SIGGRAPH 97
24TH INTERNATIONAL CONFERENCE
ON COMPUTER GRAPHICS
AND INTERACTIVE TECHNIQUES

COURSE NOTES

10

Introduction to Computer Graphics

ORGANIZER

Mike Bailey
University of California at San Diego and San Diego Supercomputer Center

LECTURERS

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Microsoft Network

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Cognivision, Inc.

Patricia Wenner
Bucknell University

Introduction to Computer Graphics

Course Notes for SIGGRAPH '97

Course Organizer

Michael Bailey
University of California at San Diego, and
San Diego Supercomputer Center

Course Speakers

Andrew Glassner
Microsoft Research

Olin Lathrop
Cognivision, Inc.

Patricia Wenner
Bucknell University

Computer graphics is an exciting field of endeavor, but it is often difficult for a newcomer to get started. This course is that opportunity. The topics being presented will address many areas within computer graphics and treat each from the point of view of "why-do-I-care" and "how-to." Those who take this course will emerge well-prepared to take on further study, including the taking of other SIGGRAPH courses. Attendees will also be ready to take on the vendor show and better appreciate the Electronic Theater. We hope you enjoy reading and using these notes as much as we enjoyed preparing them.

– Mike Bailey

Take them, use them, bring them to the masses.
Shake them, lose them, sing them to your classes.
Tiles of tides, piles of slides.
Piles of slides that no-one derides.
Slides of knowledge, slides of power – slides that last a half an hour.
Small slides. Blue slides. Old-hat and what's-new slides.
Take a slide and project it wide.
Project it far and make it tall, a slide's a slide that's seen by all.
SIGGRAPH slides go into holders, printed pages go into folders.
We teach. We teach in courses. We teach whatever the market enforces.
You want pixels? You want rays?
We'll lead you through the graphics maze.

– Andrew Glassner

SIGGRAPH '97
Introduction to Computer Graphics

About the Speakers

Michael J. Bailey

Mike Bailey is a researcher at the San Diego Supercomputer Center and a faculty member in Applied Mechanics / Engineering Sciences and Computer Science at the University of California at San Diego. Mike received his Ph.D. from Purdue University. He has also worked at Sandia National Laboratories, Purdue University, Megatek, SDSC, and UCSD. Mike's areas of interest include scientific visualization, computer aided design, and rapid prototyping. He has authored numerous papers on the use of computer graphics in engineering and science. Mike has served on the SIGGRAPH Executive Committee and was SIGGRAPH conference co-chair in 1991. Mike has also served as SIGGRAPH Courses Chair in 1984, 1985, 1987, 1988, and 1994.

Andrew S. Glassner

Andrew Glassner is a researcher with Microsoft Research, where he invents new computer graphics. Andrew received his Ph.D. from the University of North Carolina at Chapel Hill. He has also worked at Xerox PARC, the IBM T.J. Watson Research Lab, Bell Communications Research, the Delft University of Technology, and the New York Institute of Technology Computer Graphics Lab. He has published numerous technical articles on rendering theory and practice, modeling, animation, and new media. Andrew authored *3D Computer Graphics: A Handbook for Artists and Designers*, edited *An Introduction to Ray Tracing*, and created the *Graphics Gems* series for programmers. He is on the editorial boards of ACM Transactions on Graphics, IEEE Computer Graphics and Applications, and the Journal of Graphics Tools and chaired the Papers Committee for SIGGRAPH '94. His most recent book, *Principles of Digital Image Synthesis*, is a two-volume text on the principles of rendering theory for computer graphics.

Olin Lathrop

Olin Lathrop works for Cognivision, Inc., where he does consulting and custom software development for computer graphics. Olin holds a Master of Engineering in Electrical Engineering from Rensselaer Polytechnic Institute. Olin has also worked at Hewlett-Packard, Raster Technologies, and Apollo Computer, where he specialized in graphics hardware design. Olin wrote the introductory book *The Way Computer Graphics Works.*

Patricia Wenner

Patricia Wenner is a professor of Computer Science at Bucknell University in Lewisburg, PA. She received her Ph.D. from George Washington University and has worked in several information systems positions, the Census Bureau, Walter Reed Army Institute of Research, and Bucknell. At George Washington University, she lead the effort to implement GWCORE. Pat served as the SIGGRAPH conference Student Volunteers Chair in 1987 and the Courses Chair in 1990. Pat's interests include scientific visualization, environmental modeling, and network-based graphics solutions.

SIGGRAPH '97
Introduction to Computer Graphics

Mike Bailey (M)
Andrew Glassner (A)
Olin Lathrop (L)
Patricia Wenner (P)

Course Schedule

8:30 - 8:45	Welcome Overview of the Course Overview of the Graphics Process	M
8:45 – 9:15	Geometry for computer graphics	M
9:15 – 9:30	Input devices	M
9:30 – 10:10	Graphics display hardware	O
10:10 – 10:30	Morning Break	
10:30 – 11:00	Visible surface determination	P
11:00 – 12:00	Modeling	A
12:00 – 1:30	Lunch	
1:30 – 2:15	Rendering	A
2:15 – 3:00	Animation	A
3:00 – 3:15	Afternoon Break	
3:15 – 3:45	Graphics on the World Wide Web	P
3:45 – 4:15	Virtual reality	O
4:15 – 4:45	Graphics in entertainment	P
4:45 – 5:00	Finding additional information	P

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Andrew Glassner	Microsoft Research
Olin Lathrop	Cognivision, Inc.
Patricia Wenner	Bucknell University

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Course Goals

- Provide a background for papers, panels, and other courses
- Help appreciate the Electronic Theater
- Get more from the vendor exhibits
- Give our take on where the future is
- Provide pointers for further study

Topics

- Overview of the "Graphics Process" (Mike)
- Geometry for Computer Graphics (Mike)
- Input Devices (Mike)
- Display Hardware (Olin)

More Topics

- Visible Surface Determination (Pat)
- Modeling (Andrew)
- Rendering (Andrew)
- Animation (Andrew)

And, Even More Topics !

- Graphics on the Web (Pat)
- Virtual Reality (Olin)
- Graphics in Entertainment (Pat)
- Finding Additional Information (Pat)