

# SIGGRAPH '78



FIFTH ANNUAL CONFERENCE  
ON COMPUTER GRAPHICS AND  
INTERACTIVE TECHNIQUES

AUGUST 21-25, 1978

HYATT-REGENCY ATLANTA



ADVANCE PROGRAM



## CHAIRMAN'S MESSAGE

It is our intent that SIGGRAPH '78 will be a well-balanced and comprehensive conference to satisfy the total needs of attendees. We have been fortunate in having a large number of contributed quality papers with significant international representation and with excellent breadth of coverage. In addition, a number of invited papers by international authorities will be presented. This technical program, the tutorials and workshop, the extensive exposition, and the exciting special events assure an outstanding conference.

We cordially welcome you to beautiful Atlanta. The conference committee will do everything possible to make your stay both professionally rewarding and an enjoyable experience.



S. H. "Chase" Chasen  
General Chairman

## SIGGRAPH '78 CONFERENCE COMMITTEE

General Chairman:	S. H. Chasen, Lockheed Georgia Company
Program:	R. L. Phillips, U. of Michigan
Tutorials:	Norm Badler, U. of Penna.
Exhibits:	Jim Dow, Southern Co.
Arrangements:	Vic Davis, City of Atlanta
Registrar:	Gerald Cederquist, Digital Commun. Assoc.
Publicity:	Mr. & Mrs. N. Sondak, Worcester Poly.
Publications:	Roy Harris, Lockheed Georgia Company Roy Meade, Lockheed Georgia Company

## SPECIAL EVENTS

- Atlanta Showcase Spectacular opens the Conference—don't miss it!
- Computer Designed Swim Suit Fashion Show and Luncheon, Wednesday
- Vendor Sponsored Wine & Cheese Party, Wednesday 6:30-8 p.m.
- Vendor Forum, a presentation of the *technical* aspects of vendor hardware and software, Wednesday, 8:30-10 p.m.
- Conference Reception featuring music by Dixieland Quartet from the Ray Bloch Orchestra, Thursday, 6:30-8 p.m.
- Show and Tell—A special session with the latest films and graphical results, Thursday 8:30-10 p.m.
- Special Tours, Wednesday through Friday

## ANNUAL USER GROUP MEETINGS

ADAGE  
CDC (VIM)  
GCS

DISSCO (DISSPLA)  
VECTOR GENERAL

## TUTORAL SESSIONS, 21-22 AUG

- Introduction to Computer Graphics
- Introduction to Raster Graphics
- Computer-aided Design

Plus a one-day Workshop on Standards for Computer Graphics, 22 AUG.

Registration will be limited and will be accepted in order of receipt.

Each tutorial spans two days, Monday August 21 and Tuesday August 22.

The Tutorials feature international experts who will speak on current topics.

The registration fee includes:

- Printed notes
- Two lunches (one for workshop)
- Reception Monday evening (except for workshop)

### 1. Introduction to Computer Graphics (Tutorial)

- Kellogg Booth, University of Waterloo, Chairman
- Lansing Hatfield, Lawrence Livermore Laboratory
- George Michael, Lawrence Livermore Laboratory
- Carl Machover, Machover Associates
- Marcell Wein, National Research Council of Canada
- Rüdiger Hartwig, IBM/Germany

Who should attend:

- Decision-makers in the purchase or evaluation of graphics equipment.
- Managers of projects that use or intend to use graphics.
- Relative newcomers to graphics.
- Anyone considering graphics for a particular application.

