**61A Extra Lecture 9**

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**Announcements**

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**Pixels**

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**Ray Tracing**

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**Ray Tracing**

A technique for displaying a 3D scene on a 2D screen by tracing a path through every pixel.

**Dramatization:**

- **Camera**
- **Light**
- **Sphere**
- **Distance to Sphere**

\[ (0,0,0) \]

**Distance from a Source to a Sphere**

\[ r^2 = \|s - c + td\|^2 \]

\[ 0 = \|d + v\|^2 - r^2 \]

\[ 0 = t^2 \|d\|^2 + 2d \cdot (v + d) + \|v\|^2 - r^2 \]

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**Multiple Spheres**

- Compute distance to each sphere
- Pixel color from the closest sphere

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** Reflections**

- Color is a mixture of the sphere & reflection
- The source of a reflection is the surface of the sphere, instead of the original camera

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(Demos)