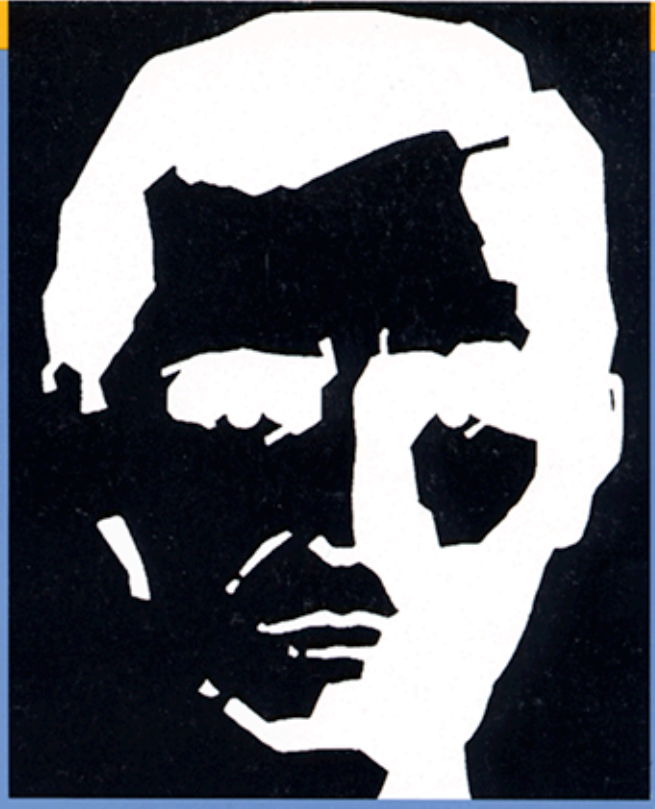
PERQ



PERQ AI

The workstation for AI professionals

PERQ

Screen image courtesy of Intran Corporation.

Affordable AI

The growing importance of artificial intelligence technology for such commercial and industrial applications as expert systems and industrial robotics is widely acknowledged. Until now, however, the high cost of hardware has too often been a barrier to the development of AI systems, particularly for smaller organizations. No more. PERQ Systems Corporation makes these developments practical with the PERQ AI workstation which enables you to develop AI applications as an OEM vendor, to implement systems for your own use, or to conduct AI research.

PERQ AI offers a low-cost, high performance Lisp workstation for AI development and research that can be easily and inexpensively extended into a fully integrated networked solution for teams of AI professionals. Large initial capital investment is no longer necessary for entry into this fast-expanding market. In fact, the PERQ AI workstation delivers Lisp performance comparable to a VAX 11/780 at a quarter of the price—the cost of a single professional's annual salary. Moreover, it provides some exceptional features not incorporated in other AI systems:

- ☐ An optimized Lisp environment based on a recognized standard
- ☐ Dedicated, high performance computing power
- ☐ Ease of access to shared resources on a distributed network

The PERQ Lisp language

The AI workstation provides all the flexibility, security and convenience that comes from working with a recognized standard. PERQ Lisp is a superset of today's most widely accepted AI language—Common Lisp. This means that applications developed under Common Lisp are easily ported to PERQ Lisp. Expressive language facilities are also provided, as well as powerful systems-building tools specifically designed for easing the implementation of embedded AI systems and software prototypes. PERQ Lisp features a powerful software environment for the development of industrial as well as research-oriented AI applications.

In addition to traditional Lisp facilities, PERQ Lisp includes:

- ☐ Tagged architecture (i.e., data items are "tagged" with a data type field
- ☐ Lexically-scoped variables (in both the interpreter and compiler)
- ☐ Keyword and optional parameters to functions
- ☐ Multiple return values (for example, an integer division function can return both an integer quotient and a remainder)
- ☐ User-controllable error handling and dynamic, non-local exits
- ☐ Powerful macro facilities
- ☐ Stream-based I/O facilities
- ☐ Formatting and pretty-printing facilities
- ☐ A rich set of numerical data types (e.g., IEEE floating point, rational numbers, and arbitrary precision integers), with generic numerical primitives
- ☐ String, array, and vector data types with generic "sequence" operations
- ☐ Bit and field manipulation
- ☐ Hash table facilities
- ☐ User-defined data types (records or structures)
- ☐ Graphics primitives
- ☐ Access to window manager
- ☐ Interprocess communication facilities
- ☐ Alien data structure handling facilities for dealing with message data from other languages such as Pascal, C, or FORTRAN.

