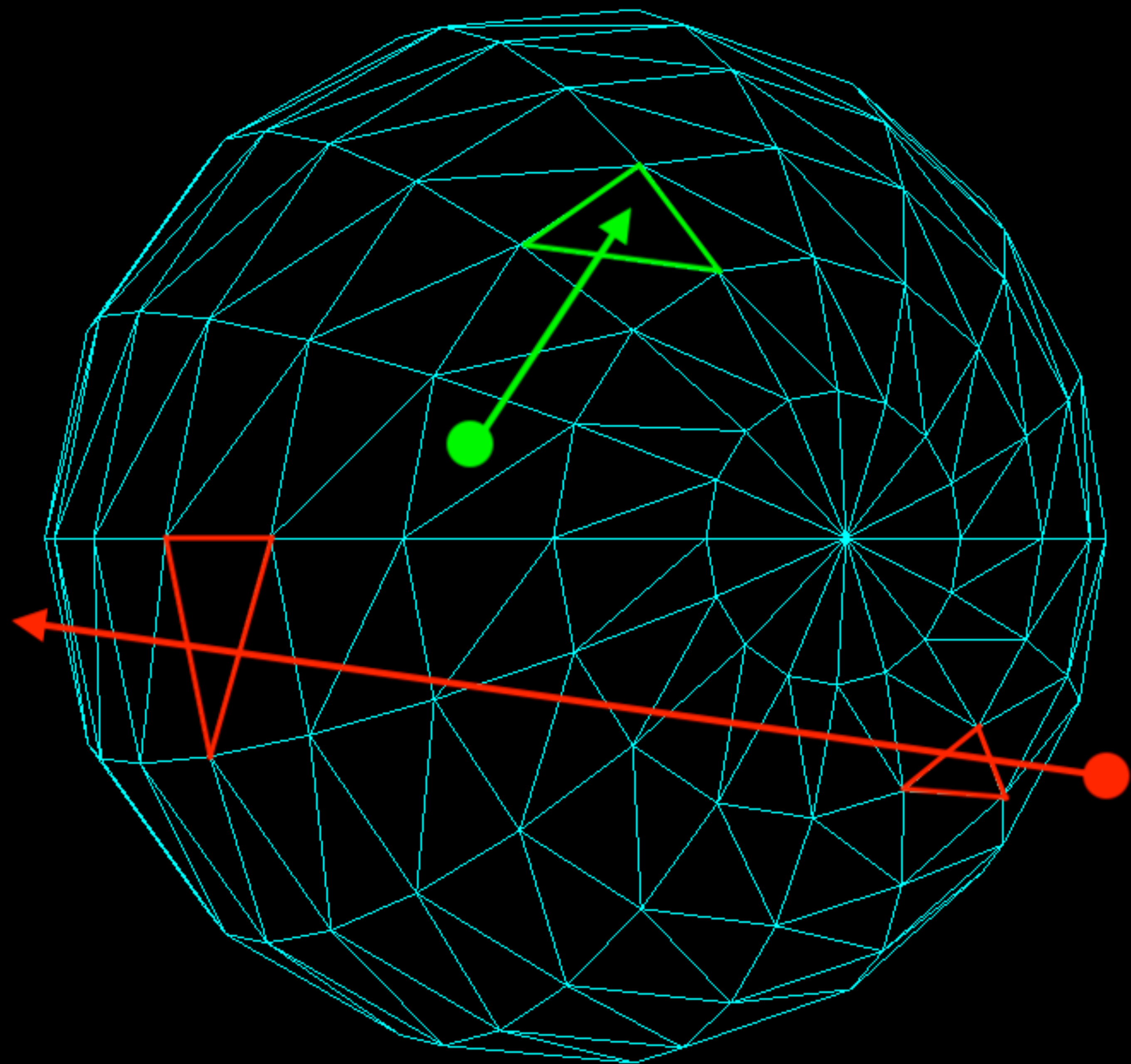
1. Loading of arbitrary OBJ files
2. Union, subtraction, intersection, and difference operations
