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THE COMPUTER AND THE LAW (p. 18). “While it would be correct to state that law will have a role to play wherever computer technology is applied to social problems, and, equally, that the pervasive influence of computers will eventually touch all of human activity, it may be useful to distinguish among three major areas of interaction between the two professions: the application of computers to the practice of law itself; the development of law directly applicable to the evolution of the computer industry; and the use of law to control the impact of information processing on society as a whole.”

THE CASHLESS SOCIETY (p. 21). “To date, the vast majority of available payment programs designed to provide cash substitutes require the completion, transfer, and processing of paper. If our cashless society is to be economically and operationally sound, this paper must be eliminated, or at least substantially reduced. That is, if a cashless society is to become a reality, an effective electronic funds transfer system (EFTS) must be successfully implemented. Most authorities agree that an EFTS is not only technically, operationally, and economically feasible, but also inevitable.”

THE LAW AND INFORMATION (p. 31). “Much of the assets of the software industry and, to some extent, of the computer hardware industry are represented by information. Because of the abstract nature of these assets, the traditional concepts of the law often do not apply effectively to some of the situations presented by commerce in this new area. The law is striving to provide predictability and rules by which the interests of the parties and the public can be adjusted, but this is a slow process, and will never approach the degree of certainty found, for instance, in the law of real estate.

“Professionals in the computer field should recognize that uncertainties are bound to exist in the law where the products and relationships are often complex and unfamiliar to most lawyers. When entering into a business transaction or an employment relationship, if they wish to bring certainty to questions of rights in products or innovations, and apportionment of potential liability, they should try to anticipate these considerations and provide for them as much as possible by written contract.”

SUPERCOMPUTER ARCHITECTURE (p. 58). “There is no question that any program solvable by any processor is solvable by any other (assuming they are both reasonably designed for general purpose use). The problem for potential users of these machines is to determine efficiency of these processors and compare cost/efficiency * speed ratios.

“Programmability should also be assessed, as well as compiler efficiency and code quality. For the parallel processors—less so for pipeline machines—APL is a more natural

language than the other common ones. If APL were the prevalent scientific programming language, then efficient programming would be far more natural for these supercomputers.”

“For pure speed or cost-effectiveness, there appears to be little difference among pipeline processors, array processors, and associative array processors. Each particular machine is designed with some application foremost in the architect’s mind; hence each user must evaluate each processor on its own merits for his job mix.”

AN ENGLISH LANGUAGE COMPUTER (p. 59). “Reality, a new English language computer business system designed for easy use by anyone, has been announced by Microdata Corporation.

“Called Reality™, the new information management system makes use of ENGLISH™, a new computer language close to ordinary English that provides a means for a user to input data to a file, perform maintenance of the file, retrieve records and obtain a formatted output report.

“The Reality system includes a central processing unit, a disc drive with 5-million character storage, a hard copy printer, and a CRT terminal.

“Use of microprogramming has resulted in a system that can handle multiple users with as many as 32 on-line terminals and still provide substantially faster response than most large-scale data processing machines. The entire system resources of Reality are managed by a virtual memory operating system implemented in microcode.”

MINICOMPUTERS (pp. 60-61). “A 16-bit minicomputer priced at under \$2,000 in quantities and a 32-bit minicomputer priced at under \$6,000 in quantities have been introduced by Interdata, Inc.”

“The Model 7/16 offers the quantity OEM buyer a wide variety of plug-in options that can be installed in the field. Within the 16-bit framework, these options include: multiply/divide, display console (with or without hexadecimal), TTY interface, power fail/auto restart, memory protect and high-speed Arithmetic Logic Unit.”

“The Model 7/32 is expandable in 32K-core increments, either with the standard (1 microsecond) module priced at \$3,950, or the high-speed (750 ns) module priced at \$4,500. Other options include floating point, memory protect segmentation, and power fail/auto restart.”

COMMUNICATIONS NETWORK (p. 65). “One of the nation’s largest private communications networks has gone into operation connecting offices and computer facilities of American Express Company and participating subsidiaries from coast to coast . . .

“The network, called A-Com, utilizes more than 400,000 miles of cable and microwave facilities, with the routing of messages controlled by computer-equipped switching sta-

tions at seven sites around the country. The facilities are leased from American Telephone & Telegraph Company.”