The sessions will include:

- Commercial packages
- Graphics hardware
- Graphics software
- Movies depicting the state-of-the-art.
- Applications of computer graphics

### 2. Introduction to Raster Graphics (Tutorial)

- Jim Blinn, Jet Propulsion Laboratory, Chairman
- Martin Newell, Xerox Palo Alto Research Center
- Jim Foley, George Washington University
- Alvy Smith, New York Institute of Technology

Who should attend:

- Decision-makers in the purchase or evaluation of raster graphic equipment
- Managers of projects that use or intend to use raster graphics
- Anyone with some experience in vector graphics
- Anyone considering raster graphics as a candidate for applications

The sessions will include:

- Hardware for raster graphics
- Software for raster graphics
- Three-dimensional techniques
- Interactive techniques

### 3. Computer-Aided Design (Tutorial)

- John J. Allan III; Director, Center for Special Studies, SMU, Chairman
- Frank Lillehagen; Central Research Inst. of Norway, OSLO
- Ketil Bo, University of Trondheim, Norway; visiting Professor, SMU
- J. Alan Adams, U. S. Naval Academy

Who should attend:

- Those interested in special hardware, software and user aspects of CAD
- Those who wish to understand CAD technology as viewed internationally
- Those who need to interface CAD to other applications

The sessions will include:

- Introduction and overview of CAD
- Modeling
- CAD data bases
- Man-machine interaction
- Key considerations for effective turn key systems
- Documentation & specification of CAD software
- Emerging CAD standards
- CAD management and economics

### 4. Standards for Computer Graphics (Workshop)

- Bob Dunn, U.S. Army Electronics Command, Moderator
- Dick Puk, Sandia Laboratories, Albuquerque
- Fred Canfield, California Computer Products
- Tom Wright, National Center for Atmospheric Research, Boulder
- Harvey Kriloff, Boeing Computer Service, Seattle

The intent of this workshop is to discuss the draft proposal for the development of standards for computer graphics (X-3 SPARC/CGPL).

The scope of the workshop is to describe the status of the X-3 study group, its conceptualization of the patterns of standards recommended, and the specific recommendations for standards development that have been documented to date in the primary areas of:

- The CORE system
- Picture protocols
- High level functions above the CORE

Who should attend: Anyone who is involved in the development, marketing, support, or use of computer graphics, whether it is output only or interactive, whether it is vector or raster, whether it is color or black and white, whether it is stand alone or connected to a host.

**Note:** Participants registering before August 1, 1978 will be sent a copy of the draft proposal prior to the workshop so that its contents will be available for study and discussion. Late registrants will receive a copy at the Workshop.

## TECHNICAL PROGRAM

### RASTER GRAPHICS 1 WEDNESDAY

- J. T. Whitted—North Carolina State Univ., Raleigh  
"A Scan Line Algorithm for Computer Display of Curved Surfaces"
- G. H. Joblove—Cornell Univ., Ithaca, N.Y.  
"Color Space and Perceptual Uniformity in Computer Graphics"
- F. C. Crow—Univ. of Texas, Austin  
"Improved Raster Display of Vectors and Characters"
- E. Catmull—NYIT, Old Westbury, N. Y.  
"A Hidden-Surface Algorithm with Anti-Aliasing"
- A. R. Smith—NYIT, Old Westbury, N.Y.  
"Color Gamut Transform Pairs"
- J. F. Blinn—CIT/JPL, Pasadena, Cal.  
"A Scan Line Algorithm for Displaying Parametrically Defined Surfaces"

### INDUSTRY USERS—EXPERIENCES, REQUIREMENTS, AND MANAGEMENT (PANEL) WEDNESDAY

- Harvey Selling, C.A.D. Ford Motor Co., Dearborn Mich.,  
Moderator
- Mike Smith, Graphics Gp. Northrop Airc., Hawthorne, Ca.
- Erbie Moak (Member of Edison Electric Institute) Southern Co.,  
Atlanta, Ga.
- Rex L. Smith, Manager of Graphics Dept., Structural Dynamics  
Research Corp., Cincinnati, Ohio
- Peter Marshall, Senior Computer Applications Engineer, Stone  
and Webster Engineering Corp., Boston, Mass.

