

The AI Dispatch

News for the AI Community from Xerox Artificial Intelligence Systems

August 1985

Xerox Continues to Set AI Price/Performance Standards

New 1186 and 1185 Workstations Shatter Price Barriers

For years, Xerox has been the leader in bringing low-cost, powerful AI workstations to the market. With the new workstations, Xerox once again changes the rules for cost-justifying AI development and for establishing delivery system budgets.

By incorporating Xerox's new 6000 Series of processors, the Xerox 1186 and 1185 offer many of the performance features of the 1108 Series but with a significant reduction in costs.

The 1185 has been specially designed for the delivery of applications to the end user and features a runtime version of Xerox's Interlisp-D. The 1186 offers power and flexibility to the AI developer and includes the full Interlisp-D programming environment as standard.

The new workstations will be available in 1985 and will be demonstrated at IJCAI.

Renowned Research Center Charting New Directions

Merging of Disciplines Pays Dividends

Founded in 1970 at the Stanford University Industrial Park, Xerox's Palo Alto Research Center (PARC) has become recognized as a major contributor to the information systems industry. Many of the design concepts now considered industry standards were born at this Northern California facility.

By combining both physical sciences and computer sciences, the center is dedicated toward applying research centered around several specific areas. These include integrated circuit electronics, materials science, optical science, and cognitive sciences

among others. By organizing these disciplines into working groups such as the Intelligent Systems Laboratory, PARC generates knowledge through internal research while also gathering knowledge through interaction with outside groups.

Through their shared resources and knowledge, the laboratories within PARC are able to make major strides beyond what their individual capabilities might suggest. Consequently, many technologies are being developed -- and implemented -- at a phenomenal rate to the benefit of both the research communities and the commercial sector.

Examples of PARC's accomplishments include major advancements in user interfaces such as pull-down menus, icons, and mice. Advanced programming environments such as Interlisp-D and tools like LOOPS further illustrate PARC's continuing impact on the information processing industry.

Latest Laser Technology to Augment AI

New High-Resolution Printer/Copier Offered for Xerox 1100 Series

With the availability of the Xerox 4045 Laser Computer Printer, you will be able to more economically enjoy the kind of clarity on hard copies that you have come to enjoy on your 1100 display.

Images, sketches, graphics, and other visual elements can now be transferred to hardcopy form with high resolution. The visual detail that is becoming so important in many AI applications, can now be transferred to the printed page at a lower cost than ever before. Not only does this enhance existing uses but it also opens the door for new applications.

Annotated x-rays, structural analyses, procedural diagrams, and other "intelligent" printouts can now extend the benefits of AI into new environments. Surgeons can carry diagnostic diagrams into the operating room. On-site engineers can be kept critically informed. Troubleshooters can take step-by-step instructions right to the problem site.

Using state-of-the-art technology, the quiet, compact 4045 offers speed, typeset quality, and multiple fonts. The standard printer model is priced at \$4,995 and will be available in the first quarter of 1986.

Images are produced at up to 90,000 dots per square inch -- about 13 times more detailed than dot matrix printers. Text can range from 6-point (.083" high) to 24-point (1/3" high) from a selection of 22 fonts. And you can download still more typestyles from an 1100 AI Workstation.

If that isn't enough -- an option will let you use the Xerox 4045 to replace your worn-out convenience copier. It can actually make high-quality "photocopies" for you at the push of a button.

UCLA Site for Mini-Seminars

IJCAI Attendees to Preview Latest Advances

As part of the IJCAI-85 R&D Exhibit Program, Xerox will be making formal presentations on many AI applications and advances.

For the convenience of the attendees, each presentation will be offered more than once with the demonstration displayed on a large screen. The presentation theater will use the latest light-valve technology from Hughes so that all attendees will have excellent viewing of large, high-resolution images.

The mini-seminar schedule will be available at the Xerox booth in the exhibit area.

"Hands-On" Encouraged at IJCAI

Attendees to Have Access at Variety of Workstations

To accommodate the interest of attendees at IJCAI-85 in Los Angeles, a number of Xerox AI systems will be available at UCLA from 11 a.m. until 7 p.m. Monday through Thursday and from 9 a.m. until noon on Friday.

The Xerox AI systems on display will offer a full complement of software including Interlisp-D and many of the applications being presented at the conference. Xerox technical support staff members and AI developers will also be available to demonstrate the systems and answer specific questions not covered in the mini-seminars to be given by Xerox throughout the conference.

Systems will also be available for demonstrations in the hospitality suite at the Beverly Hilton in the evenings.

