

## JULY 1981

[www.computer.org/csdl/mags/co/1981/07/index.html](http://www.computer.org/csdl/mags/co/1981/07/index.html)

**ARCHITECTURE** (p. 8) “The direct-execution computer directly accepts and executes a high-level language program, with no need for multiple layers of conventional software. ... There is only one language: the high-level programming language, which is the machine language recognized by the bare hardware.”

**CHIPPED LISP** (p. 10) “We have designed and implemented Scheme-79, a single-chip microcomputer that directly interprets a typed-pointer variant of Scheme, a dialect of Lisp. To support this interpreter, the chip implements an automatic storage allocation system for heap-allocated data and an interrupt facility for user interrupt routines implemented in Scheme.”

**DIRECT EXECUTION** (p. 22) “Direct-execution computer architecture can make programming truly interactive, offer a means for a complete programming language definition, and provide a measure of programming language complexity.”

**EFFICIENCY** (p. 41) “Today I use a timesharing system that is five times faster than the one I used a decade ago; it also has eight times the primary memory and vastly more secondary storage. Yet, it supports about the same number of people, and response is worse. The reason for this anomaly is simply that our aspirations have grown much faster than technology has been able to satisfy them.”

**EARLY DIRECTNESS** (p. 49) “Reflection on the Symbol IIR computer a decade and a half after its inception suggests that we tried to incorporate too many advanced features about 15 years too soon. There is a strong temptation to measure the system by today’s standards, forgetting the state of computer technology in 1966 when the design was committed.”

**TIMESHARING** (p. 55) “The primary goal of the Symbol research project was to demonstrate with a full-scale working computer that a procedural general-purpose programming language and a large portion of a timeshared operating system could be implemented directly in hardware, resulting in a marked improvement in computational rates.”

**IN JAPAN** (p. 68) “This article, a survey of Japanese activities relating to HLL [High Level Language] machines, outlines their significant characteristics, emphasizing the intermediate-language architectures, hardware structures, software/firmware/hardware trade-offs, and evaluation data.”



**GRAPHIC COLOR** (p. 82) “The best use of color and design requires an experienced graphics designer. But even engineers and businessmen can improve the appearance of their information displays.”

**TUTORIAL** (p. 89) “Addressing electronic rather than mechanical design automation, this article focuses on today’s LSI/VLSI designs. Not limited to chips, these designs include all levels of computer packaging.”

**BUSINESS DESIGN** (pp. 102-103) “The specification of a problem in business data processing should explain precisely and in the most accessible form the formulas by which the set and order of output data are obtained from the given set of input data.”

**COMPUTER INSTRUCTION** (p. 111) “Brown University’s Department of Computer Science is adding 20 Apollo personal computers as part of a project for developing a computer science laboratory that will essentially bring an interactive computing environment to classroom instruction.”

**DATA FLOW** (p. 115) “Worldwide protectionist legislation is threatening the free flow of data across national boundaries. ... Seven European nations have already enacted data protection and privacy laws that restrict transborder data flow ... and similar statutes are under consideration in a dozen other countries.”

**THE FUTURE** (p. 117) “... four crucial changes for the microcomputer industry—the advent of micros that are so low-priced they successfully compete with typewriters and profoundly impact white-collar jobs, the separation of the hardware and software industries to achieve the true economics of volume, the rise of common software written for use on a wide variety of micros, and the production of industry-standard machines.”

## JULY 1997

[www.computer.org/csdl/mags/co/1997/07/index.html](http://www.computer.org/csdl/mags/co/1997/07/index.html)

**MARKETS** (p. 6) “Apple’s remarkable achievement had little to do with the technology per se. ... Rather, it had to do with the cultivation of a new market for shallow-learning-curve, graphical computing environments.”

**INTELLIGENCE** (p. 8) “To imagine that intelligence can be equated with skill at chess playing is to completely misunderstand what intelligence is. Chess playing is to logic and calculation what intelligence is to relationships and negotiation. Chess is abstract; intelligence is social.”

**DOMAIN NAMES** (p. 12) “The staggering increase in the number of Internet users has caused serious problems for the domain name system. The Internet community’s inability to agree on a solution could fragment the Internet and change the way we use it.”

**WEB DYNAMICS** (p. 15) “Since affordable 3D accelerator chips hit the market last year, many industry observers have said that interactive online 3D technology will soon dominate mainstream computing, particularly on the World Wide Web. They say the Web will change from its current static structure to a colorful, richly textured realm where virtual people and objects interact freely.”

**SOFTWARE LIABILITY** (p. 18) “Currently, software is sold as a commodity, like a microwave oven. Users who claim they bought defective software can sue vendors for damages beyond the price of the product. Software vendors have tried to protect themselves with shrinkwrap licenses designed to limit their liability.”

**SPEEDING DATA** (p. 23) “With data prefetching, memory systems call data into the cache before the processor needs it, thereby reducing memory-access latency. Using the most suitable techniques is critical to maximizing data prefetching’s effectiveness.”

**OBJECTIVES** (p. 31) “... we embarked on an effort to develop an integrated set of diagrammatic languages for object modeling, built around statecharts, and to construct a supporting tool that produces a fully executable model and allows automatic code synthesis.”

**WOODEN VISION** (p. 43) “To some extent, vision technology has existed in the [forest products] industry since the early 1980s. ... While this has been most useful in improving efficiency, it has done little to maximize the value of the resulting products. Much research, then, has gone into developing other technologies that can detect and plot features in the wood.”

**COMPUTER DRIVEN** (p. 49) “Despite its demands and complexity, computer vision offers a powerful way to sense the environment. It has been widely used for such vehicle-related tasks as road following, platooning (where an automatic vehicle follows a manually driven one), overtaking and passing slower vehicles, and automatic parking.”

**DISTRIBUTED MULTIMEDIA** (p. 56) “Our efforts focus on developing a framework for remotely manipulating microscopic objects. Two diverse applications demonstrate our framework’s usefulness: microdissection of DNA molecules and in-situ examination of crystal formation.”

**PERFORMANCE** (p. 71) “The Cache Visualization Tool’s (CVT’s) purpose is to address the second task, understanding the causes of poor cache performance. It is thus a complement to cache profilers.”

**MORE DOMAIN NAMES** (p. 104) “In recent months a growing number of organizations have come forward to support the plan ... whose main features include ... seven new generic top-level domains (gTLDs): .firm, .store, .web, .info, .arts, .rec, and .nom.”

**SYSTEM DEVELOPMENT** (p. 110) “A model-based approach to the definition and development of a system (whether it be a business organization, a process, or a product) can reduce development costs while matching the system to the marketplace and business strategy.”

**SOFTWARE REUSE** (p. 113) “Reuse can only succeed with some injection of formal methods. And the only chance for formal methods to succeed on a large scale is if they are applied to the development of reusable components.”

**LINKAGE** (p. 115) “Hypertext linking is often embraced uncritically by Web authors eager to explore the power of hypertext without first considering its effects on their readers’ comprehension.”

**SIMULATION** (p. 120) “Emergent behavior may be one of the principal driving factors in future businesses. Through a new kind of simulation called agent-based simulation, forward-thinking companies are discovering the laws of a new economy—the ‘friction-free economy.’”

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