### POSTER SESSION WEDNESDAY

(Opportunity for one-on-one with the Author)

- G. W. Stowell, M. J. Bailey, T. J. Pavliscak—Purdue Univ., W.  
Lafayette, Ind.  
"A Microcomputer Based System for Automated Pattern  
Digitization and Editing"
- T. Towle, T. DeFanti—Univ. of Illinois, Chicago  
"GAIN: Grass Assisted Instruction"
- J. F. McIntosh—Univ. of Michigan, Ann Arbor  
"The Interactive Digitizing of Polygons and the Processing of  
Polygons in a Relational Database"
- W. Burton—Michigan Technological Univ., Houghton  
"A Compact Fixed Grid Curve Representation for Efficient  
Processing"
- W. R. Franklin—Harvard Univ., Cambridge, Mass.  
"Prism-Map Algorithm"
- H. E. Kramel, G. Rogers—Swiss Federal Institute of Technology,  
Zurich  
"Prix Vetroflex '77: The Evolution of a Design"
- R. H. Ewald, L. D. Maas—Univ. of California, Los Alamos, N.M.  
"Interactive Graphics on the CRAY-I Supercomputer"
- R. Weinberg—Lockheed Electronics Co., Inc., Houston, Tex.  
"Computer Graphics in Support of Space Shuttle Simulation"
- A. Kaufman—Univ. of the Negev, Beer-Sheva, Israel  
"System Design and Implementation of BGRAF 2"
- L. E. Deimel, Jr., et al, North Carolina State Univ., Raleigh  
"Application of Shape-Preserving Spline Interpolation to  
Interactive Editing of Photogrammetric Data"
- H. B. Voelcker et al., Production Automation Project—Univ. of  
Rochester, Rochester, N.Y.  
"Overview of the PADL-1.0/2 System for Defining and  
Displaying Solid Objects"

T. A. Zimmerlin, J. Stanley, W. Stone—Technology Service Corp., Santa Monica, Calif.

“A Sensor and Animation Simulation System”

H. Lieberman—MIT, Cambridge, Mass.

“How to Color in a Coloring Book”

S. G. Satterfield, F. Rodriguez—US Naval Academy, Annapolis, Md.

“A Microprocessor Display Controller for Combining Refresh and Storage Tube Graphics”

F. L. Moses—US Army Res. Inst. for the Behavioral & Social Sciences, Alexandria, Va.

“User Performance Under Several Automated Approaches to Changing Map Displays”

G. Woetzel—GMD, Germany

“A Fast and Economic Scan-to-Line Conversion Algorithm”

R. V. Reynolds, W. Dungan, G. Suttly—Technology Service Corp., Santa Monica, Calif.

“Texture Tile Consideration for Raster Graphics”

#### **DISPLAY SYSTEMS THURSDAY, AUGUST 24**

Philippe Matherat—Ecole Normale Superieure, Paris

“A Chip for Low Cost Raster-Scan Graphic Display”

John Staudhammer—North Carolina State Univ., Raleigh

“On Display of Solid-Sphere Atomic Models in Real-Time”

M. Wein, G. Bechthold, P. Tanner, N. Burtnyk—National Research Council, Ottawa, Canada

“Hidden Line Removal for Vector Graphics”

#### **GRAPHICS USABILITY THURSDAY**

G. Weinzapfel, C. F. Herot—MIT, Cambridge, Mass.

“One Point Touch Input of Vector Information”

N. I. Badler—Univ. of Pennsylvania, Philadelphia, Pa.

“Interaction with a Color Computer Graphics Display for Archaeological Sites”

T. Goodman, R. Spence—Imperial College, London, England

“System Response Time and Problem Solving”

J. van den Bos—Univ. of Nijmegen, The Netherlands

“Definition and Use of Higher-Level Graphics Input Tools”

E. G. Britton, J. S. Lipscomb, M. E. Pique—University of North Carolina, Chapel Hill

“Making Nested Rotations Convenient for the User”

#### **APPLICATIONS 1 THURSDAY**

H. Christiansen, T. Sederberg—Brigham Young Univ., Provo, Utah

“Conversion of Complex Contour Line Definitions Into Polygonal Element Mosaics”

W. C. Donelson—MIT, Cambridge, Mass.

“Spatial Management of Multimedia Information”

A. Sunguroff, D. Greenberg—Cornell Univ., Ithaca, N.Y.

“Computer Generated Images for Medical Applications”

W. R. Tobler—Univ. of California, Santa Barbara

“Bidimensional Regression—A Computer Program”