Age-old Method for Organizing Information is Rejuvenated

Note Shuffling Becomes Intelligent

That indispensable aid to the college-student, the "3x5" note card, is now enjoying a comeback thanks to the capabilities of Xerox AI workstations. The new NoteCards-D™ System developed by Xerox puts the simple, familiar features of the standard index card at your fingertips and then amplifies them by the power and flexibility of the Interlisp-D programming environment.

NoteCards-D is a system for authoring, information structuring, and idea processing. It runs on the Xerox 1100 Series Artificial Intelligence Workstations and has been used extensively on an experimental basis. Xerox plans to offer NoteCards-D as a fully supported product in early 1986.

Using a powerful set of integrated tools, you can use NoteCards-D to manipulate idea-sized units of text, images, maps, and other electronic information stored in a NoteFile database.

Based on extensive research into information organization techniques and on development efforts involving many disciplines, NoteCards-D provides an extremely natural interface for authoring, argument analysis, information structuring, and training. You can quickly and easily duplicate the convenience of traditional note cards and then move on to more advanced uses. For instance, you can incorporate graphic images, complex networks of related thoughts, links to dynamic databases, and automatic processing and manipulation of information.

NoteCards-D takes advantage of the powerful user interface of the Xerox 1100 Series to offer a comprehensive set of functions plus flexibility. From a NoteCards-based collection of information, you can either generate hardcopy reports or browse through ideas and data in slide-show fashion.

NoteCards-D should prove a boon to many a researcher not to mention the struggling college student. Term papers may never be the same again.

AI Gains Use of IBM-PC Peripherals

BusMaster Makes Low-Cost Color, Wide Variety of Devices Available

One of the more frustrating aspects of R&D is the challenge of interfacing hardware to expand the functionality of the development system. No single vendor can sup-

port every possible device and interface. Consequently, a developer often winds up wasting valuable time and resources creating one-time hardware solutions. This is especially frustrating in prototyping situations where many different solutions may have to be explored.

One solution is to tap into the vast universe of interfaces and devices developed for other systems. The BusMaster offers hardware expansion capability using either IBM-PC bus or Multibus peripherals. Now with the BusMaster option, you can now let your Xerox 1108 take advantage of an immense range of economical, flexible, I/O devices.

BusMaster consists of the necessary hardware and software to interface to IBM-compatible or Multibus boards. You can order it for \$3,995 starting now.

You simply use the BusMaster cable assembly to connect a standard Multibus card cage or IBM-PC Expansion Unit to an 1108 equipped with the Extended Processor Option. Readily available expansion cards can then be controlled directly from LISP at full bandwidth. Two examples -- a low-cost color display and an audio A/D conversion -- will be shown at IJCAI-85.

A large sub-industry has been built around the development of standardized plug-in and external components -- a recent publication listed several hundred of these devices for the IBM PC alone, everything from A/D converters and joystick controllers to speech synthesizers and communications controllers. This rich collection is now available to you as Xerox 1108 peripherals with the BusMaster option.



Xerox 1108-105T Meets Strict Federal Security Guidelines RF Levels are Virtually Undetectable

The first lesson in sabotage and espionage is locate your target. The first lesson in defense and security is hide what you can't afford to lose.

In the interest of national security, the federal government conducted studies regarding the detection and control of spurious electronic signals. As a result, the National Security Agency established standards limiting the strength of radio frequencies (RF) emitted by electronics used for certain applications. A special version of Xerox's 1108 Series -- the 1108-105T -- has been developed to meet these strict guidelines for secure government installations.

The RF emission standards for secure applications (NACSIM 5100A) limit the amount of RF to less than 10% of what the FCC now allows. In other words, ten Xerox 1108-105T workstations shouldn't even make your neighbor's TV fuzzy.

In addition, the workstation's 42-MB rigid disk is transportable so you can easily secure any sensitive information.

By meeting these strict requirements, Xerox AI Workstations join Xerox's complete line of Secure Information Devices. This means that your AI development efforts and applications using the Xerox 1108 can now reside in secure government locations.

The Xerox 1108-105T has a list price of \$34,950 and is available starting immediately.

Interlisp Users' Group Takes Shape

Xerox to Host Meeting at 1985 IJCAI

The Interlisp Users' Group will hold its first formal meeting on Wednesday, August 21, 1985 at the International Joint Conference on Artificial Intelligence (IJCAI). The dinner meeting, hosted by Xerox, starts at 6 p.m. at the UCLA Faculty Center, 405 Hilgard Avenue in Los Angeles. Cocktails will be served starting at 5 p.m.

At the meeting, you will have an opportunity to meet the management of Xerox AI Systems and other members of the Interlisp user community.

