APG Homework Assignment IV

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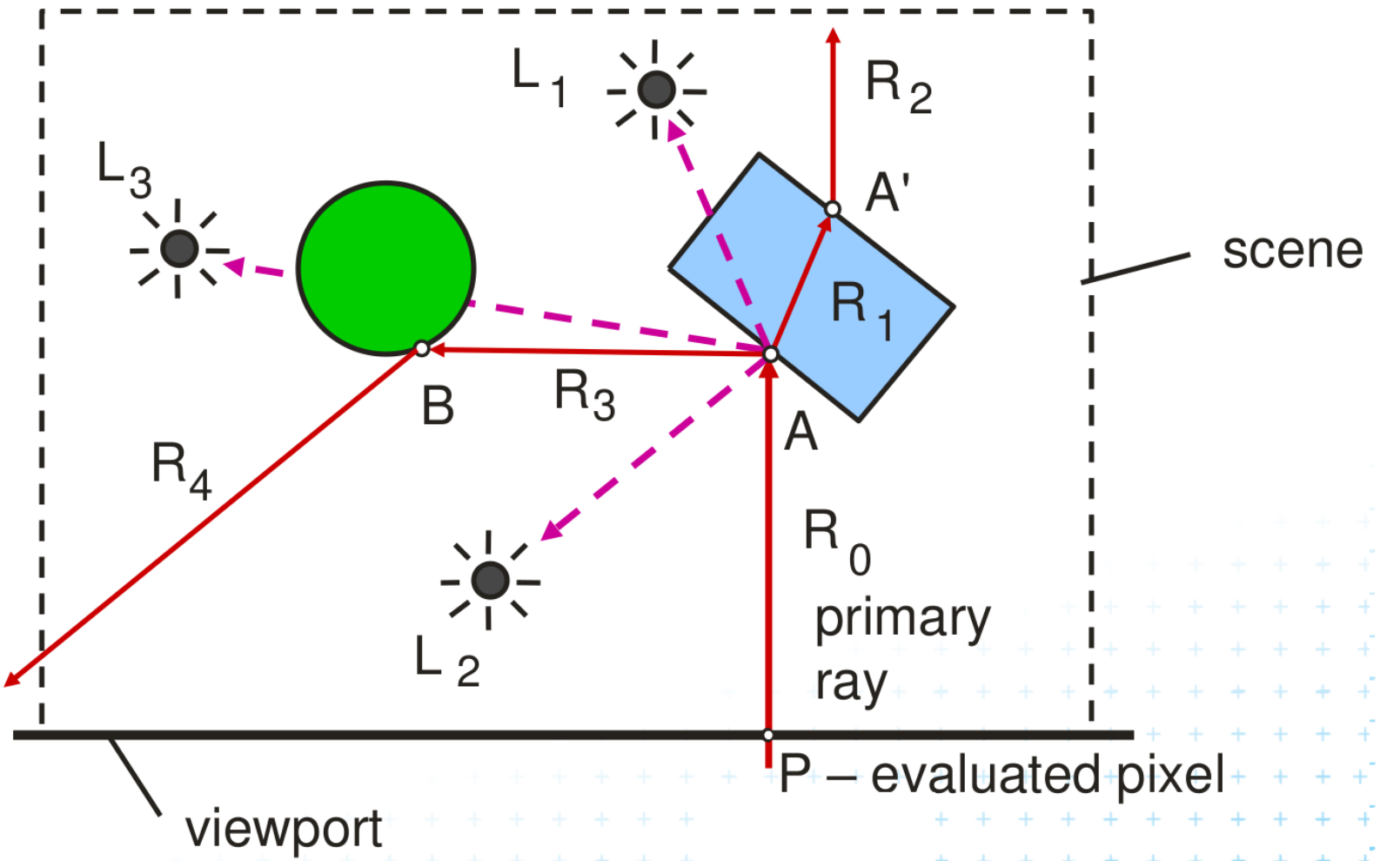
Outline

- Whitted ray tracing
  - Shadow rays
  - Reflected rays
  - Refracted rays
- Depth of Field (1 bonus point)

