About the cover: body modeling begins with bare bones

"George," our dapper cover boy, heralds Halloween and gives us a glimpse into next month's IEEE Computer Graphics and Applications, which will feature articles on techniques of modeling the human body for animation.

"Human Skeleton in Motion," the image shown at right, was generated with SAS—the Skeleton Animation System—developed by David Zeltzer of the Computer Graphics Research Group at the Ohio State University. SAS uses techniques drawn from the fields of robotics and artificial intelligence to assist in the generation of complex animation sequences. The skeleton database, for this image and for "George," is an anatomically accurate, three-dimensional digital model consisting of well over 20,000 polygons; it was produced by Don Stredney with the data generation system of Wayne Carlson.

The display software for both images was developed by Frank Crow and Hsuen-Chung Ho; it runs on a VAX 11/780 and drives a 640×480×32-bit frame buffer. The background fractal was generated by David Zeltzer. (Zeltzer details these animation modeling techniques in an article in the November issue.)

CAE system aids in digital logic design and documentation

A totally integrated logic design/analysis system, the Idea 1000 from Mentor Graphics Corporation is a computer-aided engineering system that combines powerful local processing and mass storage at each workstation, interactive simulation, and a high-speed local network with a distributed database.

The network is a high-speed, coaxially connected communications system. An engineer can access data to his own workstation or from another in the system with comparable speed and functionality without significant performance degradation, the company says.

Each workstation consists of an Apollo CPU with 32-bit architecture (two 68000 processors), an 800×1024-pixel graphics display, and a graphics tablet integrated into a small, desklike enclosure; an electrostatic hardcopy printer is optional. The CPU contains up to 3.5M bytes of program memory and up to 66M bytes of Winchester disk storage.

The Apollo Aegis operating system can segment the CRT screen into multiple windows, which can be displayed side by side, overlaid, or expanded for full-screen viewing. Aegis also supports simultaneous operations. For instance, an engineer can edit one program while another is being compiled or while queries are being monitored and received.

The system software is a set of interrelated applications programs working with a companion database management system, which provides both data manager and database facilities. The applications programs include structured logic design, interactive logic simulation, project communications, document preparation, graphics output generation, and custom programming tools (Pascal or Fortran).

The US price of the Mentor Ideal 1000 is $83,000 per station in a typical four-station distributed network and $69,000 each in a 10-station network. Lease terms are available.
Modified light pen interfaces with personal computers

Symtec's high-resolution light pen, originally designed for Apple computers, has been modified to interface with IBM's Personal Computer and the Atari 400 and 800 home computers.

The pen has a ½-inch-diameter stainless steel barrel, a telephone-type cord, touch ring or optional touch tip, and a plug-in connector. It plugs into the IBM color graphics adapter or the Atari game port number four and generates x and y coordinates and pen switch function.

The $150 retail price for either the IBM or the Atari version of the light pen includes programming instructions; packaged software programs are also available.

Reader Service Number 16

Vector processor drives laser or electrostatic plotters

The KMW Systems VP30 vector processor accepts random vectors, symbols, and other graphic information from a host mainframe, reduces this data to raster form, and drives an electrostatic or laser plotter. With a vector storage capacity starting at 1,000,000 vectors, the unit is capable, the company says, of driving the largest electrostatic plotter at full speed.

Host input configurations include IBM, CDC, and Univac channel interfaces, magnetic tape, high-speed communications including IBM bisync and SNA/SCLC, and a data-products-compatible front end for attachment to minisystems. The standard unit features switch-selectable support for the full range of Benson, Calcomp, and Versatec electrostatic plotters.

The vector processor also features erase mode, variable area pattern fill, and programmable grid lines. It accepts trace sequential (seismic) data input and can overlay data to create composite plots.

The single-quantity price of the VP30 is $19,500.

Reader Service Number 17

New product information is considered for use in either regular or supplemental issues, depending on when it is received. Send all product releases to:

Carl Machover
New Products Editor
IEEE CG&A
10662 Los Vaqueros Circle
Los Alamitos, CA 90720

Solid modeling package offered for CAD/CAM system

Calma Company has introduced a solid modeling application package for its Design, Drafting, and Manufacturing Revision 10 CAD/CAM system. The new software, called DDM/Solids, allows designers to generate high-precision shaded images and perform mass properties calculations. It is completely integrated into the DDM CAD/CAM system, eliminating the need for additional hardware.