The group's purpose is to increase the awareness and usability of Interlisp and its supporting hardware. One way the group accomplishes this is through its newsletter, Masterscope. Named after the Interlisp-D's program analysis tools, the Masterscope newsletter is available to all Interlisp-D users. Each issue focuses on current user issues as well as announcements about new products, software releases, training classes and other information of interest to the AI community.

For more information about the meeting or a subscription to the newsletter, contact Xerox AI Systems at (818) 351-2351, extension 2676.

Informal AI Gathering Hosted

One of the greatest stimuli for AI has been the interchange of ideas among AI professionals. Sometimes it is in informal gatherings that the best contacts are made and most fruitful discussions occur. One such opportunity will be hosted by Xerox during the IJCAI-85 in Los Angeles.

Each evening, Monday through Thursday (8/19-22), a hospitality suite will be open at the Beverly Hilton in Beverly Hills. The hotel will provide a comfortable setting for IJCAI attendees to discuss topics of mutual interest. Cocktails and hors d'oeuvres will be served from 5 p.m. to 10 p.m. and some of Xerox's latest products will be available for demonstrations.

The hotel is located 5 minutes from UCLA at the corner of Wilshire and Santa Monica Boulevards.

Training Continues to Expand AI Effectiveness

Extensive Schedule Aimed at Growing Base of Interlisp-D Users

One of the critical needs of the artificial intelligence community is the proliferation of practitioners developing and using AI. For the AI profession and AI business to grow, there has to be a way to transfer AI knowledge to a wider community.

Xerox Corporation has recognized this need and has developed a variety of courses to satisfy AI training requirements. The selection of courses include everything from one-day management introductions to AI to a battery of intensive 5-day classes. The courses allow both novices and professionals to enhance their knowledge of AI and the various programming tools available to solve their particular problems.

Courses are regularly held at the Xerox AI Systems headquarters in Pasadena, CA and the new center in Leesburg, VA. Classes can also be scheduled at other locations to satisfy your needs. Major courses scheduled for the rest of 1985 include:

XEROX AI SYSTEMS TRAINING SCHEDULE

July - December, 1985

	----- INTERLISP-D -----			LOOPS
	Introduction 5 Days	Intermediate 5 Days	Advanced 5 Days	5 Days
July	29th Pasadena			
August		5th Pasadena		12th Pasadena
September	16th Leesburg	23rd Leesburg		30th Leesburg
October	28th Chicago	14th Pasadena	21st Pasadena	
November		4th Chicago 11th Leesburg	18th Leesburg	
December	2nd Pasadena	9th Pasadena	16th Pasadena	

Customized classes can also be scheduled to address your unique needs.

PROLOG Being Added to Xerox AI Product List

Quintus to Develop Software Product

Xerox has announced plans to support Prolog on its 1100 Series of AI workstations. The Prolog implementation being adopted by Xerox is fully interfaced with Interlisp-D so that you can use features from both development environments. (See related article on COMMON LISP).

The addition of Prolog will allow developers of 1100 applications to satisfy a broader set of market requirements. This includes applications for Europe and Japan where Prolog is a more popular AI language. Of special note is the fact that Japan has chosen to incorporate Prolog into its much-publicized fifth-generation computer.

The Prolog development effort has been awarded to Quintus Computer Systems, Inc. of Palo Alto, California. Quintus has established itself as a high-caliber software developer specializing in Prolog development and delivery systems.

Although still in the implementation stage, the Xerox version of Quintus Prolog should be available sometime in the first part of 1986. Pricing is expected to be announced at IJCAI-85.

Xerox Increases Support by 60%

New AI Systems Offices Opened Nationwide

The dynamic, sometimes volatile, nature of the AI industry demands strong, responsive vendor support. For hardware and software suppliers this means constantly monitoring user requirements and providing effective, accessible support personnel.

Xerox is one company that has always placed great importance on support and this year has re-emphasized its commitment to AI. In the first half of 1985 alone, Xerox has increased the number of its sales and support offices from eight to thirteen. The five new offices are in Atlanta, Denver, Hartford, Houston, and Seattle. They join those offices already located in Boston, Chicago, Dallas, Kansas City, Los Angeles, New York, San Francisco, and Washington, DC.

With the addition of its new offices, Xerox now offers local support in most major metropolitan areas. Geographic dispersion and well-trained staffing combine to offer you the largest and strongest support group in the industry.

Xerox Introduces More Enhancements to Installed Systems

New Interlisp-D Release Increases Capacity and Functionality

Users of Xerox 1100 and 1108 AI Workstations have had an early Christmas this year. The package arrived in May and had many big surprises that further strengthened Interlisp-D's position as the most advanced and reliable programming environment available.

