Siggraph 85, ACM Siggraph's Twelfth Annual Conference on Computer Graphics and Interactive Techniques, will take place July 21 to 26, 1985 at the Moscone Center in San Francisco, California. A major component of the conference will be the Siggraph 85 art show. You can see a few representative computer graphics from last year's show on these two pages. Artists using computer graphics in a variety of media, such as sculpture, photography, and video are encouraged to enter their work for consideration. Deadline for entries is March 15, 1985. To receive a detail for participating artists, please contact: Siggraph 85 Conference Services Office, 111 East Wacker Drive, Chicago, IL 60601; (312) 644-6610.
Siggraph 85 will again feature a film and video show. Last year’s show, a true spectacle, entailed 7000 people each of two nights. This year’s film and video show is expected to draw even bigger crowds. Anyone using computer graphics to produce video or film is encouraged to enter the work for consideration. Deadline for entries is April 17, 1985. To receive a guide for contributors, please contact: Siggraph 85, Conference Services Office, Smith, Bucklin and Associates, Inc., 111 East Wacker Drive, Chicago, IL 60601; (312) 644-6610.

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Two videotape series offer self-paced training

A new educational videotape series called Manufacturing Insights: The Video Magazine for Industrial Management, has been announced by the Society of Manufacturing Engineers.

The first videotape in the subscription series is Flexible Manufacturing Systems (FMS). This 35-minute presentation, like all the videotapes in the series, is designed to present management considerations related to the use of new technologies. The issues and questions dealt with include operating principles, economics, advantages, disadvantages, future applications, etc.

After a brief primer, the videotape takes a close-up look at the technology as actually used in several plants. Each segment, filmed on location, features equipment and processes in action and is accompanied by commentary and discussion from engineers and managers who have made the application work. Editorial commentary is by Tom Drozdak, CMfgE, P.E., editor-in-chief of SME's Manufacturing Engineering magazine.

An annual subscription to Manufacturing Insights costs $500 and offers a new videotape every three months. Each tape focuses on a specific topic selected for its growing importance and influence on modern manufacturing practices.

In addition to FMS and Robotics in Assembly and Packaging, available now, upcoming tapes and their issue dates include Simulation (March 1985), Lasers (June 1985), Adaptive Control (September 1985), and Robotic Welding and Painting (December 1985).

For complete subscription information, contact Steve Bollinger, Manufacturing Insights, SME, Video Communication Dept., One SME Dr., PO Box 930, Dearborn, MI 48121; (313) 271-1500, X 402.

T&W Systems has announced a new series of training videotapes called Video-Tutorial for its popular Versa-CAD computer-aided drafting system.

Based on the 400-page CAD-Tutor sequential training manual, the series consists of 10 video tutorials, which guide the user through the various functions of the VersaCAD program, providing a comprehensive overview of CAD drawing with a powerful microcomputer-based system.

Each tutorial includes a demonstration drawing that illustrates use of specific program features, along with a detailed explanation of efficient ways to do CAD drawings. Examples are presented on the IBM PC, but the CAD principles demonstrated are just as applicable to other systems.

Throughout the tapes, professional instruction is given by the authors of the CAD-Tutor text, themselves drafting instructors with many years of experience. Some of the subjects covered include manipulating groups of objects, cross-hatching, automatic dimensioning, and symbol libraries.

The set of 10 Video-Tutorials, offered in VHS or Beta format, retails for $495 and is available from T&W Systems and its dealers.

For more information contact T&W Systems, Inc., 7372 Prince Dr., Suite 106, Huntington Beach, CA 92647; (714) 847-9960.

X3 calls for comments on proposed ANSI standard for intelligent peripheral interface device


This draft proposed standard was developed by X3T9.3, Device Level Interface, a task group of X3T9, the X3 Technical Committee on I/O Interface. Its purpose is to facilitate the development and use of computer systems by providing a common logical interface that permits the interconnection of peripherals with diverse characteristics (disks, tapes, printers, terminals, etc.).

