GLOBAL ILLUMINATION

Weekly Activity 2

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Physical light measurements to RGB pixel values.

The given paper briefly introduces a few physical light measurement formulas and how these formulas are used in Illumination Engineering, later on it is mentioned that this is only the tip of the iceberg as the author hasn't touched the topics of scattering, absorption, reflection and so on, but within the given context of information computer graphics has developed to such extent that these formulas are today required to process a photorealistic image. Many algorithms provide us with the tools of replicating the behaviour of light as practically such as photon mapping, ray tracing and so on. Since Global Illumination is inspired from the process of photography, it has major influences in the given aforementioned algorithms. Here are 3 of my thoughts regarding how one might use physical light measurements to replicate itself in RGB values.

1. Since computer graphics are virtual worlds which we see on screen we have only a limited amount of spectrum to show light as accurately as possible, this is where RGB pixel (8bits and 10bits) values come in and not necessarily only RGB colour space but HSV or CIE or Greyscale as well.
2. Cameras play a big role here hence a good camera should be able to capture a scene with maximum values possible so as to not loose information on light and since all cameras are 8bit of 10bit cameras which produce images in RGB values we can use that image as a reference for our 3D rendering tools.
3. Third idea is a straightforward common shading algorithms and some global illumination algorithms which are equipped with specialized functions have proved to be a great way to mirror light as accurately as possible in a 3D image