3. Custom colour shading
4. Generation of resulting geometry
5. Custom scene input

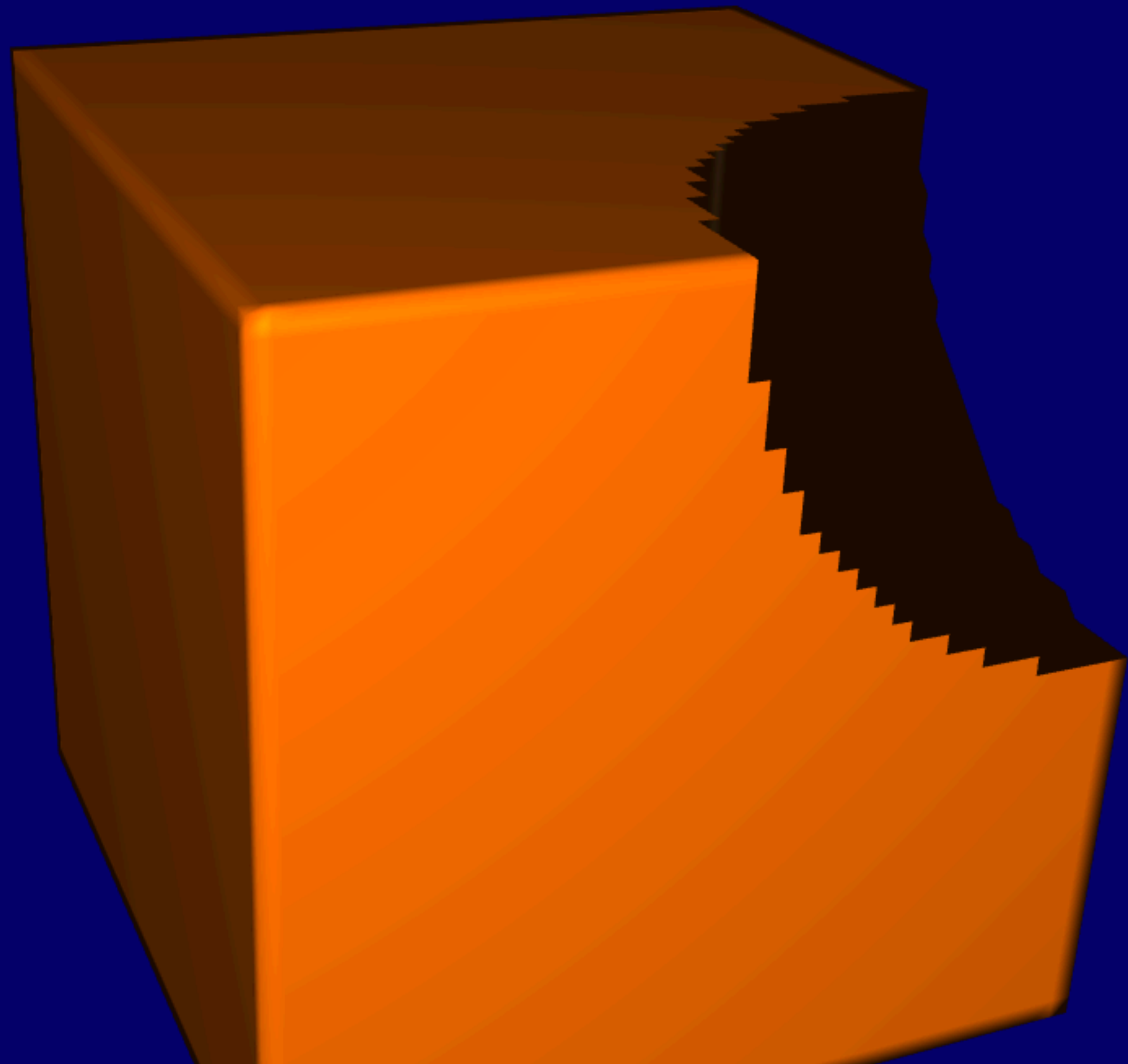
