Lightfield Photography

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Background and Motivation
What’s Wrong with This Picture?
What Is Wrong? It’s Just a Picture!
What is Wrong with Pictures?

- The current most perfect photographic print only shows one aspect of reality; it reduces to a single image fixed on a plane, similar to a drawing or a hand-drawn painting. The direct view of reality offers, as we know, infinitely more variety. We see objects in space, in their true size, and with depth, not in a plane.
Can We Create More than Pictures?

- Can we request that Photography renders the full variety offered by the direct observation of objects? Is it possible to create a photographic print in such a manner that it represents the exterior world framed, in appearance, between the boundaries of the print, as if those boundaries were that of a window opened on reality.
Different views
Different views
Different views
Different views
Different views
Different views
Change Aperture / All-In-Focus
Rodin Radiance Capture
Change Viewpoint
Change Focus
Change Focus
Radiance (aka Lightfield) Photography

- A picture is a rendering of the light rays in a scene
  - Determined by lenses, aperture, viewpoint, etc.

- Radiance (lightfield) photography records the rays
  - Rays can be reproduced to render “the full variety offered by the direct observation of objects”
  - We can also synthesize arbitrary pictures

- Idea is over 100 years old (Integral photographs)
  - Technology now exists to make radiance photography practical
## Course Schedule

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<td>Lightfield in Projective Space</td>
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<td>Radiance and Radiance Capture (Plenoptic Cameras)</td>
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