The first three sections contain material that is useful across all device classes that the device-generic command sets can support. The later sections are oriented to particular device classes. This document is intended for use with magnetic and optical discs.

The draft is available for a public review and comment period ending May 4, 1985. Copies may be obtained from the X3 Secretariat, CBEMA, Suite 500, 311 First St. NW, Washington, DC 20001. Orders must include prepayment of $25 and a self-addressed mailing label.

Brainworks seeks educational software from independent authors

Brainworks, Inc., the new educational software publishing company founded by Sherwin A. Steffin, who created Edware Services five years ago, has announced that it is inviting submissions of educational software from independent authors.

"In particular," Steffin said, "we are looking for works by authors with significant credentials in specific subject matter, or those who have academic credentials, backgrounds in educational technology, or professional experience in management training."

While stressing that Brainworks has an open mind and plans to publish educational software of most types, Steffin said that his principal interest is in acquiring programs that employ what educators call "discovery learning," which aims to develop such critical thinking skills as problem solving and logic. Well-designed simulations also fit within this category. Tutorial and drill-and-practice programs, however, will also be given serious consideration.

The company is primarily looking for programs designed for the Macintosh and Apple II series, because of their popularity as home and school computers. PC software will also be considered.

"We're not exclusively interested in finished products," Steffin said. "We will accept development proposals. If presented with a promising idea or concept, we may also provide consultation and editorial services, engineering help, equipment, and some funding." Brainworks has set up a screening panel to review submissions.

The company has stated that it does not employ or plan to employ authors. "We don't want to be developers. We are publishers," Steffin said. "There are a lot of talented people out there. We don't want to compete with them. We want to work with them, and use our technical and marketing know-how to help them make money."

The company believes it has the ability and experience to structure attractive compensation packages for independent authors, many of whom are fully employed, while others are working full time at designing or programming new software.

"We're not looking for games," Steffin said. "However, authors should remember that to sell, software must be stimulating and engaging. That's the real challenge."
Braintrain is a memory aid, and also helps determine a user’s brain side dominance.

Two programs Brainworks is currently marketing are “Chipwits” and “Braintrain,” originally created for the Macintosh, but now available for all Apple II computers.

The company reports that consumer demand for the original Macintosh version of Chipwits is running far ahead of projections, and that in December, its first month, it had already made the leading software best-seller lists. “With millions of Apple II computers installed in homes and schools, we expect these new versions of Chipwits and Braintrain to be blockbusters,” said Sherwin Steffin, Brainworks president.

Chipwits are computer-generated robots the user programs and teaches to perform tasks and react as a person might in a series of real-life adventure situations. Programming is done with icons. Although no programming knowledge is required, Chipwits does teach computer programming applications and the principles of artificial intelligence. A new language called IBOL—Icon Based Operating Language—is employed. As with all Brainworks products, Chipwits is designed to develop a person’s critical thinking skills, which include such areas as memory, problem solving, and logical thinking.

Braintrain is a unique program designed to improve a person’s memory for words and names, numbers, graphics, and abstract spatial relationships. It enables a person to determine whether he or she is right- or left-brain dominant, and to measure the improvement in both hemispheres. The Apple II versions retail for $39.95 each.

Contacts should be made with Sherwin Steffin, Brainworks, Inc., 24009 Ventura Blvd., Calabasas, CA 91302; (818) 884-6911.

February 1985
Leading machine vision manufacturers serve as advisors for first international vision conference and expo

More than 20 machine vision manufacturers hold key roles in developing Vision 85, the first international conference and exposition on applied machine vision. Slated for March 25-28, 1985, at Cobo Hall in Detroit, the event will highlight machine vision and its impact on industry worldwide.

Sponsoring the exposition are the Society of Manufacturing Engineers (SME) and the Automated Vision Association (AVA), recently formed by Robotic Industries Association. The conference, beginning March 25, 1985, is sponsored by the Machine Vision Association of SME (MVA/SME).

