Introduction to Programming with Java 3D

Lecturers

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Abstract

Java 3D is a new cross-platform API for developing 3D graphics applications in Java. Its feature set is designed to enable quick development of complex 3D applications and, at the same time, enable fast and efficient implementation on a variety of platforms, from PCs to workstations. Using Java 3D, software developers can build cross-platform applications that build 3D scenes programmatically, or via loading 3D content from VRML, OBJ, and/or other external files. The Java 3D API includes a rich feature set for building shapes, composing behaviors, interacting with the user, and controlling rendering details.

In this tutorial, participants learn the concepts behind Java 3D, the Java 3D class hierarchy, typical usage patterns, ways of avoiding common mistakes, animation and scene design techniques, and tricks for increasing performance and realism.

Preface

Welcome to these tutorial notes! These tutorial notes have been written to give you a quick, practical, example-driven overview of *Java 3D*, the cross-platform 3D graphics API for Java. To do this, we've included almost 600 pages of tutorial material with nearly 100 images and over 50 Java 3D examples.

To use these tutorial notes you will need:

○ An HTML Web browser
○ Java JDK 1.2 (Java 2 Platform) or later
○ Java 3D 1.1 or later

Information on Java JDKs and Java 3D is available at:

http://www.javasoft.com

What's included in these notes

These tutorial notes primarily contain two types of information:

1. General information, such as this preface
2. Tutorial slides and examples

The tutorial slides are arranged as a sequence of 600+ hyper-linked pages containing Java 3D syntax notes, Java 3D usage comments, or images of sample Java 3D applications. Clicking on the file name underneath an image brings up a window showing the Java source file that generated the image. The Java source files contain extensive comments providing information about the techniques the file illustrates.

Compiling and executing the Java example file from the command-line brings up a Java application illustrating a Java 3D feature. Most such applications include menus and other interaction options with which you can explore Java 3D features.

The tutorial notes provide a necessarily terse overview of Java 3D. We recommend that you invest in a Java 3D book to get thorough coverage of the language. One of the course lecturers is an author of the Java 3D specification, available from Addison-Wesley: *The Java 3D API Specification*, ISBN 0-201-32576-4, 1997.

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Henry Sowizral is a Distinguished Engineer at Sun Microsystems where he is the chief architect of the Java 3D API. His areas of interest include virtual reality, large model visualization, and distributed and concurrent simulation. He has taught tutorials on topics including expert systems and virtual reality at conferences including COMPCON, Supercomputing, VRAIS, and SIGGRAPH. Henry has taught Java 3D at SIGGRAPH, Eurographics, Visualization, JavaOne, VRAIS, and other conferences.

Henry is a co-author of the book *The Java 3D API Specification*, published by Addison-Wesley. He holds a B.S. in Information and Computer Science from the University of California, Irvine, and an M.Phil. and Ph.D. in Computer Science from Yale University.

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Dave Nadeau is a principal scientist at the San Diego Supercomputer Center, a national research center specializing in computational science and engineering, located on the campus of the University of California, San Diego. His areas of interest include scientific visualization and virtual reality, He has taught Java 3D and VRML at multiple conferences including SIGGRAPH, Eurographics, Supercomputing, WebNet, WMC/SCS, VRAIS, and Visualization.

Dave is a co-author of *The VRML 2.0 Sourcebook* published by John Wiley & Sons. He holds a B.S. in Aerospace Engineering from the University of Colorado, Boulder, an M.S. in Mechanical Engineering from Purdue University, and is in the Ph.D. program in Electrical and Computer Engineering at the University of California, San Diego.