

Programming Open Inventor: An Object-Oriented OpenGL Toolkit

Organizer

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Lecturers

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Course **19** NOTES

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Programming Open Inventor™, An Object-Oriented OpenGL™ Toolkit

SIGGRAPH '95

Course Abstract

Open Inventor is an object-oriented 3D graphics toolkit built on OpenGL. Inventor provides a framework for the development of interactive 3D graphics applications. Besides rendering support through OpenGL, Inventor provides built-in mechanisms for scene construction, event handling, picking, direct 3D manipulation, animation, data monitoring, bounding box computation, attribute searching, file reading and writing, attribute editing, scene viewing, as well as a run-time hierarchical type system. Inventor is designed to be window system neutral, and interfaces for X and Windows exist today. This course will show how to write interactive 3D graphics applications using Open Inventor by detailing aspects of the Inventor programming interface and demonstrating the use of Inventor in real-world applications.

Speaker Biographies

David Mott

David Mott is the course organizer, and one of the creators of the Inventor toolkit. He is a member of the Technical Staff at Silicon Graphics Computer Systems. Besides his work on Inventor, David has helped develop several Inventor based desktop applications which employ 3D direct manipulation, including the WebSpace VRML Viewer. He has an Sc.M. degree from Brown University and a B.S. degree from California Polytechnic State University, San Luis Obispo, both in computer science. David was the organizer for the 1994 version of this course.

Eric Enderton

Eric Enderton is the senior member of the computer graphics software group at Industrial Light & Magic. He led the initial design and implementation of ILM's Inventor-based 3D graphics software library in 1991, and since then has participated in the development of both interactive and non-interactive 3D applications that use it. Eric has an M.S. degree from the University of California, Berkeley, where he studied 3D computer graphics. Eric was a speaker in the 1994 version of this course.

Eric Gregory

Eric Gregory received a Bachelors degree in Computer and Information Science from UC Santa Cruz in 1985, and a Masters degree in Computer Science from the University of Southern California in 1989. He is a member of ACM and IEEE Computer Society. Eric's professional interests include real-time simulation, virtual environments, and high-performance computer architecture. Eric has been using Inventor since its beta release in a wide variety of applications including, ALIVE! - a real-time character animation system developed in conjunction with Viegraf Assoc. and Colossal Pictures. He is currently with Protozoa Inc. Eric was a speaker in the 1994 version of this course.

Michael M. Heck

Mike Heck is Vice President for Research and Development at Template Graphics Software (TGS). He has a BSEE from the University of Pittsburgh and has worked on implementations of various 3D graphics standards since 1980. Mike was a speaker at previous SIGGRAPH tutorials in PHIGS (1986) and PEX (1993), and was co-author of the first book on 3D programming with PHIGS. Both Mike and TGS are now focused on making OpenGL and Open Inventor available everywhere. TGS provides OpenGL for Sun/Solaris, Apple PowerMac and Windows 3.1/95. TGS provides Open Inventor for Sun/Solaris, IBM RS6000/ AIX, DEC/ Alpha/OSF and iWindowsNT on Intel, MIPS, PowerPC, and DEC Alpha platforms. TGS will also have Open Inventor for Hewlett-Packard HP/UX, Apple PowerMac and other platforms this summer.

Dr. Paul S. Strauss

Dr. Paul S. Strauss is a Member of the Technical Staff at Silicon Graphics. He is one of the principal architects of the Inventor 3D Graphics Toolkit. He received an Sc.B. from Brown University, an M.S. from the University of California, Berkeley, and a Ph.D. from Brown, all in Computer Science. Paul was co-organizer and speaker at the Siggraph 1993 course "Developing Large-scale Graphics Software Toolkits", and co-authored the paper "An Object-Oriented 3D Graphics Toolkit", Siggraph 1992. He was an invited speaker at OOPSLA '93, where he gave the talk "IRIS Inventor, a 3D Graphics Toolkit". His research interests include graphics application development environments, lighting models, and ray tracing. Paul was a speaker in the 1994 version of this course.

Dr. Tim Wiegand

Dr. Tim Wiegand is a Research Associate at the Martin Centre. He has been an Inventor user since its first release and has been working on new modeling and interaction techniques for use in architecture. Tim received the B.A. and Ph.D. degrees from Cambridge University where he was a member of the computer graphics group; He was also involved with undergraduate and external teaching. Tim was a speaker in the 1994 version of this course.

Schedule

Introduction

David Mott, 10 minutes

Inventor Architecture and Database Fundamentals

Paul S. Strauss, 90 minutes

Inventor Nodekits

Eric Gregory, 25 minutes

Event Handling and 3D Manipulation

Tim Wiegand, 75 minutes

The Window System, Interactivity and Portability

Michael M. Heck, 75 minutes

High-Performance Programming

Eric Gregory, 50 minutes

Extending the Toolkit

Eric Enderton, 75 minutes

Wrap-Up

David Mott, 5 minutes

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1	Inventor Architecture and Database Fundamentals
2	Inventor Nodekits
3	Event Handling and 3D Manipulation
4	Interfacing with X and Windows
5	High-Performance Programming
6	Extending the Toolkit
7	An Object-Oriented 3D Graphics Toolkit (reprint)
8	IRIS Inventor, A 3D Graphics Toolkit (reprint)
9	Open Inventor Nodes Quick Reference (reprint)
10	How to Write an Open Inventor File Translator (reprint)
11	Optimizing Open Inventor Applications
12	Open Inventor Books

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