Machine vision is a recent development in high technology and an area encompassing robotics, computer-aided design and manufacturing, and flexible manufacturing systems. One of its primary uses is spotting defects during the manufacturing operation, thereby reducing production costs.

With the rapid expansion of the machine vision field—more than 50 percent annually, Vision 85 will feature a lineup of eight technical sessions, a plenary session, and a tutorial. In addition to an overview of machine vision, the focus will be on application planning, flaw detection, process verification, image sensing, process control and gauging, research and development, methods and techniques, and robot vision.

Exhibit exposition, the conference is considered by MVA/SME to be "one of the most relevant and comprehensive programs on machine vision." Full-conference fees are $450 for MVA/SME, RIA, and SME members and affiliates, and $520 for nonmembers; single-day fees are $190 for members and $260 for nonmembers. The tutorial is $70.

The exposition will feature demonstrations of flaw detection and other uses of machine vision in assembly, inspection, related vision components, computerization technologies, robotics, software, part identification, and sensors. Also featured will be parts assembly, material handling, work-in-process, warehousing, guidance, and control technologies with vision capabilities.

X3 announces approval of two standardization projects in office systems

New members urged to participate

X3, the Accredited Standards Committee for Information Processing Systems, has recently approved two new standardization projects for Technical Committee X3V1, Office Systems. These two projects are:

X3 Project 490-D: Message-oriented text interchange systems (MOTIS) naming convention and directory services. This project will accomplish the following:

- Define one or more naming forms for MOTIS-users (O/R names) that are easy for people to use, remember, and derive.
- Describe how the directory service would be accessed and used by MOTIS-users and by MOTIS components, acting independently or on behalf of MOTIS-users.
- Develop a formal set of service definitions, service primitives, and a protocol specification to enable implementation of the directory service.

X3 Project 491-D: Progression of presentation/rendition capabilities relative to user requirements. The scope of this project is to develop a standard providing definition of migration steps from current alphanumeric information systems, both public and private, to functionally sophisticated information systems as they are applied to office systems.

The following items are to be considered in the development of this standard:
- Basic alphanumeric (ASCII)
- Character-coded graphics, such as mosaics and dynamically re- definable character sets (DRCS).
- Geometric graphics wherein any point on the display can be selected independently.
- Digital color
- Analog color
- Such additional miscellaneous capabilities as photographic, audio, video, etc.

This project is applicable to business information systems, both public and private, and the devices that are used to access information required in office systems.

X3 announces approval of new standardization project on 8-bit ASCII, structure and rules

New members invited to participate

X3, Information Processing Systems, announces approval of a new project to develop an American National Standard for 8-bit ASCII, Structure and Rules. Technical Committee X3L2, on Codes and Character Sets, will do the development work on this proposed standard.

X3L2 will address the problem of providing an ANSI version of International Organization for Standardization/Draft International Standard 4873, 8-Bit Codes Structure and Rules. However, the proposed ANSI standard will refer to particular ANSI control and graphic character sets, including the specific designation escape sequences.

This proposed standard requires explicit designation and invocation of character sets to eliminate ambiguity that often occurs when a character imaging device assumes a different set of characters from those the sender intended.

Interested parties are urged to join X3L2 to participate in this development effort. The next meeting of X3L2 is scheduled for March 26-28, 1985, in Washington, DC. For more information about the upcoming meeting schedule and membership requirements please call the X3L2 Chair: Tom Hastings, Digital Equipment Corporation, 146 Main Street, M105-3/E12, Maynard, MA 01754; (617) 493-8109.
Survey reveals high level of need for affordable CAD instruction

Autodesk Inc., makers of AutoCAD, the leader in microcomputer-aided drafting (CAD) software, announced three winners in a drawing from a national CAD survey. The survey was sent to over 4000 educators with responsibility for computer-aided drafting.

The winners of AutoCAD 2 software (valued at $2000) were: David Alexman, Los Angeles Community College; James Hrouda, Mineral Area College of Montana; and Kenneth Perry, University of Kentucky.

