EC526 Project Plan: Ray-Tracing

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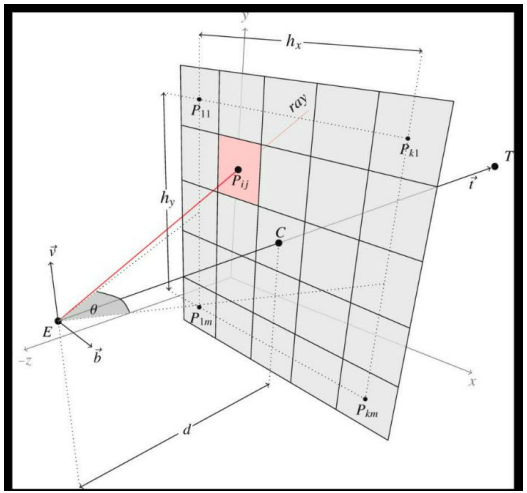
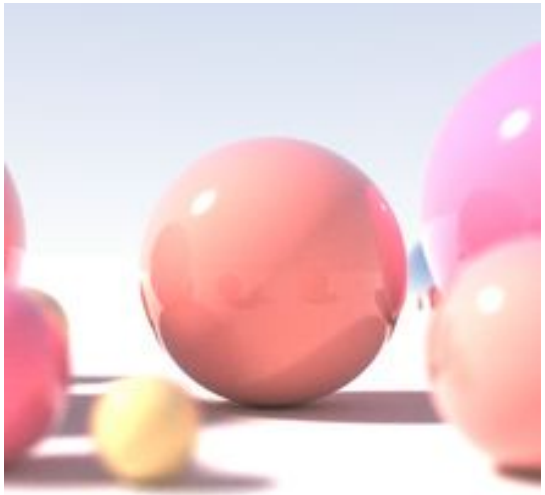
Description

Ray Tracing: Technique for producing high-fidelity images, where light rays are simulated entering the “eye” (viewport) for each pixel on the screen as they interact with the scene



Wikipedia contributors, "Ray tracing (graphics)," *Wikipedia, The Free Encyclopedia,* https://en.wikipedia.org/w/index.php?title=Ray_tracing_(graphics)&oldid=1078731359 (accessed March 31, 2022).



Goals

- Write scalar and parallel versions of ray tracing code to produce an image
- Determine the speedup when these different methods are used (number of threads/processes, MPI vs OpenACC, etc.)

Methods

- Follow the Ray Tracing in One Weekend tutorial to create scalar code
- Using this baseline, write OpenACC and MPI equivalents
- Measure the runtime for each on a variety of scenes, thread counts, etc.