In addition to being able to view designs as they will actually appear when manufactured, users can mix wireframe and shaded images on the same screen and integrate models created on DDM/Solids with designs produced using other DDM packages. The company has also incorporated its surface modeling software into the new package.

The DDM/Solids package is available for $10,000.

Reader Service Number 18

Micro-based plotting software aids applications developers

A graphics plotting utility, portable across most mini/microcomputer operating systems and capable of producing mainframe-quality output, has been introduced by Graphic Software Systems, Inc. Designed for applications software developers, the GSS-Plot software package is a set of Fortran-callable subroutines that facilitate the preparation of line graphs, bar charts, scatter charts, pie charts, histograms, log scale graphics, and other graph-type displays.

With GSS-Plot, the programmer has control of color, axis type, axis labeling and titling, graph scale, line patterns, cross-hatching, and the number of graphs on a page. The system assumes a number of basic parameters for all graphic displays, so users can either utilize existing default values for graphs or override the default actions by specifying other parameters.

The basic GSS-Plot software consists of object code on either 8- or 5 1/4-inch floppy disks or on nine-track magnetic tape. End-user and OEM licenses are required and multiple-quantity discounts are available. Single-user, eight-bit microcomputer licenses for end users are $500. The multiuser version is $2000. A software subscription service, which includes telephone consulting, media and manual updates, and enhancements, is also available at a minimum annual subscription rate of $200.

Reader Service Number 19

VAX systems graphics package is device independent

Designed to simplify graphics development in CAD/CAM applications, Digital Equipment Corporation's VAX-11 Decor provides a software interface between an application program and one or more display and output devices. Decor consists of Fortran and Bliss subroutines, based on the Siggraph Core system recommendation, that run under VMS on VAX family computers.

Device-independent Core graphics implementation features include two-dimensional direct and buffered output, a subset of synchronous input, raster extensions, image segmentation (temporary and retained), attributes for output primitives and image segments, and device handlers for NS11 displays and Tektronix 4014 devices. Decor also offers viewing operation support for multiple windows on multiple display devices and support of multiple coordinate systems for user definition of images, internal processing and storage, and device-specific display.

The VAX-11 Decor software package is available for a single-system license fee of approximately $7500.

Reader Service Number 20

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Reader Service Number 6
The Aztek Model 1020 Slide system, a comprehensive business graphic arts system, can be connected to existing computer facilities. It can also operate as a stand-alone or as part of a distributed computer network.

**BEWARE OF HEADHUNTERS.**

The problem with most computer graphics "recruitment firms" is the career advice they're qualified to give amounts to little more than a list of job openings and a pep talk.

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**Slidemaking graphics system has 256K-byte memory**

In addition to unveiling the "L" Station turnkey Model 1020 Slide system, Aztek has announced the unbundling of its Slidegraphics and Azcore software for IBM, HP, and DEC computers.

Slidegraphics, an interactive business and graphic arts package, is the image processing application and system software that is the basis for the Slide system. Written principally in ANSI 16 Fortran, Slidegraphics can support any input or output raster, vector, or image graphic device. Azcore is a device-independent graphics and imaging Fortran support library.

A color hardcopy option that uses a laser graphics interface to the Xerox 6500 CGP color copier is also now available to Slidegraphics and Azcore users.

The L-shaped oak design station with color monitor, 1024 x 1280-resolution tablet, and an alphanumeric CRT and keyboard also features an HP-1000 computer system with 256K bytes of memory and fixed head 20M-byte disk.

The Slide system with an optional 35mm film recorder sells for about $100,000.

**Plug-in board enhances TI 810 printer**

A plug-in board that converts the Texas Instruments 810 RO printer to a 4010-compatible vector plotter as well as a high-speed raster graphics plotter is available from Analog Technology Corporation. The company claims that the two-microprocessor design of its Graphics 810 Model 200 board has made the TI 810 the fastest matrix impact graphics plotter available, and that the addition of more than 200K bytes of memory for vector mapping has made the 810 the first 4010-compatible vector graphics printer/plotter on the market.