Also integrated into the PERQ Lisp environment is a screen-oriented EMACS-like editor. In addition to normal editing capabilities, it provides facilities for editing, evaluating, and compiling Lisp expressions and saves results in either the Lisp environment or a file. The editor is written entirely in PERQ Lisp and is readily extensible.

The PERQ Lisp environment also includes powerful debugging facilities, and extensive on-line help and documentation.

PERQ AI: Dedicated performance

Researchers and software developers demand high performance from their AI machines. A guaranteed, immediate response is fundamental to motivating users who are at the forefront of technology—and need to stay there. They demand the best. They expect a level of performance that is not degraded by sharing computing power. But they still require the flexibility to be able to communicate their ideas and developments with other team members and access shared resources when necessary.

The PERQ AI workstation offers all the benefits of a dedicated super mini-computer with exceptional graphics capabilities, combined with the flexibility of an architecture that can be microcoded for optimum Lisp performance.

The basic configuration consists of: a floor-mounted cabinet which houses the bit-slice, proprietary processor, the main memory and disk storage facilities; a high resolution, bit-mapped raster display; an alphanumeric keyboard; and a graphics tablet with pointing device for a natural, efficient user interface.

PERQ AI's proprietary processor supports multiple instruction sets simultaneously resident in the Writable Control Store. This enables workstations to support entirely different instruction sets for Lisp and other languages such as Pascal and C.

The unparalleled high quality graphics capabilities of PERQ AI are a key feature for AI application areas. Two displays are available: a 768 × 1024 portrait screen or 1280 × 1024 landscape screen. Both displays are black and white, non-interlaced bit-mapped screens with 100 dots per inch resolution, refreshed 60 times per second for flicker-free screen updating.

The graphics tablet works with a variety of pointing devices for point-and-act efficiency in using pop-up menus and in the manipulation of screen images. An alphanumeric keyboard is essential for text and program entry. Speech and sound generation hardware further enhance the user interface.

LINQ and Accent: Sharing resources

Research applications commonly involve groups of professionals who need to communicate with each other. It is, therefore, very important that the communication should be handled easily and quickly, so that ideas and resources can be shared without delay.

The PERQ AI workstation is one of a family of products that may be integrated into a LINQ™ local area network controlled by the Accent advanced network operating system. Although the PERQ AI can operate as a single-user, stand-alone workstation, LINQ enhances its capabilities. LINQ connects workstations, servers, gateways and other manufacturers' computers and devices into a sophisticated open network based on Ethernet™ technology.

Accent is a message-based, multiprocess operating system providing a demand paged 32 bit virtual address space for each user process. Accent was designed to be a truly distributed, transparent operating environment.

Accent features network-wide interprocess communication, concurrent active windows, multiple instruction sets, multiple processes with a flexible process scheduling facility, and more. The Accent design provides transparent remote file and server process access. Thus a Lisp program at one machine may invoke a process on a second machine, access data on a third and send screen output to yet a fourth, all managed by the operating system without the program having to know where these resources are or even understand how they are accessed.

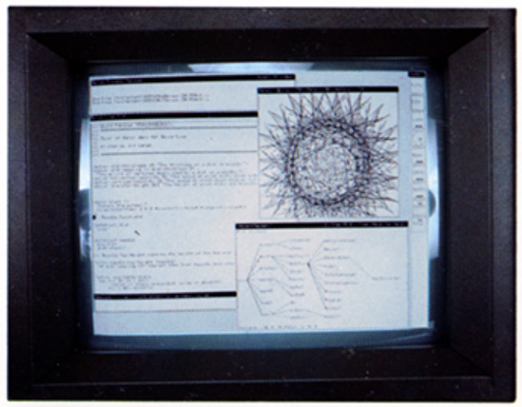
In addition to the Lisp environment, Accent simultaneously supports co-equal environments which include the native Accent environment, and Qnix™—a UNIX™ System V environment licensed from AT&T. The fact that these environments are co-equal means that a program in Lisp, for instance, has access to all the facilities of either native Accent or Qnix.

LINQ and Accent provide benefits to the AI user such as multiprocessing capabilities, a distributed file system and transparent access to network graphics, computation, and data resources.

PERQ Systems: Responding to your needs

Vital considerations in any AI development project are product support and the commitment to continual enhancement, both in terms of software and hardware. These considerations have, unfortunately, long been ignored by other suppliers of AI equipment. PERQ Systems believes that product support and corporate response to emerging market requirements are fundamental. In developing PERQ AI, many experts from major universities and research institutions were consulted. In supporting PERQ AI, PERQ Systems is always responsive to customer needs—from installation and training through on-going customer service and product enhancement.

PERQ AI—a fully supported environment for AI professionals.



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