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Course Notes 21

PROGRAMMING OPEN INVENTOR, AN OBJECT-ORIENTED OpenGL TOOLKIT

Organizer
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Lecturers
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Eric Gregory
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Paul S. Strauss
Silicon Graphics, Inc.

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Cambridge University

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

SIGGRAPH '94

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 upport 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 ell as a run-time hierarchical type system. Inventor is designed to be window system neutral, an interfaces for X and Windows exist today. This course will show how to write interactive 3D a hics applications using Open Inventor by detailing aspects of the Inventor programming in erface 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 3D Graphics Toolkit. He is a Member of the Technical Staff at Silicon Graphics Computer Systems. He received a Bachelors degree in Computer Science from Cal Poly, San Luis Obispo, and a Masters degree in Computer Science from Brown University where he studied 3D computer graphics. Prior to working at SGI, David programmed graphics applications for Claris Corporation and Xerox Corporation.

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 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 deGraf Assoc. and Colossal Pictures.

Paolo Sabella

Paolo Sabella is a senior staff engineer at NeTpower and is currently working on the port of the Inventor toolkit to the Windows environment. He has a MSc. degree from Rensselaer Polytechnic Institute. Paolo has chaired the 1987 Siggraph course "Object Oriented Geometric Modeling and Rendering" and has authored the paper "A Rendering Algorithm for Visualizing 3D Scalar Fields", Siggraph 1988. He has worked in 3D object-oriented modeling systems at Schlumberger and window systems and graphics device architecture at Sun Microsystems.

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.

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 PhD. degrees from Cambridge University where he was a member of the computer graphics group. He was also involved with undergraduate and external teaching.

Schedule

Introduction
David Mott, 10 minutes

Inventor Architecture and Database Fundamentals
Paul S. Strauss, 90 minutes

Event Handling and 3D Manipulation
Tim Wiegand, 75 minutes

Interfacing with X and Windows
Paolo Sabella, 75 minutes

Inventor Nodekits
Eric Gregory, 25 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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