The board eliminates the host computer processing time needed to sort and rasterize vectors since they are mapped directly in the Model 200's memory before image printing starts. Simple escape commands transmitted over serial RS-232 on Centronics-type parallel interfaces allow the user to select a plotting resolution of 72 x 72 or 144 x 144 dots per inch.

Other commands allow scaling of the rasterization up to 1024 x 1024, image orientation for efficient paper utilization, and a variety of hardware and software character fonts. The printer uses inexpensive plain computer paper and does not require host data spooling because it can pause in the middle of a plot without image degradation. Like other boards in ATC's Graphics 810 series, the Model 200's raster memory can be addressed in a variety of methods for plotting or host-rasterized data.

The Model 200 plug-in conversion can be installed easily, the company says, and Texas Instruments' warranties remain in effect. The price of the Model 200 board is $295.

**Reader Service Number 23**

**Reader Service Number 22**
System produces color slides from CRT video input

Videoslide 35, a system designed to record video images on 35mm color film, has been introduced by Lang Systems. The product can be used with most color raster graphics terminals and is aimed primarily at the personal computer market.

Accepting video input in most formats, including RS-170 RGB, TTL RGB, NTSC, or others specified at the time of ordering, the system can be connected to the video output or can run in parallel with the monitor used by the operator. Controls consist of an on-off switch, three thumb-wheel switches for color balance control (factory set for Ektachrome 64), and an exposure start control. Additional software is not required for the system’s operation, nor is special operator training needed, according to the company. Videoslide 35 accepts conventional 35mm film, and developing may be performed by any commercial photographic processor.

The unit price of the Videoslide 35 is $2500.

Reader Service Number 23

Dot addressability allows angled text display

The GTC214, the newest intelligent terminal from PsiTech, features a 6809-based graphic engine providing high-speed graphic constructs, a 14-inch in-line color monitor with a 0.31-mm-pitch color mask, two programmable character sets in any cell size up to 256 x 128 pixels, self-test diagnostics, and eight macros (strings of graphic commands) programmable and displayable with a single command from the host.

Dot addressability for both graphics and text allows subscripts, superscripts, and angled text to be displayed. Text can also be displayed with individually selected foreground and background colors or in overstrike mode.

The GTC214 costs $7100 in single-unit quantity. OEM discounts are available.

Reader Service Number 24

CAD/CAM digitizer operates in IBM 3250 environment

An on-line, large-format digitizer is now available for CAD/CAM users in the IBM 3250 environment. The 2180/A22 from International Applied Systems is an option to the company’s recently announced full color Series 2100 CAD-Colorgraphics System.

The digitizer has an active digitizing surface of up to 42 x 60 inches and operates by emulating the functions of the interactive devices available with the IBM 3250 and the IAS 2100 systems (light pen, keyboard, and function keyboard).

The digitizer option is available with the Series 2100 CAD-Colorgraphics System in 90 days ARO. A 36 x 48-inch digitizer with multi-button cursor, power-adjustable base, and control electronics is $8200.

Reader Service Number 25

Eight-pen plotter functions as digitizer

An 11 x 17-inch, eight-pen flatbed plotter, the DMP-29, is available from the Houston Instrument Division of Bausch & Lomb. The DMP-29’s firmware set allows the plotter to emulate a digitizer; thus, says Bausch & Lomb, high-resolution data input and output are produced by the same instrument. Inherent capabilities enable the plotter to define window limits, scale plots up or down, vary line intensity, evoke European character sets, and automatically describe circles, ellipses, and general curves.

In addition to software-callable routines, 21 functions are available at the front-panel membrane keyboard.

The DMP-29 sells for $1995.

Reader Service Number 26

Document assembler interfaces with drafting systems

Summagraphics is now marketing a specialized word processing software package that interfaces directly with the company’s Summadraft computer-aided design and drafting systems to serve as a specification writer. It can be used to place text output directly on architectural, engineering, and other drawings, diagrams, and charts and can also be used to prepare routine office text.

The package is a page-oriented, function-key-driven document assembler that can be used simultaneously with computer-aided drafting operations in multiterminal systems.

The price of this package, which includes a letter-quality printer, is $8250.

