

Abstract

Volume graphics is an approach to handling conventional graphics applications with volumetric techniques. This course provides an overview of volume graphics, with a focus on volume modeling, volume manipulation, volume rendering, and their applications. The course is divided into two portions, and can be viewed or structured as two half-day courses. The morning is devoted to fundamentals of volume graphics, modeling and the associated applications. The afternoon is devoted to volume rendering, manipulation and the associated applications. The course will cover the technology and several major applications, available tools and techniques, the challenges confronting the field of volume graphics, and some of the advanced topics in the field.

Course schedule

Morning: Fundamentals and Modeling

8:30	-	9:30	Kaufman	Introduction to Volume Graphics
9:30	-	10:15	Sramek	Volume Sampling and Voxelization
10:15	-	10:30		Coffee Break
10:30	-	11:15	Gibson	Distance Volumes
11:15	-	12:00	Lorensen	Volume Modeling and Medical Applications
12:00	-	1:30		Lunch Break

Afternoon: Rendering and Manipulation

1:30	-	1:35	Kaufman	Introduction to Volume Rendering and Manipulation
1:35	-	2:30	Pfister	Real-time Ray Casting
2:30	-	3:15	Gibson	Volume Deformation
3:15	-	3:30		Coffee Break
3:30	-	4:15	Avila	Volume Haptics
4:15	-	5:00	Swan	Terrain Applications