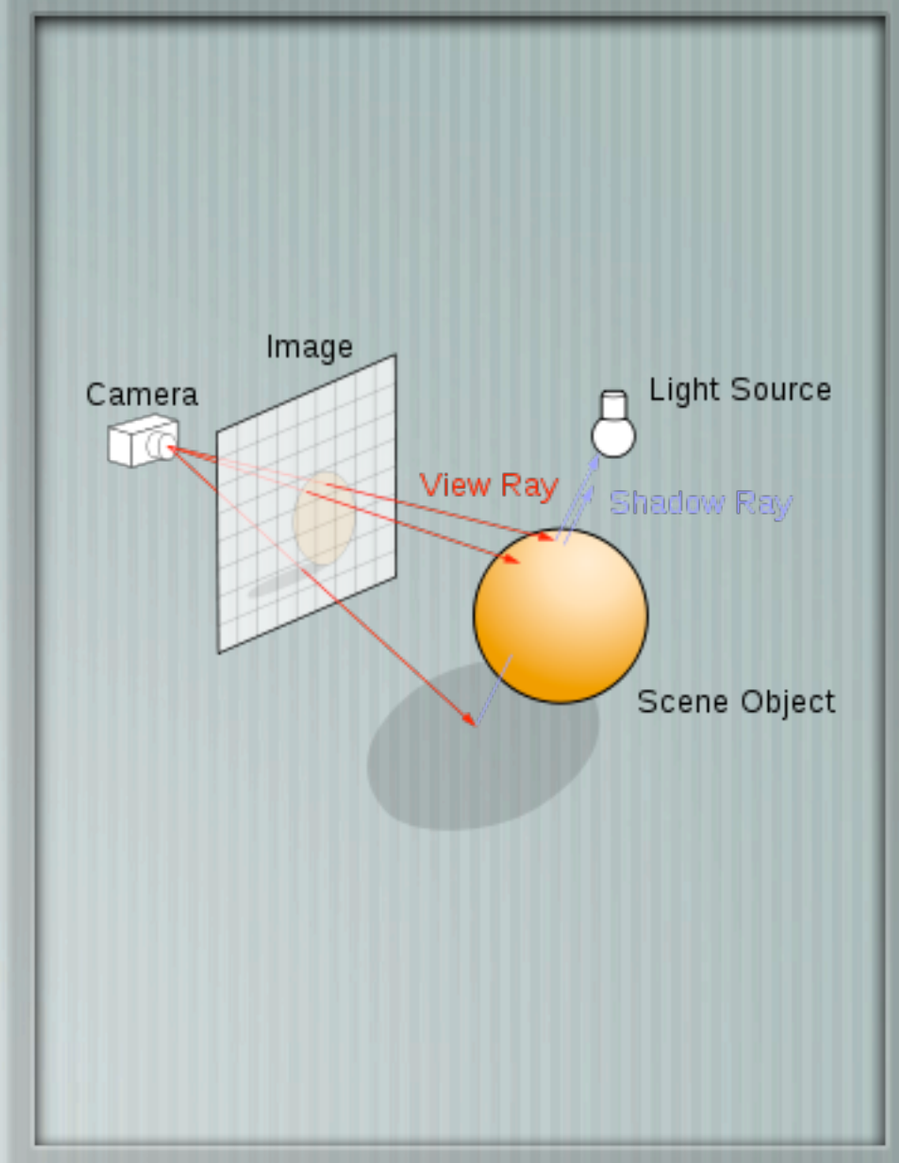
Ray Tracing

Scott Chatham

What is it?

- Follows rays of light and simulates interactions with objects to determine color
- Can create more realistic images, but at greater cost
- Works on a pixel by pixel basis instead of vertex by



How does it work?

- Create your scene
- For each pixel in our viewport, cast a ray and find its intersection
- Stopping here would produce a result much like that of the pipeline renderer we've been using
- Ray tracing can do more...

Recursive Ray Tracing

- Once a ray intersects with an object, we can cast additional rays from that point to get more information
  - Shadow rays
  - Reflected rays
  - Transmitted rays

That seems slow...

- Using a naive approach, each ray has to check intersection against every object in the scene
- This gets even worse when we cast rays for each intersection
- Things we can do to help:
- Bounding volumes
- Acceleration structures