Designing Real-Time 3D Graphics for Entertainment

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Course 6

NOTES

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James Helman
Silicon Graphics

SIGGRAPH '95 Course

Abstract

Using examples from actual games, theme attractions, graphics hardware and software toolkits, this course reviews real-time graphics in the design and construction of leading-edge theme park and location-based entertainment systems The focus is on graphics from hardware through artistic content

The course has two components The first part covers the methods available to make the best use of current workstation-level graphics technology for high-quality, real-time renderings The topics include hardware and software architectures, multiprocessing, graphics optimization, database tuning and tricks of the trade from visual simulation

In the second part, developers discuss the use of those techniques as one component in creating interactive 3D experiences, whether for home game consoles or for location-based entertainment or theme park installations. The topics covered include tools and methods for content generation, software frameworks, database modeling, programming and game design.

Speakers

James Helman
Silicon Graphics

Jim Helman works in Silicon Graphics' Advanced Graphics Division as a member of the engineering team for IRIS Performer, SGI's real-time graphics toolkit. Before coming to SGI, he was a student in the Applied Physics department at Stanford University where he worked on his PhD in data visualization. His interests include virtual environments, game design, and keeping large green cars running

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Michael Jones
Silicon Graphics

Michael Jones works in Silicon Graphics' Advanced Graphics Division where he manages the IRIS Performer engineering team. He has worked with high-performance visual simulation systems for the last 5 years. Prior to joining Silicon Graphics, he worked in diverse areas, including high-performance visual simulation, color conversion of monochrome films and serials, optimization of cellular telephone antenna placement, and the nationwide routing of delivery trucks. He has been a professional computer programmer since the seventh grade. His personal interests include work and sleep

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Sharon Clay
Silicon Graphics

Sharon (Fischler) Clay is a member of the IRIS Performer engineering team in the Advanced Graphics Division at Silicon Graphics where she specializes in performance issues for system implementation and real-time graphics applications. She was a member of the original design team, and before that, was a member of the Graphics Software group where she worked on the development team for the VGX graphics platform. Her interests, besides a real need for speed, include user interfaces, plants and fish (simulated and real). She studied using natural language in graphical user interfaces at the University of California at Santa Cruz where she received her Masters degree in Computer Science. Her Bachelors degree is in Mathematics and Linguistics from the University of California at Berkeley

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Philippe Tarbouriech
Electronic Arts

Philippe Tarbouriech works in Electronic Arts as a member of the Advanced Technology Group. He manages the conversion of ShockWave to Playstation and PC while working on other projects. He was the software designer, aerial photographer and one of the game designers of the original ShockWave on 3DO. Prior to joining Electronic Arts, he worked in diverse unfit startup companies. His interests include evolution. He holds a M.S. in electrical engineering and computer science from ENSEA (France)

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Michael Limber
Angel Studios

Michael Limber is Chief Operating Officer at Angel Studios and serves as its Production Director He has a degree in Architecture from U C Berkeley and a Masters in Industrial Design from Pratt Institute His professional computer graphics career began in 1985 after getting a job at Digital Productions in Los Angeles Beginning as a modeler and progressing to the position of Technical Director, Michael spent two intense years at the trailblazing computer graphics company, using a Cray XMP and state-of-the-art proprietary software to create commercials, film effects, visualizations, and music videos After serving as Head Animator at the fully digital Post Perfect, in 1989, he moved to San Diego to work as Director of Computer Animation at Angel Studios with another Digital Productions veteran and colleague, Brad Hunt.

Michael worked as Animator and Technical Director on "The Lawnmower Man" and Peter Gabriel's MindBlender, among a multitude of other unique projects Since that time, Angel Studios has become a significant developer of real-time interactive enterentertainment for companies like Sega, Hasbro, and most recently Nintendo For the last seven years Michael and his partners, Diego Angel, Harry Benham, and Jill and Brad Hunt, have endeavored to make Angel Studios a pioneering developer of state-of-the-art applications and compelling content.

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Wes Hoffman
Paradigm Simulation

Wes Hoffman is the founder of Paradigm Simulation Inc Paradigm Simulation was started five years ago and has positioned itself as a leader in the real-time 3D market. The database and programs he has worked on are well known by those in the industry, such as the Performer town database and the Magic Edge location based entertainment experience Mr Hoffman is currently leading the database development effort for Paradigm's Nintendo Ultra 64 game Before working at Paradgim he worked at Merit Technology building a real-time simulation toolkit. Mr Hoffman graduated from Syracuse University with a Bachelor of Fine Art and a major in computer graphics His other interests include making crop-circles

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Eric Johnston
LucasArts

Eric Johnston is currently the technical lead for LucasArts Entertainment s 3D console development group Previously at Spectrum HoloByte, as head of their VR group, he developed Onyx-based games for location-based entertainment applications As a Macintosh games programmer, his credits include the Mac versions of Rebel Assault, Indiana Jones and the Fate of Atlantis, Monkey Island 1 and 2, Loom, Pipe Dream, and Putt-Putt Joins the Parade Eric graduated from U C Berkeley, with a B S in electrical engineering and computer science A former windsurfing instructor, he currently spends too much of his spare time on the flying trapeze

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Agenda

8:30 **Introduction**
Architecture and Performance of Entertainment Systems
Jim Helman

9:00 **Visual Simulation Methods**
Michael Jones

10.00 **Break**

10:15 **Performance Trade-offs and Database Tuning**
Sharon Fischler

11 00 **Tuning to the Metal**
Philippe Tarbouriech

12.00 **Lunch**

1:30 **Creating Compelling Real-Time Content**
Michael Limber

2.30 **Database Design for Visual Simulation and Entertainment**
Wes Hoffman

3:15 **Break**

3 30 **Prototyping and Portability of Hardware-Assisted 3D Games**
Eric Johnston

4.15 **IRIS Performer, Videos & Wrapup**
Jim Helman

5 00 **Close**

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