#### **RASTER GRAPHICS 2 FRIDAY**

T. K. Porter—HEW, Bethesda, Md.

“Spherical Shading”

P. Atherton, K. Weiler, D. Greenberg—Cornell Univ., Ithaca, N. Y.

“Polygon Shadow Generation”

J. F. Blinn—CIT/JPL, Pasadena

“Simulation of Wrinkled Surfaces”

L. Williams—NYIT, Old Westbury, N. Y.

“Casting Curved Shadows on Curved Surfaces”

## **GRAPHICS PACKAGES** FRIDAY

R. L. Heilman—Battelle Columbus Labs, J. M. Marchant—Control Sys. Corp. Columbus, Ohio

“TIGS—An Overview of the Terminal Independent Graphics System”

K. M. Levine—Vector General, Woodland Hills, Calif.

“Core Standard Graphics Package for the VGI 3400”

R. N. Kopolow, M. A. Polisher, J. R. Warner—Univ. of Colorado, Boulder, Col.

“DIGRAF—A Fortran Implementation of the GSPC Standard”

R. G. Kellner, T. N. Reed, A. V. Solem—Los Alamos Scientific Lab, Los Alamos, N. M.

“A Portable Graphics System”

T. Crockett, G. Hamlin, Jr.—ICASE, NASA—Langley, Va.

“GRAF 80—A Microprocessor-Assisted Graphics System”

R. J. Hubbold, P. J. Bramhall—Univ. of Manchester, England

“A Flexible, High Performance Interactive Graphics System”

## **APPLICATIONS 2** FRIDAY

D. L. Bouquet—Lockheed-Georgia Co., Marietta, Ga.

“An Interactive Graphics Application to Advanced Aircraft Design”

J. N. England—North Carolina State Univ., Raleigh

“Interactively Generating Computer Graphics Descriptions of Physical Curved Surface Objects”

R. Haber, M. Shephard, R. Gallagher, D. Greenberg—Cornell Univ.

“A Generalized Graphic Preprocessor for Two-Dimensional Finite Element Analysis”

H. J. Borkin—Univ. of Michigan, Ann Arbor

“The Development”

## **ANIMATION** FRIDAY

D. Herbison-Evans—Univ. of Sydney, Australia

“NUDES 2: A Numeric Utility Displaying Ellipsoidal Solids, Version 2.”

C. Hewitt, K. M. Kahn—MIT, Cambridge

“Dynamic Graphics Using Quasi Parallelism”

E. Catmull—NYIT, Old Westbury, N. Y.

“The Problems of Computer-Assisted Animation”

## **SPECIAL SESSIONS**

In addition to the program described above, two special sessions are planned:

**THURSDAY:** R. M. Haralick of the University of Kansas is chairing a session on Image Processing and Computer Graphics.

**FRIDAY:** R. F. Riesenfeld of the University of Utah has organized a session on Geometric Modelling.

## **EXPOSITION**

### **SIGGRAPH '78 FEATURES AN EXTENSIVE EXPOSITION OF GRAPHIC HARDWARE.**

(AT PRESS TIME IN MARCH, 32 COMPANIES HAVE RESERVED 49 BOOTHS)

**EXPOSITION HOURS:** 10 a.m.—6 p.m. Wednesday & Thursday  
23-24 August  
9 a.m.—Noon, Friday, 25 August

Adage, Inc.  
Applicon, Inc.  
Aydin Controls  
CDC, Cybernet Services  
Celco  
Chromatics, Inc.  
Computervision Corporation  
Datamart, Inc.  
Dicomed Corporation  
Evans & Sutherland  
Gould, Inc., Instruments Division  
Hewlett Packard, Data Terminals Division  
Houston Instrument  
IBM Data Processing Division  
Imlac Corporation  
Information Processing Systems of California, Inc.  
Integrated Software Systems Corporation (SSCO)  
Intelligent Systems Corporation  
Interpretation Systems, Inc.  
Logic Sciences, Inc.  
Magnavox, Government & Industrial Electronics Company  
Megatek  
Printronic  
Ramtek  
Spatial Data Systems  
Summagraphics  
Talos Systems, Inc.  
Tektronix, Inc.  
Three Rivers Computer Corporation  
Varian, Graphics Division  
Vector General, Inc.  
Xerox, Information Systems Group

