

Even More Sampling

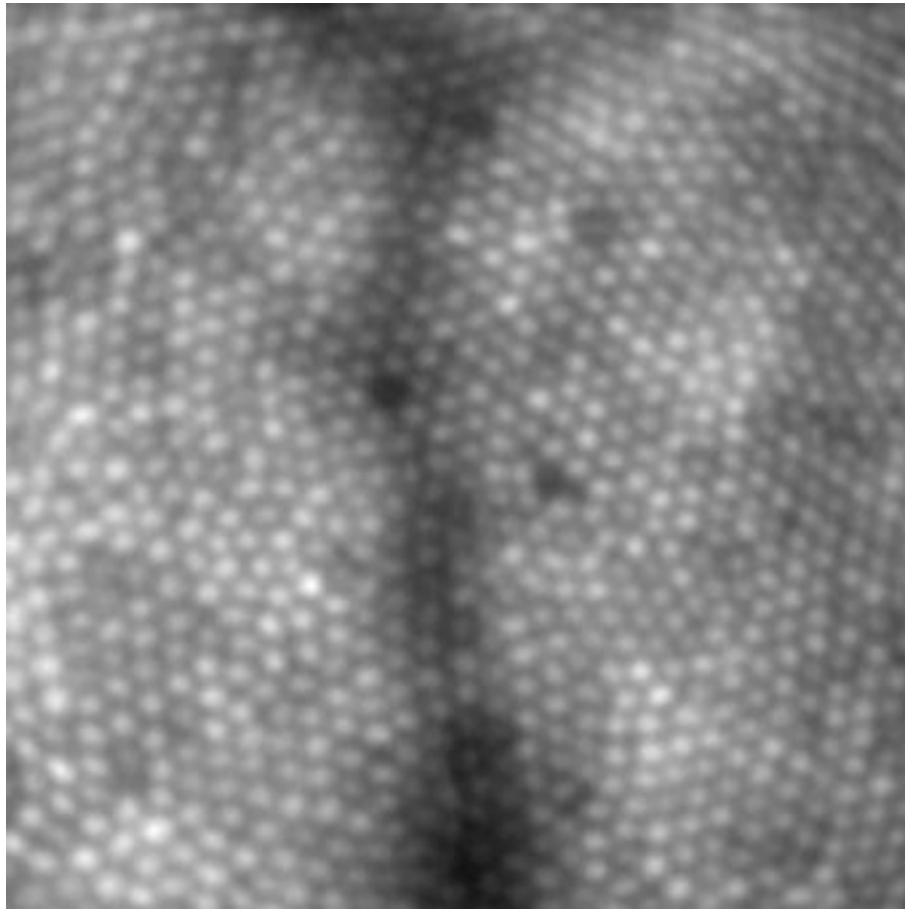
- Jittered Samples - How?
- Distributed Sampling
- Motion blur, depth of focus, caustics
- Spatial Subdivision

Jittered Samples

- Random pixel displacement
 - purely local computation
- Poisson Disc
 - minimum distance between samples

Sampling and reconstruction in the eye

~ 0.47 deg.



J. Liang, D.R. Williams and D. Miller, "Supernormal vision and high-resolution retinal imaging through adaptive optics,"
J. Opt. Soc. Am. A 14, 2884-2892 (1997)

Motion Blur

- Shutter angle
 - mostly fixed, high end variable 30 deg - 180 deg.
- Electronic shutters in silicon imagers
 - needs buffer level

Depth of Field

- Pinhole camera model
- Real lenses, f -stops
 - circle of confusion

Distributed Sampling

- uniform treatment of
 - antialiasing
 - surface shinyness
 - translucency
 - soft shadows - penumbrae
 - motion blur
 - depth of field

References

- [Dippe85] Mark A. Z. Dippe and Erling H. Wold, "Antialiasing Through Stochastic Sampling", Proc. Siggraph '85, Computer Graphics, 19, 3, July 1988, pp 69-78.
- [Cook86] Robert L. Cook, "Stochastic Sampling in Computer Graphics", ACM Transactions on Graphics, 5, 1, January 1986, pp. 51-72. (or Chapt. 5 in the Glassner Text)
- [Cook84a] Robert L. Cook, Thomas Porter, and Loren Carpenter, "Distributed Ray Tracing", Proc. Siggraph '84, Computer Graphics, 18, 3, July 1984, pp. 137-145.
- [Potmesil81] Michael Potmesil and Indranil Chakravarty, "A Lens and Aperature Camera Model for Synthetic Image Generation", Proc. Siggraph '81, Computer Graphics, 15, 3 (August 1987), pp. 297-305.