Results of the survey show a great demand in colleges and vocational schools for inexpensive CAD instruction. Of the more than 500 respondents, 62 percent reported plans to purchase microcomputer-based CAD within the next 12 months, and 93 percent reported a “need for CAD in the classroom.” Yet, nearly half the respondents (48 percent) reported that less than 20 percent of their students “will graduate next year with a basic understanding of CAD.”

“There are figures indicating a high sense of obligation among drafting and design educators to prepare students for tomorrow’s workplace,” commented Josef Woodman, Autodesk’s Manager of Education Markets. “In recent months we have seen a large number of micro-based CAD systems installed in classroom environments, and we expect this trend to continue.” Other information emerging from the survey:

- 71 percent of the respondents reported that microcomputer-based CAD systems “are an economical way of training large numbers of students.” Only 13 percent reported that micro-based CAD systems “are of limited value compared to larger CAD systems.”
- 73 percent of respondents reported that “funding” and “lack of equipment” were the two chief obstacles to implementing CAD in the classroom.

Survey on design fees and pricing

The 1984 PSMJ Design Services Fee Structure Survey, sponsored by the Professional Services Management Journal (PSMJ) and the A/E Marketing Journal (AEMJ) shows that large differences exist in fee levels, bidding, and price competition affecting a large portion of the market and that government projects tend to be among the highest fee levels for design services.

This survey contains data from 474 design firms with a broad cross section of size and geographic regions represented. This is the first time this survey has been conducted.

The survey noted some major differences in billing rates, both regionally and by type of firm. Generally, the highest rates were in the West and lowest in the East, South, and Midwest. Typical differentials were 20 percent between the high and low regions. Large and full service (A/E/P) firms had the highest billing rates, while small firms and architectural firms had the lowest billing rates.

The survey shows the median billing rate for principals in design firms is now $75 per hour. Other key rates determined in the survey include medians of $60 per hour for Associates; $55 for Project Managers; $50 for Project Engineers; and $45 for Project Architect.

Commenting on the sizeable differences showing in the regional analysis, PSMJ Editor Frank Stasiowski said, “The survey clearly shows areas where there is a higher level of competition between firms and the supply of design firms exceeds the demand. Areas that are low in fees tend to correspond with areas of the country where the construction industry is not ‘booming.’ While we expected this to show in the survey, we did not expect the differences to be so great in this basic building block for fees.”

The survey compiles data on 40 significant project types, including private sector and government clients. No set pattern emerged where a particular type of client has all high or low fees. However, many government projects, particularly state and local government projects, were typically in the higher fee ranges (fees expressed as a percentage of construction cost). High fee structures included water and sewer line projects (mean fee level of 11 percent of construction cost) and wastewater treatment plants (mean of 10 percent). Lower fee level project types included mid-rise office buildings (3 percent mean) and extended care/nursing homes (4 percent mean).

The survey contains data on various billing practices and contract types now being used by firms, with custom contracts now the most popular (used by 35 percent of responding firms). Lump sum fees are the most predominant fee type with firms typically performing 33 percent of their work this way. Hourly contracts represent 16 percent of work for the typical firm.

- 53 percent expected to pay less than $10,000 for a complete CAD system, including CPU, monitor, software, and input and output devices. Twenty-four percent expected to pay more than $10,000 for such a system.

Despite the rapidly diminishing cost of CAD systems, lack of funds is still the major problem educators face in delivering CAD instruction. “Industry is now using CAD extensively, while most students are still learning to draw with pencils and T-squares,” said Woodman. “Ultimately, industry will pay the price for this skills gap. Educators can’t do it all alone. Business and government leaders need to explore ways of delivering current skills to the nation’s future labor pool,” added Woodman. For more information contact: Autodesk Inc., 2658 Bridgeway, Sausalito, CA 94965; (415) 331-0356.

The data on computer pricing shows that no consensus exists on how to charge clients for the use of computers on projects. Only 24 percent of firms charge all computer costs to projects, while 32 percent include these costs in overhead.