## SPECIAL TOURS

### GUIDELINES—ATLANTA will offer three special tours:

- **SCENIC-RESIDENTIAL:** 1:30—4:30 P.M. Wednesday \$7.25  
This tour includes Atlanta's famous Peachtree Street, etc., elegant residential areas, view of and stop at points of historic interest.
- **STONE MOUNTAIN:** 3 to 4 hours, Thursday morning \$7.50  
This tour takes you to 3200 acres of scenic beauty and special attractions. See the world's largest sculptures on the mountain side, ride the enclosed skylift to the top for a breathtaking view of the metropolitan area, walk through the Plantation with 19 antebellum buildings, and ride around the lake on an authentic paddlewheel riverboat.
- **WARM SPRINGS—CALLOWAY GARDENS:** 9 a.m. — 5 p.m. Friday \$15.75  
You will see and tour the FDR Museum, Little White House, visit the Calloway Gardens with spectacular flowers, visit the Chapel and the Country Store, have lunch at the Garden Inn.

All tours include transportation, entrance fees, and your guide. Since reservations are limited, early reservations are recommended. Write Guideline, P. O. Box 52503, Atlanta, Ga., 30355, or call (404) 355-0962 or 355-8987. A desk will be set up at our registration desk on Tuesday evening and Wednesday morning to take additional reservations for any available space.

## TRAVEL AND ACCOMMODATIONS

Eastern Airlines will be responsive to your total travel needs whether or not their flights serve your location. Their convention desk will work out the lowest fares. Refer to our conference and call (9 a.m.—5:30 p.m. Eastern Time):

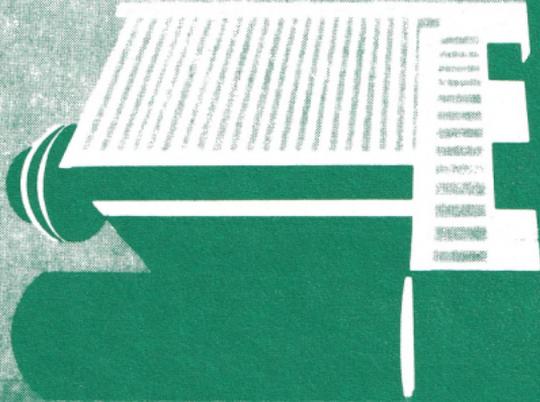
1 800—327-1295

1 800—432-1217 (in Florida)

Hotel reservations at the conference headquarters should be made directly with the Regency using the form provided or a facsimile.

# HYATT REGENCY ATLANTA

In Peachtree Center



NAME \_\_\_\_\_  
 FIRM \_\_\_\_\_  
 STREET ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
 WILL ARRIVE ON \_\_\_\_\_ WILL DEPART BY 12 NOON ON \_\_\_\_\_ DATE \_\_\_\_\_

MY COMPANY WILL  WILL NOT  GUARANTEE PAYMENT

CHECK OUT TIME: 12 NOON • CHECK IN TIME 2 PM

### CIRCLE RATE DESIRED

If room is not available at rate requested, reservations will be made at nearest available rate.

Additional person in room \$8.  
 Children under 14 free when sharing room with adults.

### SCHEDULE OF RATES

	No. of Rooms	No. of Persons
Single	\$31, \$33, \$35, \$37, \$41, \$45	
Double	\$41, \$43, \$45, \$47, \$51, \$55	
Twin	\$41, \$43, \$45, \$47, \$51, \$55	
Suites	\$145, \$165, \$210	

NAME(S) OF ADDITIONAL PERSON(S) SHARING ROOM \_\_\_\_\_

NOTE: Reservations will be held until 6:00 P.M. unless accompanied by deposit or company guarantee. Reservations MUST be received 21 days prior to opening date of convention.

**SIGGRAPH '78**

August 19-26, 1978

# Association for Computing Machinery

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