

Q and A for Viewing Transformation

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Can we support other projections than orthographic and perspective projections? For example, a projection simulating the image observed from bug's eyes? What if this projection is not represented as a simple matrix?

Yes, we can support many other projections that are represented as some mathematical equations. Also, current GPU can support arbitrary projections although the projection is not represented as a simple matrix.

I felt that there are something missed in the image generated by using perspective projection. Then, I realized that those images do not have effects like out-of-focusing and in-focusing. How can we support these effects?

To correctly simulate these kinds of effects, we need to simulate a lens that we are using in camera. This can be supported by using ray tracing, but may take long computation time. Instead, we can mimic similar effects by considering depth values of rasterized objects. For example, the depth values of the rasterized objects are far away from the user-defined focal depth, we blur the image of the object. This is not a correct solution, but a hacky solution that can run very fast in the rasterization rendering mode.