

Displaying curves, surfaces and solid objects in Unity3D system

Student: Yan Kaitao

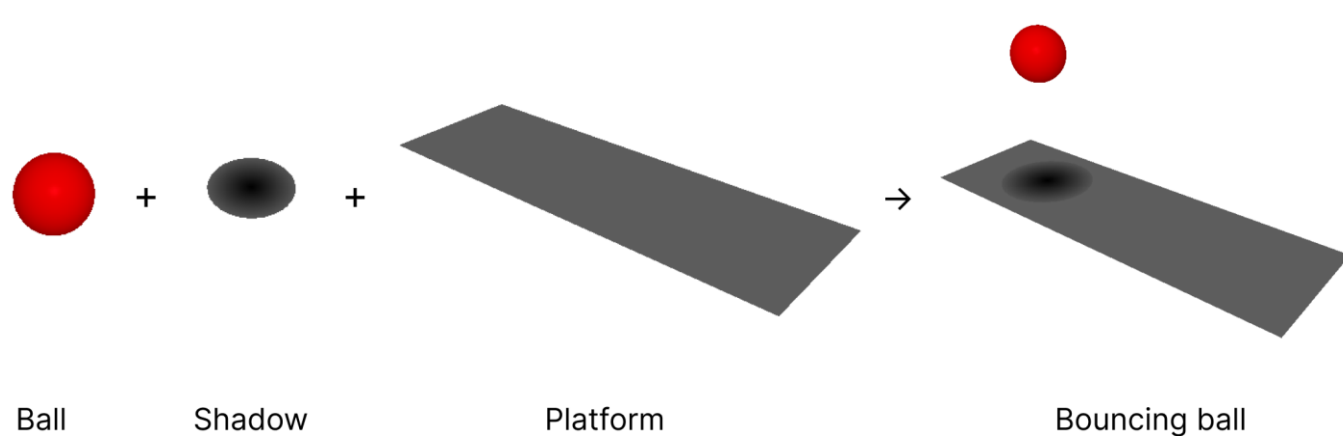
Supervisor: A/P Alexei Sourin

Project objectives

The project focuses on improving the features of the interactive software ShapeExplorer, which allows students to generate curves and polygon meshes defined by parametric and implicit functions, to aid in visualization.

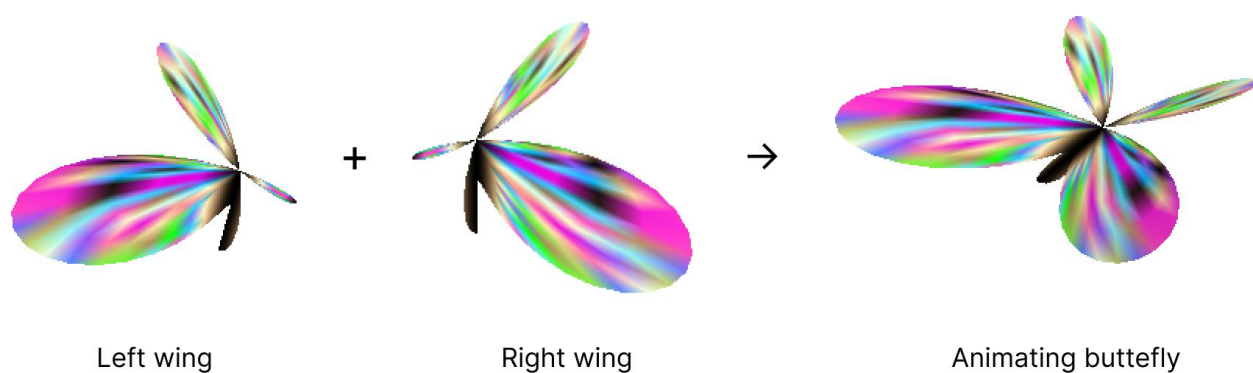
Displaying multiple objects in a single tab

In previous version, individual objects were displayed in separate tabs. In Unity3D, the Generated Mesh Objects are set active to render multiple objects. The software also scales the axes and finds the best camera view and angle.