Whitted Ray Tracing

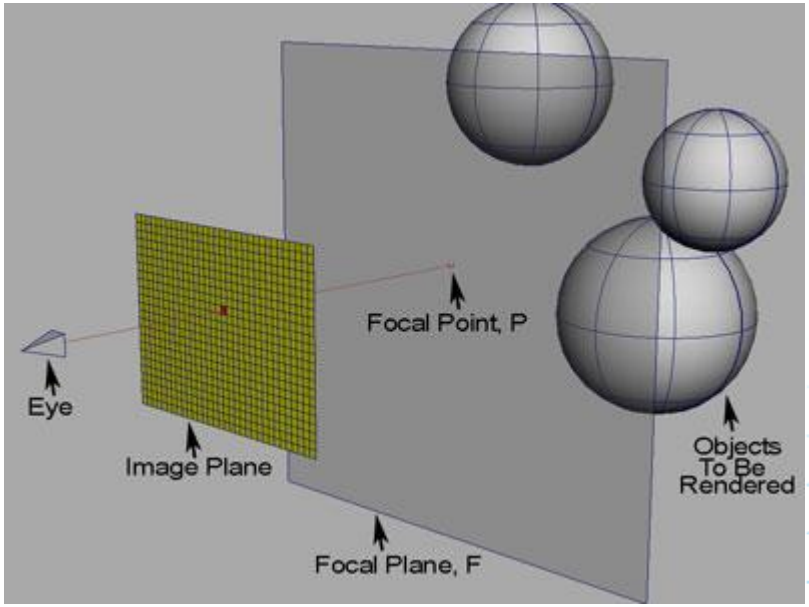


Whitted Ray Tracing

- Shadow ray
  - Visibility between an intersection and a light source
    - TRUE (no occlusion) / FALSE (any object in between)
    - Ray parameter *t* within (0; 1)
- Reflected ray
  - Ideal (mirror) reflection: $\alpha_i = \alpha_o$
    - Both rays and surface normal in the same plane
- Refracted ray
  - Ideal refraction: Snell's law
    - Total internal reflection: critical angle in optically denser medium
- Recursion depth ≤ 8

Depth of Field

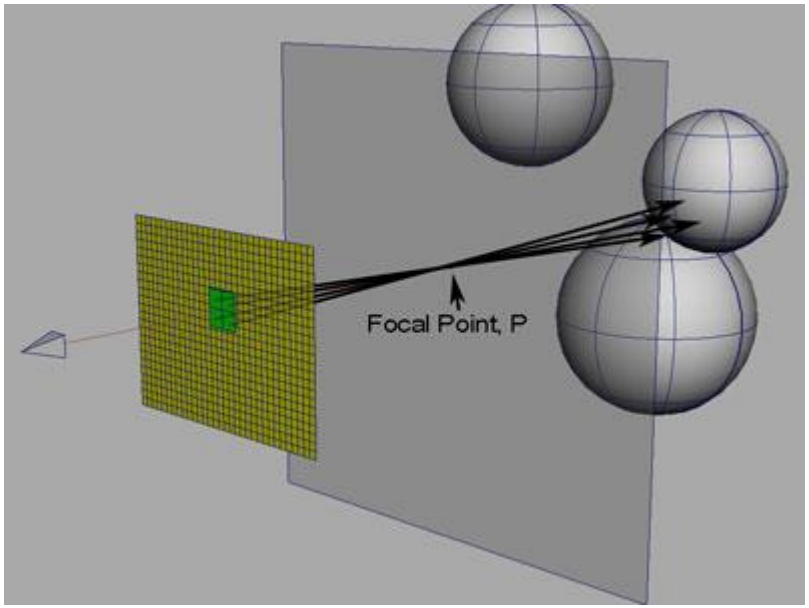
- Pinhole camera: infinite
  - No blurring with regard to the distance from camera



http://cg.skeelogy.com/depth-of-field-using-raytracing/

Depth of Field

- Finite aperture camera
  - Sharp at the focal plane, blurred with distance from it



Thank you for your attention!

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