Reader Service Number 27

Free-form graphic design station generates smooth curves

Designed for both business and graphic arts applications, the D38+ remote, free-form graphic design station from Dicomed features an automatic curve smoothing capability.

Most computer-generated graphics maintain a straight-line format. But Dicomed’s new patented figure type called Flexigon allows D38+ operators to create complex graphic shapes from a minimum number of points, producing the smooth look of an artist’s free-formed French curve and eliminating the time-consuming operation of manually smoothing curves, the company says.

Other features of the design station include rotation, full diagnostic capability, an extended display list, user-oriented prompts, 64 colors, interpolation, and multiple typefaces available in any combination on a single graphic display.

A digitizing tablet, a black-and-white hard-copy unit, and a communications adapter (for telephone hookup to remote D38+ stations) are available as options.

The basic D38+ unit without options is priced at $63,500.

Reader Service Number 28

At the Dicomed D28+ design station, the operator creates the image on the screen and it is recorded on disk as continuous update. When the design is completed, the information stored can be converted to a 35mm color slide; a single disk stores up to 133 slides.
On-site seminar explores GKS standard

To help both suppliers and end users of graphics hardware and software, Athena Systems, Inc., has designed a seminar on the Graphical Kernel System, or GKS, a proposed international computer graphics standard.

Presented by Peter R. Bono, vice-president of product development at Athena Systems, the one- or two-day on-site seminar will be tailored in content and structure to meet the needs of individual organizations. It will consist of structured lectures, informal "brain-storming," and question-and-answer sessions.

Bono is chairman of the American National Standards Institute Technical Committee on Computer Graphics and chief US delegate to the International Standards Organization Working Group on Graphics. He is one of eight authors of the original Core system and has participated in the international review of GKS since 1978. He has coauthored several articles on graphics standards, including "GKS—The First Graphics Standard" (IEEE Computer Graphics and Applications, July 1982) and "Graphics Programming Using the Core System" (Computing Surveys, December 1978).

The GKS seminars will be offered starting this month. The fee for a one-day course conducted for 12 persons is $4000, plus $200 for each additional person; for a two-day course, $6000, plus $300. For full details call Connie Pacheco at (203) 599-3061 or write to her at Athena Systems, Inc., 206 S. Broad St., Pocatuck, CT 06379.

Laser printer combines text and graphics

Because it features an embedded intelligent controller with an MC68000 microprocessor and one megabyte of RAM, the Symbolics LGP-1 laser graphics printer can combine text and graphics in addition to producing line drawings, documents, and screen images.

Combining precision scanning optics, semiconductor laser-beam recording, and electrophotographic copier technology, the nonimpact printer has a 480 x 240 resolution and accepts data prepared for an ASCII line printer, a Diablo daisywheel printer, a Unix Troff-compatible phototypesetter, and a Tektronix graphic display. It also has a native-mode format. A compact desktop unit, it prints 660 lines per minute in line printer mode.

The LGP-1 can be connected to several common interfaces. It has a standard RS-232C serial line interface; as a line printer, it has the standard eight-bit parallel interface compatible with Centronics line printers; and for higher performance use, it has a 16-bit parallel interface.

The base price of the LGP-1 is $24,950 with quantity and OEM discounts available.

Reader Service Number 29

Interface available for BYU animation software

Gould DeAnza has announced the availability of a complete user interface for Movie.BYU, a three-dimensional, shaded-surface computer graphics software package marketed by Brigham Young University. By means of the interface software, Movie.BYU enables full animation capability on a Gould DeAnza IP8500 image processor under a VAX or VMS operating system.

Movie.BYU is built around six Fortran programs. The main program provides an interactive command processor for defining models and then rotating them in three-dimensional space and separating them into parts. Gourand algorithms allow smooth shading of faceted surfaces. It also removes hidden surfaces, produces continuous-tone images, generates three-dimensional lettering, and allows for key frame animation.

Other programs convert contoured images into three-dimensional models and enable the user to edit, file, and update models, either in shell or solid form.

The IP8500 image processor contains 16 different channels divided by four memory tiles. Thus the animator can flip through each frame in 1/30 of a second, producing up to 64 frames automatically. Film development is not necessary, and programming results can be seen as soon as they are calculated.

Gould DeAnza is offering the Movie.BYU interface for $2500.

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