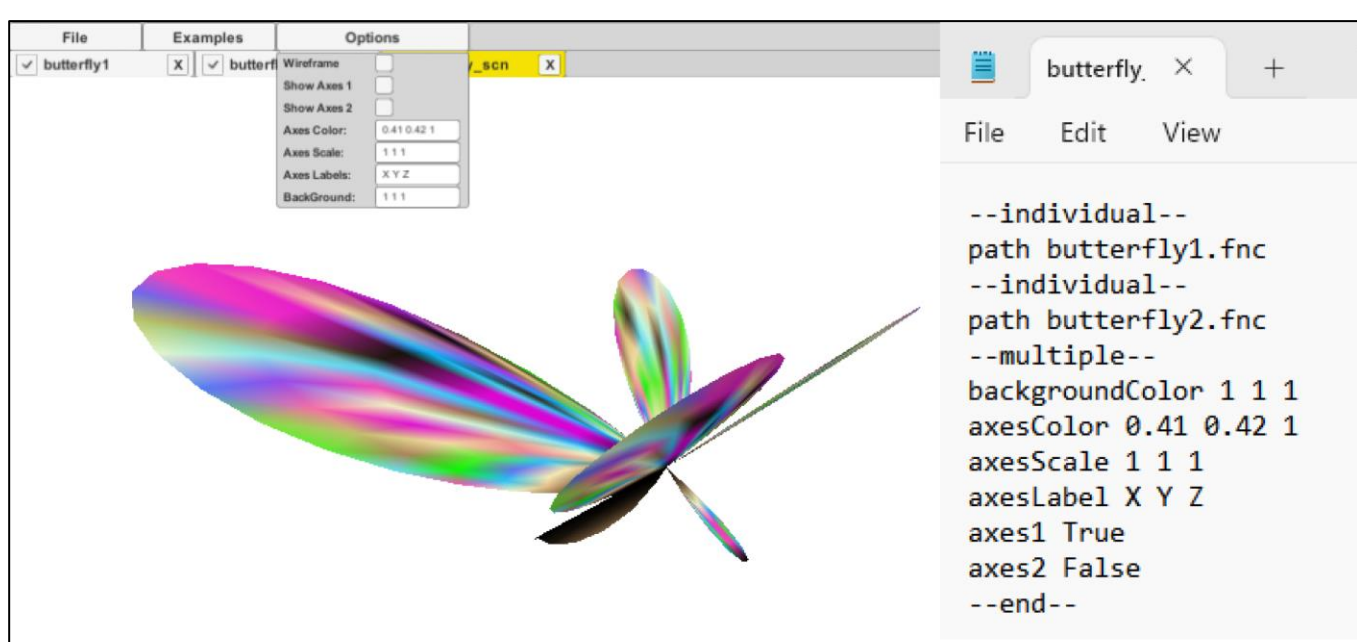


Loading and saving multiple tab with customized attributes

For convenience, the software also allow users to save the multiple objects as a single file, in which relative paths of the individual files are being stored.

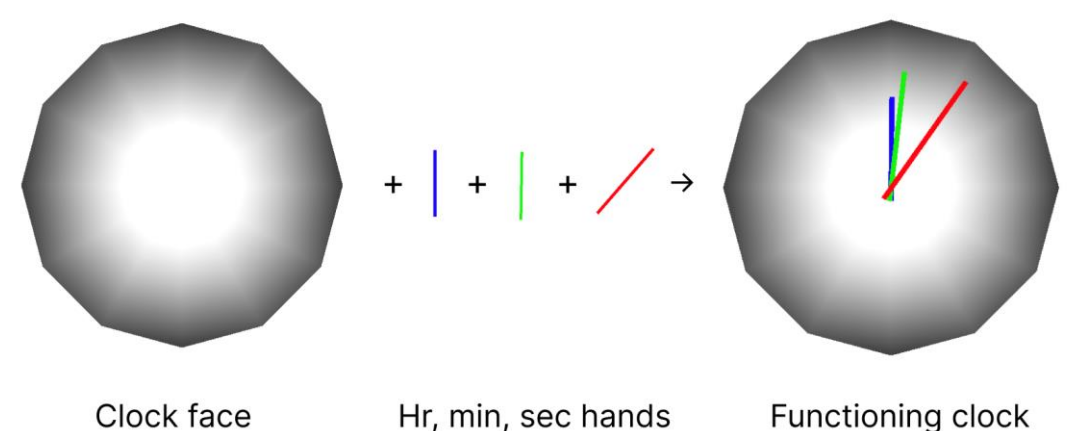


Users can also modify attributes pertaining to background color and axes. When the user loads this file, the software will load all corresponding tabs at once .

