TINGE

Task 4

Programming Assignment

16 March 2025

§1 Integration

You have now learnt how Rendering equation works and how we are going to solve it using Monte Carlo Integration. As such, we have already written the classes for an Abstract Material, and a specific type of material: being Diffuse.

Now your task is to integrate this with the `IntersectionOut` struct: This should have an object of `AbstractMaterial` class. Along with this, add an object of `AbstractMaterial` to the `AbstractShape` class as well.

§2 Emissive Material

We have added a Material class for Diffuse material, now make a new class for Emissive material. This type of material *only* emits light: The implication in the Rendering equation is that the emissive spectral radiance L_e is some constant value throughout, and the incident spectral radiance L_i is 0 throughout.

We will work on making other types of materials as we go ahead, for now let's work on the easier ones.

§3 Renderer

Now, to solve the rendering equation, you need to create a new class: Call it `Renderer`. This takes in the inputs as the Camera and the vector of objects and renders the image by solving the rendering equation.

You can take the number of samples for the Monte Carlo as an input for now. Also, this can be a static class.

Good luck on your code! Here's Lord Master of Hand Torture signing off~