Project milestones

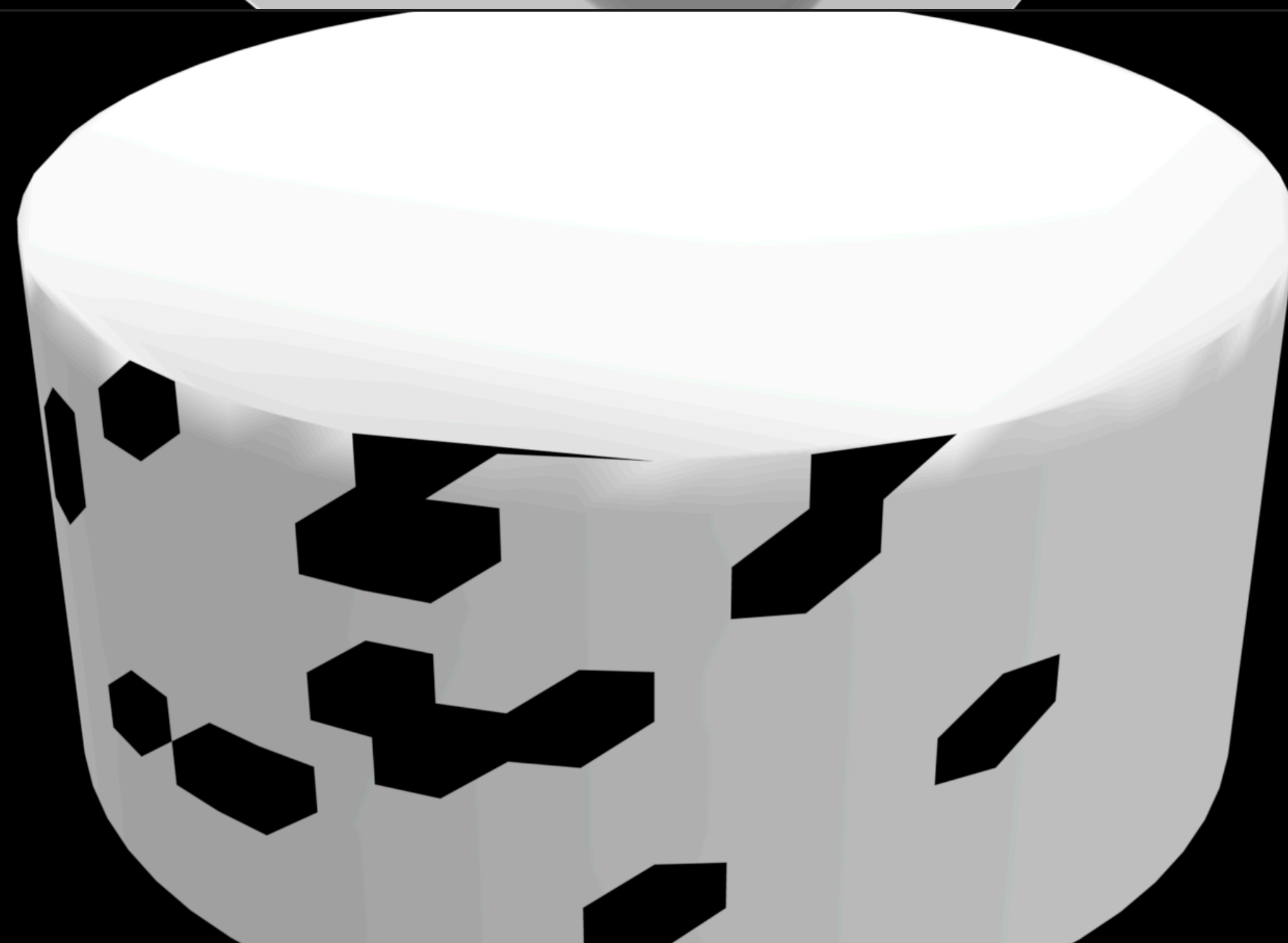
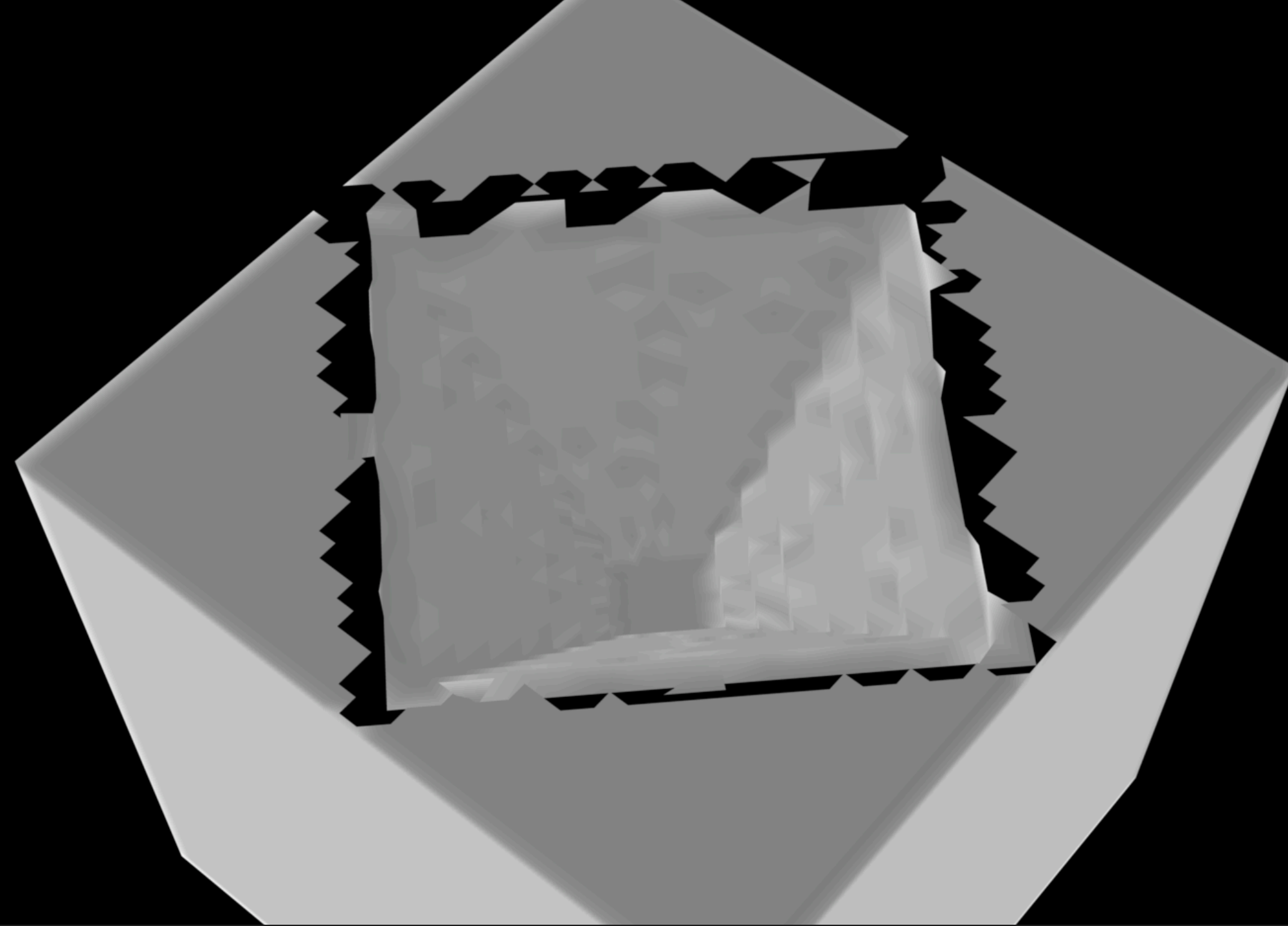
