MODERN RAY TRACING

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Abstract. Ray Tracing is the basis of most modern rendering systems, as it attempts to simulate the physices of light as it interacts with the environment. This paper serves to comment on the major methods that are used in modern implementations of ray tracing based rendering. There is significant more information that cannot be compleatly explained here, but the primary aspects of the major methods are explained. The three primary sections of this paper are *rendering*, *shading*, *material*, and *lighting*. These are the four main components in rendering engines. Each portion will be explained in more detail in its respective sections.

1. Rendering

This section is primarily about the methods employed for the ray tracing and ray casting. Each method will be outlined and explained in detail, followed by the advantages and drawbacks of the method. Finally in a conclusion, there will be a comparison of each of the methods directly against one another.

1.1. **Ray Tracing.**

Ray Tracing is a method that attempts to follow the direction of light. A simple synopsis of this method, is that is simulates a single ray of light at a time. Based on the simulation of the ray of light, it is able to determine, the color of a pixel of the output image.

Date: January 5, 2019.