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President’s Message [p. 5] “Our relations with our sister societies within AFIPS, in general, and with the ACM, in particular, are extremely good, but there is still room for greater cooperation that will translate, of necessity, into greater benefits for the profession.”

Introduction [p. 10] “This special issue attempts to bring together a body of work by leading researchers in computer architecture, image processing, pattern recognition, and pictorial database management. ... I hope that these articles will stimulate further investigations towards the cost-effective development of intelligent image analysis computers, which in turn will bring us closer to our ultimate goal: promoting better man–machine interactions in the era of real-time knowledge information processing.”

Cellularity [p. 14] “This article reviews the basic techniques of image processing using two-dimensional arrays of processors, or cellular arrays. It also discusses various extensions and generalizations of the cellular array concept and their possible implementations and applications.”

Biomedical Images [p. 22] “One study in particular, on which descriptions in this article are based, involves a joint effort by the University of Michigan’s human genetics and electrical and computer engineering departments and is supported by a grant from the National Cancer Institute. Basically, automated image analysis is being applied via sophisticated biochemical and computer techniques to derive an accurate estimate of the mutation rate for the human species.”

Pattern Recognition [p. 36] “Cellular logic computers, under development since the 1950s, are now in use for image processing in hundreds of laboratories worldwide. This survey of cellular logic computer architectures for pattern processing in image analysis concentrates on recent efforts and examines some newer architectures that combine logical and numerical computations.”

Pictorial Processing [p. 51] “With VLSI technology, we can integrate image processing, pattern recognition, and database management to produce a cost-effective computer system for advanced automation and machine intelligence.”

Parallel Data [p. 62] “The MPP, a single instruction, multiple data parallel computer with 16K processors being built for NASA by Goodyear Aerospace, can perform over six billion eight-bit adds and 1.8 billion eight-bit multiplies per second. Its SIMD architecture and immense computing power promise to make the MPP an extremely useful and exciting new tool for all types of pattern recognition and image processing applications.”

Workshop Report [p. 83] “The IC industry has so reduced silicon costs and IC development time that a silicon foundry can now provide two-week delivery. Yet the printed circuit board or the interconnection substrate may take six months to fully implement, and its reliability is not yet adequately addressed. This incompatibility and the increasing cost of interconnection were principal concerns at the spring workshop of the IEEE Computer Society’s Computer Packaging Committee.”

Classroom Computers [p. 86] “I propose that the [Computer] society become actively involved with computers in education. It would be a union made in heaven. Our educational community would greatly appreciate the society’s help with this new, exciting, and complicated educational tool. It would eliminate much duplication of effort and establish a smooth transition between the technical and non-technical aspects of computers in the classroom.”

Educational Computing [p. 112] “A new nonprofit organization dedicated to the use of computers for learning and other school-related tasks has been established. Called the National Association for Educational Computing, the organization is open to educators on all levels—preschool; elementary, middle, and high school; college and university—and commercial schools as well as to parents, school board members, students, and other interested individuals.”
Editor-In-Chief’s Message (p. 4) “Welcome to the 32nd edition of Computer, my first as Editor-in-Chief. I am proud to follow the performance of Ed Parrish, who implemented significant changes during his tenure. After years of research that showed members thought Computer was too theoretical and too detached from the needs of our industry members, Ed and others before him initiated evolutionary changes to Computer.”

President’s Message (p. 8) “We plan to focus on software engineering as a major theme this year. Last year, we adopted a statement of software engineering ethical principles. This year, we plan to finish work on identifying the body of knowledge that constitutes the basis for professionalism in this exciting field. We will begin work on a program of competency recognition for practitioners.”

Letter (p. 10) “I think computer professionals should take into account the social issues of our developments and not limit ourselves to ethical aspects. Let’s not underestimate the value of the humanities. The truth cannot be explained only with physics and math.”

Think Computing (p. 16) “While forms of voice and gesture recognition have been around for years, neural interface technology—which links the computer to the human nervous and muscular systems—is still in its infancy. Many projects are still in the lab, and only a few have matured enough for commercial release. The technology thus does not have much of a track record in the marketplace.”

Y2K and Skills Shortage (p. 19) “Critical issues such as Asian economic instability and corporate consolidation threaten the underpinnings of some IT organizations. However, the need for organizations to hurriedly cope with both the Y2K problem and the European Monetary Union’s currency conversion may offer many workers at least short-term job possibilities.”

Systems Research (p. 39) “Systems developers are facing a major discontinuity in the scale and nature of both applications and execution environments. Applications are changing from transforming data to directly interacting with humans: they will use hardware and data that span wide-area, even global, networks of resources and involve interactions among users as well. Even the architecture of individual processors is uncertain.”

Computing vs. Networking (p. 40) “On the one hand, the Web’s popularity and growth has been fueled largely by desktop applications consuming bandwidth-intensive images and video. On the other hand, thin-client computers ... are becoming more commonly used as edge-of-network devices, often connected by wireless technology.”

Moore’s Law Support (p. 43) “The Semiconductor Research Corp. is one of the few organizations to get fierce competitors like Intel, Motorola, and IBM to the same table, let alone cooperate. And it has also wrangled money—$37 million annually—from these companies and others. With this money, it funds future research to keep the engines of semiconductor production churning.”

Y2K Diary (p. 51) “As the year 2000 nears, we seek one high-profile technology consultant’s unique perspective on the consequences, compliance efforts, legends, and hype that surround the Y2K problem. This year, Computer will offer a Y2K consultant’s diary, highlighting the experiences of Howard Rubin ... a member of our Editorial Board.”

Wearable Devices (p. 57) “Current projects and industry efforts are attempting to define a new generation of wearables. Several conferences have already been held, in which attendees worldwide addressed the state of research and development, explored how wearable information appliances will let us manage information in new ways, and examined some of the obstacles to making wearables more widespread.”

Reading Online (p. 65) “The questions we need to ask, then, are ‘Which, if any, of paper’s qualities must reading appliances imitate to be successful?’ and ‘What are the advantages of reading online and how can computers help people read?’”

Standards (p. 129) “So it seems that although we are certainly developing object-oriented and distributed operating systems, all of their components are (at best) made out of ice cubes, which are always slowly melting and losing their identity. However, it seems that no matter how computer technology changes, computers continue to look a lot like the Posix Open System Reference Model.”

Future e-Commerce (p. 133) “Microsoft’s desire to integrate its Internet Explorer into Windows, for example, spawned a complex set of competitive and regulatory issues, exemplifying the inherent difficulties in defining and pricing a product in computer-mediated markets. In one sense, then, the new tools provided by computer and engineering sciences are now wreaking havoc with conventional economic theories.”

Selected CS articles and columns are also available for free at http://ComputingNow.computer.org.