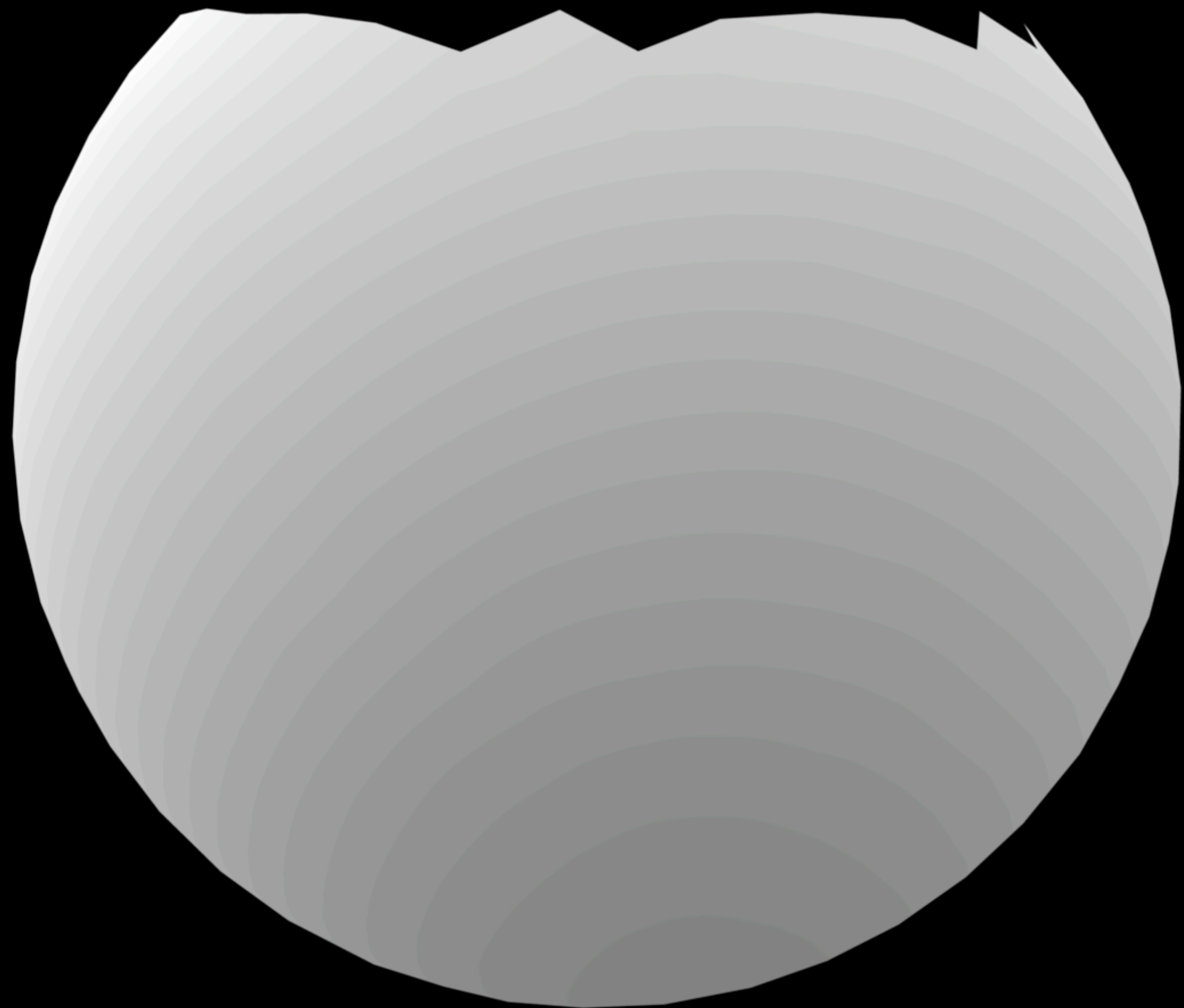
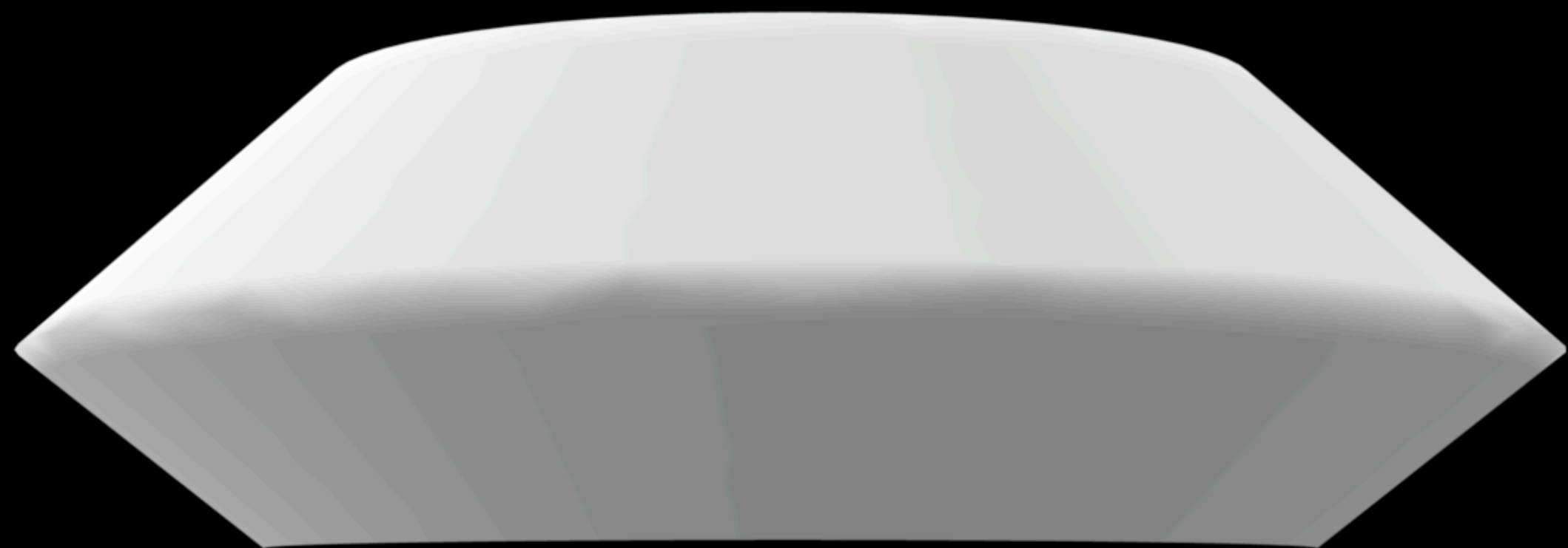
Generation, then customization

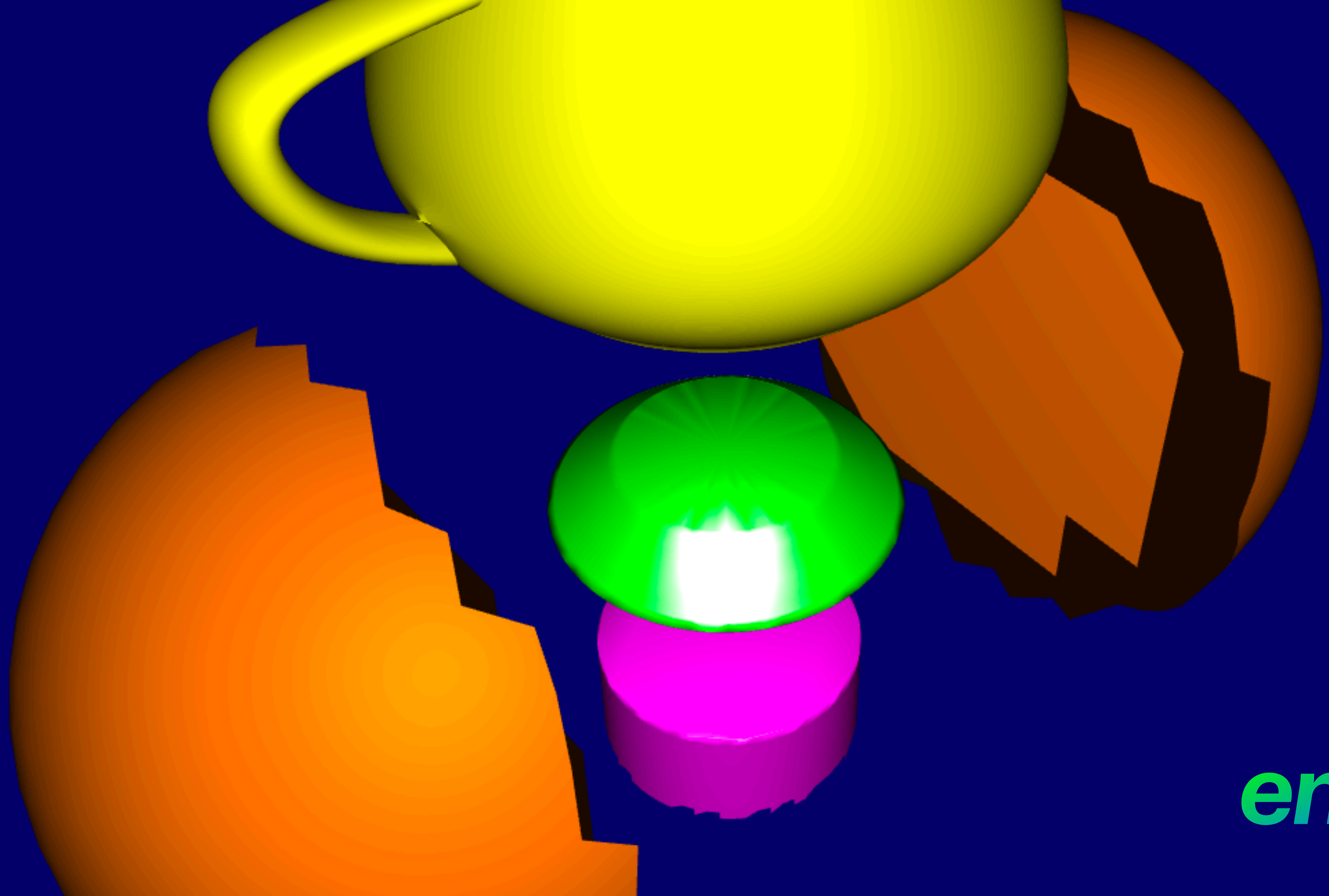
1. Calculating when points are inside of meshes
2. Removing unnecessary vertices
3. Defining the 4 operations
4. Generating scenes from JSON files
5. Saving results to OBJ files











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