Introduction

Overview

This introduction provides an overview of NCSA Isosurface Visualizer. The organization and use of this manual are described and notational conventions explained.

About NCSA Isosurface Visualizer

NCSA has developed Isosurface Visualizer as a non-interactive batch utility to enable users to easily create 3D animations from time-dependent data.

Isosurface Visualizer, a 3D visualization tool, allows users to view data in a simple manner. Input data consists of a single 3D scalar array of floating-point values. The indices of this array form the x, y, z coordinates, and the variable at each node determines where the isosurface passes through the data. You can think of an isosurface as a three-dimensional contour plot, although this is not what it actually is.

Special Features

The features of NCSA Isosurface Visualizer 1.0 allow you to:

- control orientation of geometry including independent x, y, z translation, rotation, and scaling
- control light source parameters including arbitrary x, y, z location of light source and RGB color of light source
- specify material properties including ambient, diffuse, and specular coefficients and specular high-light size which allows control over how the light source interacts with the viewed object
- save hardware rendered images to disk for 3D rendered animation sequences (including full hidden surface removal)
- save polygonal isosurfaces in either NCSA HDF Vset format or plain ASCII format

System Requirements

To run Isosurface Visualizer, you will need a Silicon Graphics 4D series

workstation with at least 24-bits of color, hardware Z-buffer, 8M RAM or more, and version 4D1-3.1 OS or newer. A very limited subset of the functionality of Isosurface Visualizer will run on systems with less than 24-bits of color, but this is not recommended.

A limited version of Isosurface Visualizer may be built for computers other than Silicon Graphics Irises. See Chapter 3, “Technical Notes,” for details.

Use of This Manual

Organization of This Manual

This manual is organized into three chapters. Each page in a chapter is given a unique number that consists of the chapter number, a period, and the number of that individual page (beginning with the first page of the chapter). For example, page 2.3 is the third page of the second chapter. Each chapter is divided into sections, and most sections are divided into subsections.

Manual Contents

This manual is organized into the following chapters:

Chapter 1, “Getting Started,” provides a tutorial and describes Isosurface Visualizer and its functionality. A detailed description of all command line parameters is included in this chapter.

Chapter 2, “Creating Animations,” offers suggestions and examples in setting up batch jobs to create 3D rendered animations from time-dependent and time-independent data.

Chapter 3, “Technical Notes,” provides users with an understanding of the file formats and techniques used to transform their input data into a 3D isosurface visualization.

Appendix A, “Obtaining NCSA HDF and Other Software,” gives information on obtaining NCSA HDF as well as other NCSA software products via FTP or regular mail.

Form of Presentation

The material in this manual is presented in text, program lists, screen displays, command line parameters, and entry format notation.

Text

Portions of this manual refer to other sections or chapters of the manual where related topics are discussed. These cross references usually indicate the title of sections or chapters enclosed in quotation marks, such as, See Chapter 1, “Getting Started.”

Program Lists and Screen Displays

Program lists and screen displays in this manual are presented in `courier type`.

Command Line Parameters

Command line parameters requiring arguments are denoted as the parameter followed by the argument list enclosed in <> with a space separating each argument. For example, -r <rx ry rz> indicates that the -r parameter requires three arguments: rx,ry,rz.

Command line parameters which do not require any arguments are denoted as the parameter followed by its description enclosed in (). For example, -p (print current settings) indicates that the -p parameter does not require any arguments and is used as a flag to print the current settings.

Entry Format Notation

Throughout this manual, several explanations instruct you to make entries by typing on the keyboard. These entry instructions are printed in **`courier bold type`** and appear within a screen display, paragraph, or on a separate line.