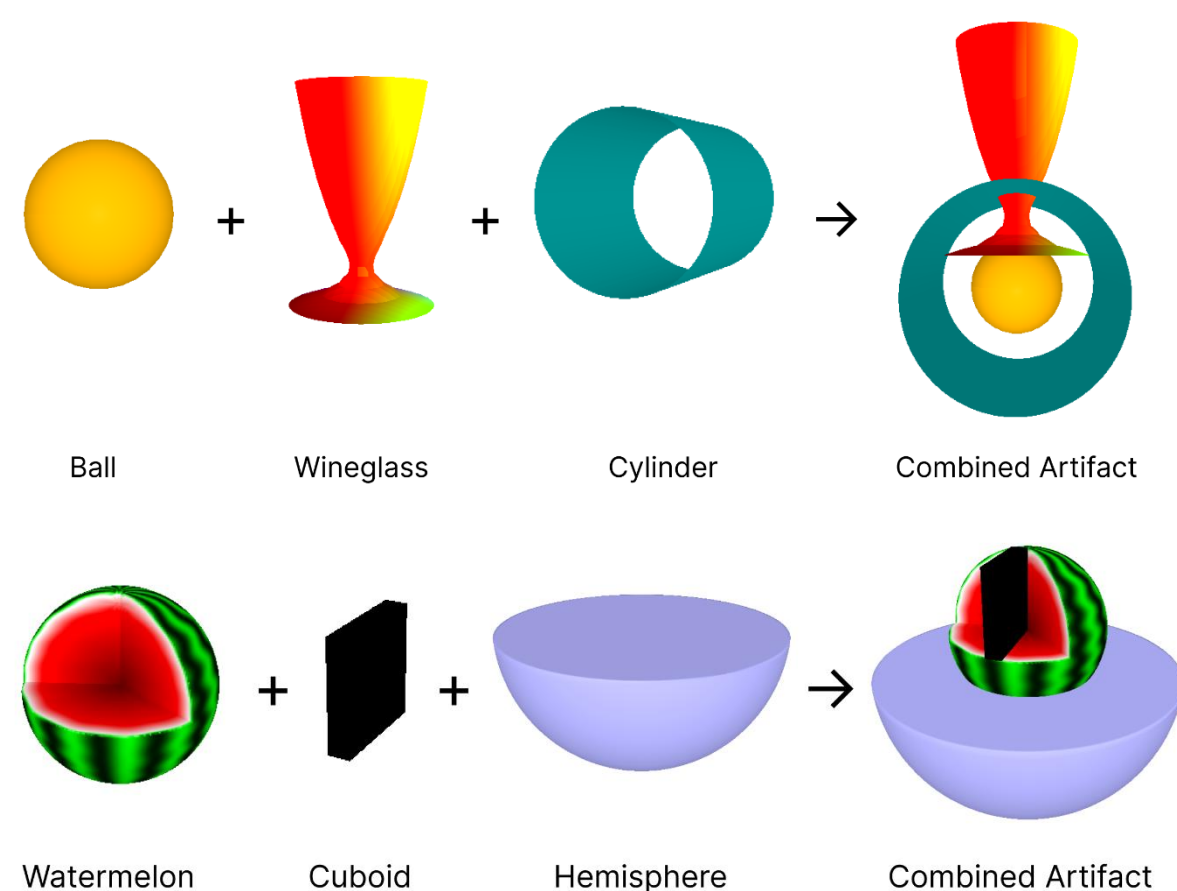


Project significance

To render meaningful visualizations, such as a clock, the individual clock face and hour, minute and second hands (which are animating) must be combined together in a single scene.



Other types of objects can also be combined together in a 3D setting.



Synchronizing timer for animating objects

Unity3D allows multi-threading, whereby numerous animations can run concurrently, with all their starting time synchronized when rendered.

