

## Sampling and Reconstruction of Visual Appearance: From Denoising to View Synthesis

CSE 274 [Fall 2022], Lecture 10

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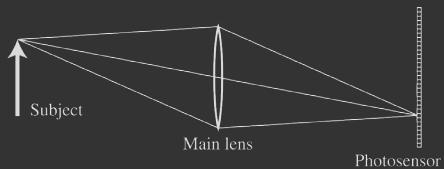
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## Applications

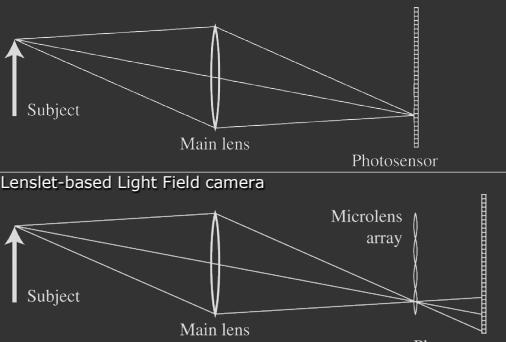
- Monte Carlo Rendering
- Light Transport Acquisition / Many Light Rendering
- *Light Fields and Computational Photography*
- View Synthesis
- Animation/Simulation (not covered in course)

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### Light Field Inside a Camera



### Light Field Inside a Camera



[Adelson and Wang, 1992, Ng et al. 2005 ]

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### Stanford Plenoptic Camera [Ng et al 2005]



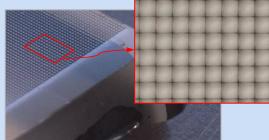
Contax medium format camera



Kodak 16-megapixel sensor



Adaptive Optics microlens array



125 $\mu$  square-sided microlenses

$$4000 \times 4000 \text{ pixels} \div 292 \times 292 \text{ lenses} = 14 \times 14 \text{ pixels per lens}$$

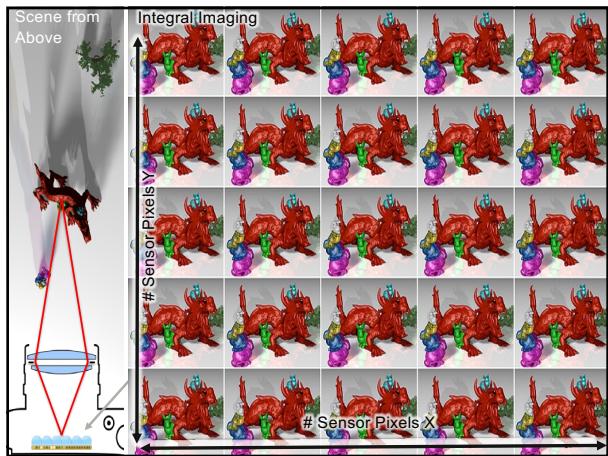
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### Digital Refocusing

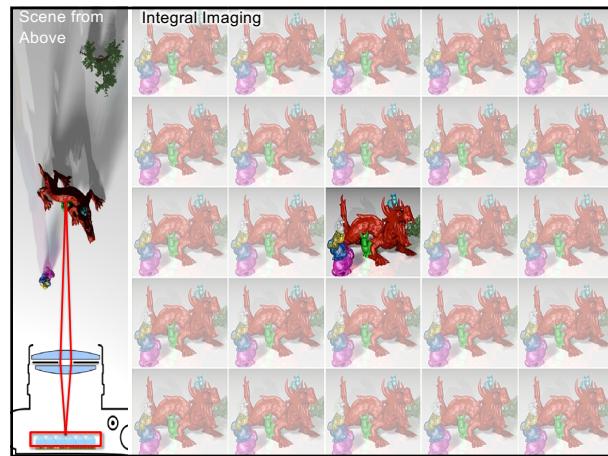


[Ng et al 2005]

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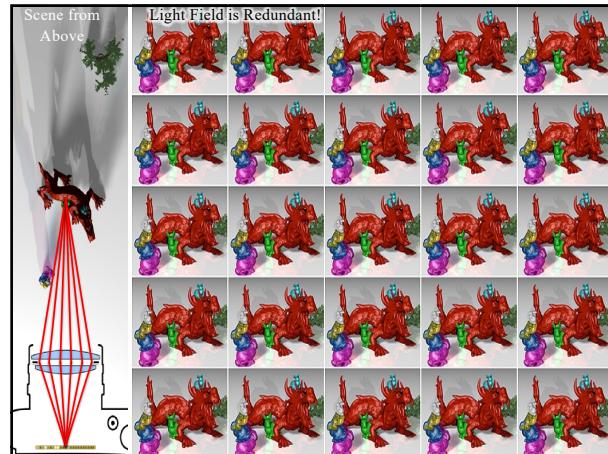
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