

**SIGGRAPH 1991**  
*18th International Conference  
On Computer Graphics and  
Interactive Techniques*

*Las Vegas Convention Center  
28 July - 2 August*

## COURSE NOTES

## C27

**PHOTOREALISTIC VOLUME  
MODELING AND  
RENDERING TECHNIQUES**

**Chair**  
Masahiro Inaba  
The Media Studio, Inc

**Lecturers**  
Neil Green  
Apple Computer, Inc  
James T. Kajiya  
California Institute of Technology  
Marc Levoy  
Stanford University  
Ken Perlin  
New York University  
Holly E. Rushmeier  
Georgia Institute of Technology

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*Masa Inakage*

## **Chapter 2. The Uses of Photorealistic Volume Rendering in Data Visualization**

*Marc Levoy*

**Photorealistic Volume Rendering in Scientific Visualization**

**Volume Rendering in Radiation Treatment Planning**

## **Chapter 3. Rendering Furs**

*James T. Kajiya*

**Rendering Fur with Three Dimensional Textures**

## **Chapter 4. Techniques in Hypertextures**

*Ken Perlin*

**Surflets**

**Hypertexture**

## **Chapter 5. Radiosity Methods for Volume Rendering**

*Holly E. Rushmeier*

### **Radiosity Methods for Volume Rendering**

#### **Monte Carlo Methods for Spatially Uniform Isotropically Scattering Media**

#### **The Zonal Method for Calculating Light Intensities in the Presence of a Participating Medium**

## **Chapter 6. Volume Tracing Flames and Atmospheric Effects**

*Masa Inakage*

### **Volume Tracing Soft Objects**

### **Modeling Laminar Flames**

### **Volume Modeling the Atmospheric Effects**

## **Chapter 7. Voxel Automata**

*Ned Greene*

### **Detailing Tree Skeletons with Voxel Automata**

### **Efficient Approximation of Skylight Using Depth Projections**

### **Voxel Space Automata: Modeling with Stochastic Growth Processes in Voxel Space**