Bidding/price competition now seems to be widespread in the industry. Fully 75 percent of participating firms report having taken part in some form of bidding for design services. Firms are typically receiving 10 percent of their work from projects that have bidding/price competition.

Bill Fanning, who conducted the survey, noted two key points from the data on price competition. “First, there is no direct correlation between project type fees and the occurrence of bidding/price competition, which indicates that bidding does not lower fees. Second, subconsultants reported a higher incidence of work from bidding/price competition and the great portion of this work was where the requirement to compete on price was originated by the prime design professional.”

“While prime design firms do not want to compete on price themselves, they seem to want other design professionals to bid on their projects” said PSMJ Editor Frank Stasiowski. The complete survey is available from PSMJ, 126 Harvard Street, Brookline, MA 02146. The cost is $90 for the complete report.
High-tech companies seen affected by industrial development bond limits

High-technology companies seeking Industrial Development Bonds, or IDBs, for private projects may find it is more difficult to obtain them under the Tax Reform Act of 1984, according to Coopers & Lybrand, one of the Big Eight accounting and consulting firms. The firm's recently published monograph, "The 1984 Tax Law: A High-Technology Perspective," analyzes the law's impact on such companies.

The companies will be affected principally by two major provisions of the law, one of which limits the annual amount of private activity bonds that can be issued by governmental units within a state during any year. The other measure gives state and local jurisdictions greater discretion to decide which private projects will qualify for IDBs, Coopers & Lybrand said.

"The measures are intended to move the use of IDBs closer to Congress's original desire to encourage projects that promote the public good," said Edward A. Bartko, partner in Coopers & Lybrand's High Technology Industries Program.

Bartko explained that IDBs were created to allow both public and private projects to issue tax-exempt bonds at interest rates 20-30 percent below market. But in recent years, Bartko said, controversy has arisen because private use of the bonds was seen to have wandered off the course originally intended by Congress—that of promoting socially desirable programs and such areas of the economy as small business.

Although the new law was designed to address those concerns, it may serve to make the IDB allotment process a political one, according to Bartko. With states and localities left to pick their own bonding priorities, it becomes more likely that political "favors" will play a larger role in determining which jurisdictions will win financing for their projects.

"For high-tech companies seeking IDBs, this may require more promotion with local officials, to justify a particular project and show that it serves 'the greatest public good' and merits attractive financing rates," Bartko said.

Coopers & Lybrand reports that the new bond ceiling is $150 for each resident of a state or $200 million per state, whichever is greater. In 1987 the ceiling will be reduced to the greater of $100 per person or $200 million per state.

The law divides the financing equally between the state and communities, based on population, unless otherwise allocated, forcing each state and community to decide what private projects really are in its best interest and deserving of IDB financing, according to Coopers & Lybrand.

The measure also prohibits those borrowers who have already used $40 million in IDBs from getting further tax-free financing. This is intended to limit the amount in IDBs received by large private borrowers who should have other access to the capital markets, Bartko said.

"This action may make it somewhat easier for smaller companies, such as entrepreneurial high-tech operations, to qualify for IDBs," summarized Bartko.


Call for new members to join X3L2 task group on two-byte graphic character set for processing and interchange

X3, the Accredited Standards Committee for Information Processing Systems, has recently approved a new standardization project on two-byte graphic character set. This work has been assigned to Task Group X3L2.3, Two-Byte Graphic Character Set.

The purpose of this Task Group is to develop an ISO and ANSI standard for a character set in which each character is assigned a two-byte code. It is intended that this standard would be applicable in text-processing programming languages, and their interchange, where access to a large number of characters is desirable.

Task Group X3L2.3 is extending an invitation to all interested participants to join in this important development effort. For more information about upcoming meeting dates and membership requirements please call the X3L2.3 Chair: Ronald J. Pellar, Xerox Corp., A3-39, 701 South Aviation Blvd., El Segundo, CA 90245; (213) 536-7364.