The new release, dubbed Intermezzo, greatly increases the capacity for handling large applications. It also adds and expands many significant functions. The major enhancements include:

Virtual Memory Expansion -- The virtual address space, previously limited to 8 MB, is now expandable to 32 MB. Although Interlisp-D is extremely efficient -- few large systems even exceed the prior 8 MB limit -- Xerox has continued to anticipate the demands from increasingly ambitious development efforts. By increasing the virtual memory fourfold, you now have approximately six times more user space (beyond the system code area) for your applications.

Storage Management Improvements -- Besides increasing the addressable memory, the programs that allocate memory have been greatly enhanced. You will now also realize increased system performance and reliability.

TCP/IP Communications Compatibility -- Using Interlisp-D workstations, you can now communicate with non-Xerox hosts, especially UNIX systems, over the Ethernet. Both 1108's and 1100's now support TCP/IP communication protocols. This is in conjunction with a new File Transfer Protocol that gives you a virtual terminal facility for chatting between TCP hosts while emulating either TTY or VT100 terminals.

Chat Extensions -- Using a new Lispusers package, VTCHAT, you can now emulate a VT100 including its right-keyboard and mouse-sensitive window. You may also communicate with NS hosts.

Litatom Limit Expansion -- The number of atoms allowed has been doubled to 64K in order to handle code that automatically generates large numbers of atoms.

TEdit Improvements -- Both reliability and functionality have been improved. For instance you may now work with much larger documents and print them on Epson FX-80 dot-matrix printers.

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New Drawing Capability -- You can now use a new Lisp Library package, Sketch, to create and edit images using a menu-based window. The completed images can then be moved into documents using TEdit.

Other changes in the fully supported release include new print and filing routines, new device-independent graphics functions, as well as improvements to the file and Grapher packages. For more information contact Xerox AI Software Support at (800) 228-5325 or in California call (800) 824-6449.

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Equipment Designers Cut Prototyping Expenses

Fine-tuning of Operator Panels Streamlined

Ever-advancing technology brings with it a major challenge -- how to incorporate new features and functions into a piece of equipment without making it too difficult to operate.

That's a major concern to Xerox when it brings out a new copier. It also concerns thousands of other companies who design everything from microwave ovens to space shuttles.

At IJCAI, Xerox will demonstrate its recently developed solution to a time-consuming and expensive problem -- how to create the right operator interface without spending a fortune fabricating and testing prototypes. Xerox's solution came from its own Palo Alto Research Center (PARC). Developers there have created a special system -- the working name is Trillium -- that runs on Xerox AI Workstations.

Trillium allows human-interface designers to create soft prototypes of operator control panels. On a display screen, a designer first defines the functions to be performed in terms of control-panel components -- buttons, knobs, LEDs, and so on. Then using a mouse, the designer arranges the components into a 'soft' prototype on the workstation's display. The knobs and other devices can be shifted, enlarged, shaped, or manipulated in other ways until the designer is satisfied.

As soon as a prototype is finished -- no fabrication time needed -- a group of typical operators can be brought in to try out the new copier design. By using a mouse to mimic use of the prototyped equipment, the operators quickly highlight any desirable improvements.

After a few inexpensive changes and retesting, the designer is ready to produce a

hard prototype for final testing. The result -- a lower-cost copier available much sooner than would be possible using conventional prototyping and testing.

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COMMON LISP Dialect Coming to Xerox 1100 Series
Objects To Enhance Standardized Version Of LISP

Xerox users will soon have the best of both worlds -- Interlisp-D's advanced programming environment with the portability of COMMON LISP.

Xerox has just announced that it will be developing an implementation of COMMON LISP that is fully interfaced with Interlisp-D. This means you can take advantage of all the features of the Interlisp-D environment while developing COMMON LISP code. No longer will you have to decide between the portability of COMMON LISP and the advanced environment of Interlisp-D. (See related article on PROLOG).

In addition, Xerox researchers have proposed an extension of COMMON LISP to support object-oriented programming. Xerox has many years of experience with this programming paradigm, which it pioneered in the 70's with its Smalltalk research effort. The prototype of COMMON LOOPS, as this new proposal is called, will be demonstrated at IJCAI-85.

Availability of both COMMON LISP and COMMON LOOPS is scheduled for 1986.

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Xerox 1108 Gets New Look
New Ergonomic Display Increases Productivity

Without sacrificing any functionality, Xerox has introduced an improved version of its high-resolution, large-format display for its 1108 Series of AI Workstations.

The new display has the same size screen yet is overall 2" lower, 2" narrower, and 1" less deep than its predecessor. You also get a more reliable optical mouse that moves more freely over a newly patterned mouse pad.

But the big news is with the latest ergonomic features. The screen can now tilt and swivel and has a non-glare finish. Plus, the keyboard angle -- with its low-profile design -- can be adjusted for optimum comfort.

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