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IMAGE DATABASES (p. 7). “Recently, there has been much interest in various kinds of database management systems for nontextual information. The database community has manifested this interest in proposals for multimedia databases, spatial databases, object-oriented databases, and various marriages between database and artificial intelligence techniques. In the computer vision community, interest has focused specifically on the design of image databases and efficient retrieval of iconic information by content. This iconic information will be used as a component for various query processing strategies, which in turn can directly influence efficient effector behavior, such as robot task planning.”

AN OBJECT MODEL (p. 33). “Carefully engineered data models have long been recognized as aids to information organization and interpretation, with object-oriented data models achieving recent popularity. In these models, each entity, whether a pixel or a semantically meaningful image feature, is called an object. Each object is an instance of a particular type, which defines the object’s structure, its applicable functions, and perhaps some of its properties. Our purpose here is to apply object-oriented database principles to help model an image for computer vision.”

COPYRIGHT (p. 72). “Software is indeed the first technology allowed copyright protection. Perhaps Congress did not realize that software is a form of technology when it passed laws placing it in the copyright system. Judges seem to have been likewise ignorant of the functional nature of software, given the outcome of some recent court decisions.”

“Affording copyright protection to user interfaces takes us yet further away from the scientific tradition of sharing knowledge. It is time for computer professionals to take a responsible attitude regarding this dangerous situation. If programmers want to keep the freedom to write whatever programs they want and to benefit from the research of their colleagues, now is the time to make themselves heard.”

CONCURRENT DOS (p. 84). “Digital Research (DRI) provides alternative operating systems for PC compatibles. The alternatives derive from the company’s CP/M and M/PM (multi-user) operating systems, introduced in the 1970s and preeminent for 8-bit (8080A- and Z-80A-based) microcomputers.

“Concurrent DOS 386 Version 3.0 and Concurrent DOS XM Version 6.2 (for 80286-based systems) are DRI’s primary operating systems for the general-purpose PC market. Concurrent DOS provides many sophisticated operating sys-

tem features, including multitasking, multiuser, and windowing capabilities.”

DISKETTE CONVERTER (p. 90). “Everyone likes a bargain, and the DoubleDisk Converter from Biological Engineering is just that. This mechanical punch makes a square hole opposite the write-protect hole on a 3.5-inch diskette, instantly turning a 720-Kbyte disk into a high-density 1.44-Mbyte disk.”

“According to the manufacturer, there isn’t any difference between converted and factory-manufactured diskettes. Based on its research, the company found the magnetic media nearly identical. In fact, it contends that ‘There’s a greater variation between different manufacturers’ specifications for high-density disks than there is between a manufacturer’s double density and high-density 3.5-inch disks.’”

NOTEBOOK-SIZED PC (p. 92). “Toshiba has announced its first notebook-sized PC, the T1000SE. The 80C86-based unit has a 9.54-MHz processing speed and measures 12.4 inches wide, 10.2 inches deep, and 1.78 inches high.

“The T1000SE has 1 Mbyte of RAM and features a battery-backed RAM disk. The system is expandable to 3 Mbytes with optional memory cards. It incorporates an industry-standard 1.44-Mbyte 3.5-inch disk drive.”

PCB DESIGN (p. 95). “The Run electronic design system from Formula GmbH is an integrated program for the automated design of electronic circuits and printed circuit boards on the Apple Macintosh from draft to production.

“The design begins with the schematic capture, where the support of hierarchical design (top down and bottom up) enables developers to break down extensive projects into smaller modules. The interactive process is aided through procedures such as orthogonal rubber-banding during the dragging function; macro functions to move, copy, delete, and edit groups of objects; rotating and mirroring of components; support of bus structures; and on-line design rule checks.”

SUPERCOMPUTERS (p. 101). “... there are two major approaches to supercomputing in industry to date. The first approach, taken by Cray and many other supercomputer manufacturers, uses a few powerful processors. This approach extracts the maximum performance from the most current high-speed technologies, such as gallium arsenide (to be used in the Cray-3).

“In contrast, the second approach emphasizes using a large number of simple processors, such as bit-serial processors, to exploit massive data parallelism. The Connection Machine from Thinking Machines uses the second approach.”

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