Norman I. Badler

Badler becomes associate editor-in-chief of IEEE CG&A

Lansing Hatfield, editor-in-chief of IEEE Computer Graphics and Applications, has announced the appointment of Norman I. Badler as his associate editor-in-chief. Badler is associate professor of computer and information science at the Moore School of the University of Pennsylvania and has been on that faculty since 1974. Badler's principal areas of concentration include computer animation control systems (especially for the human figure), three-dimensional object representations, interactive system design, human motion analysis, robotics, understanding of natural language motion verbs, and the application of artificial intelligence techniques to graphical problems.

Badler is a coprincipal investigator of research projects for the National Science Foundation and has a US Army Research Office Artificial Intelligence grant. His major personal research project is TEMPUS, a system being built for NASA, to model, simulate, and animate human figures in zero-gravity three-dimensional environments.

Badler has been an active participant in ACM Siggraph since 1975 and is responsible for expanding the tutorial program at the annual Siggraph conference. He was conference tutorial chair from 1976 to 1979. He was elected vice-chair in 1979 and again in 1981. He has consulted with Digital Productions; Advanced Technology Systems; Smith, Kline and French Labs; Textron; Plan Print Company; the Institute for Cancer Research; and Lankenau Hospital. He is also coauthor of more than 35 technical
papers and has helped produce six cover illustrations and a feature article in *Self* magazine. He is active in the supervision of PhD candidates. Badler also operates a computer graphics research facility with full-time staff and about 25 students participating. He conceived of and served as general chair of the first conference on motion analysis in 1979 and served as program chair of a workshop on motion perception and representation in 1983.

Badler received his bachelor of arts in creative studies mathematics from the University of California at Santa Barbara in 1970, his master of science in mathematics from the University of Toronto in 1971, and his PhD in computer science in 1975 from the University of Toronto.

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**Errata**

**Program Change**

Shinichiro Haruyama and Brian A. Barsky wish to correct the program given in their article “Using Stochastic Modeling for Texture Generation,” which appeared in *IEEE Computer Graphics and Applications*, March 1984, Vol. 4, No. 3, pp. 7-19. The correction is for the main program appearing on page 9. The corrected section should read:

Let $N(\mu, \sigma)$ be a Gaussian variable with mean $\mu$ and standard deviation $\sigma$.

- main program
  
  $l = 1$
  
  $f_h(u_{min}) = N(0, \sigma)$
  
  $f_h(u_{max}) = N(0, \sigma)$
  
  createmiddle ($f_h(u_{min}), f_h(u_{max}), u_{min}, u_{max}, l$)
  
- procedure createmiddle ($f_1, f_2, u_1, u_2, l$)
  
  if $l > \text{desired \_level \_of \_detail}$ then output ($f_1$)
  
  else begin
  
  $f_{middle} = f\left(\frac{u_1 + u_2}{2}\right) = N\left(\frac{f_1 + f_2}{2}, \sigma^2 \right)$
  
  $l = l + 1$
  
  createmiddle ($f_1, f_{middle}, u_1, u_2, l$)
  
  createmiddle ($f_{middle}, f_2, \frac{u_1 + u_2}{2}, u_2, l$)
  
  end

The $f_h(u)$ created in this way has the properties of approximate fBm.

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**Incorrect copyright notices**

In the article about the cover in the January 1985 issue a number of copyright credit lines were incorrectly printed. The images on page 16 should have shown that they were copyrighted by Cranston-Csuri Productions. The Norelco razor on page 17 should have shown the copyright registered to MAGI Productions. The Fuji Film, the East and West image on page 19, and all the images on page 20 are the copyrighted property of Digital Effects. Our apologies for the confusion.

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**Larry Elin is MAGI executive**

We truly regret the misspelling of Larry Elin’s name in the article about the cover in the January issue of *IEEE Computer Graphics and Applications*. Our sincere apologies to Larry Elin for that mistake.

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**Thank you**

Mary Johnson sends heartfelt thanks to everyone involved.