AUGUST 1983

Special Message on CS+ACM (p. 7) “We seek a go/no-go decision on increased cooperation from the ACM Council and the IEEE Computer Society Governing Board by March 1984. Much data needs to be collected and comprehensive reports presented. We need to learn each other’s organization, the pressure points, the numerical data with respect to subscriptions, finances, advertising, and costs, as well as staff concerns and opportunities. Most important of all, we need to learn what our members think.”

Special Message (p. 8) “The conferences and tutorials area is a highly visible indicator of the necessity for adaptation within the [IEEE Computer Society]. The rapid growth in technology generates new conference topics annually. But the costs of advertising, publishing, and facilities keep driving our expense budgets upward. As we try to meet the demand for increased services, our overhead goes up.”

Introduction (p. 14) “The major challenge now facing the medical imaging community does not involve the process of imaging per se but rather the management of images once they have been acquired. Our goal with this special issue is to highlight ongoing developments in medical image management and perhaps stimulate specialists in local area networking and image database management to focus their attention on some of the problems yet to be resolved.”

Divide and Conquer (p. 19) “A thorough architectural approach is urgently required to decorrelate user requirements from technical and manufacturing boundary conditions and produce generic concepts for system modules and procedures down to the bottom system level. This article presents a general procedure for an adequate architectural approach and describes in detail concepts for solving the basic technical problems.”

Security Implementation (p. 36) “Agreement on certain communication protocols and data formats to be used for interconnecting components within digital image archiving systems will simplify the design and construction of individual hardware and software components and improve the ability of suppliers to tailor services to the needs of particular medical facilities. ... Agreement on a compatible bulk storage medium and the associated data formats will ensure permanence of the archived data beyond the expected lifetime of the equipment used in the original archive system.”

Layered Pictures (p. 39) “The layered approach to the design of computer networks has been developed in the contexts of distributed data processing and office automation. We have suggested an analogous approach for picture archiving and communication systems [PACSs]. By studying the first three layers (physical, picture link, picture network), several design equations appropriate to PACS have been obtained.”

The Digital Light Box (p. 51) “One of the most important components of a radiology information system is the [PACS] display console. For the radiologist, the PACS console will serve as the main interactive device for image interpretation and for consultation, replacing the film light box. ... This article represents preliminary thinking at the University of North Carolina regarding the specifications and performance requirements for a prototype PACS console.”

Direct Manipulation (p. 68) “Interactive systems that display a representation of the object of interest and permit rapid, incremental, reversible operations through physical actions rather than command syntax are attracting enthusiastic users. Immediate visibility of the results of operations and a layered or spiral approach to learning contribute to the attraction. Each of these features needs research to refine our understanding of its contributions and limitations. But even while such research is in progress, astute designers can explore this approach.”

Technological Property (p. 73) “In general, technical developments can be guarded through patent protection, through copyright protection, by using a trademark, or by keeping the development a secret. This article reviews the characteristics of each method, lists the relative advantages and disadvantages of each, and offers general guidelines for protecting software and firmware.”
Web Search (p. 4) "Searching for websites is one of the most common tasks performed on the Web. It is also one of the most frustrating. In fact, the situation has become a notorious symbol of the Web's growing size and lack of structure, as well as the inadequacy of Web search technologies. However, a number of Web companies and research organizations are taking a variety of approaches to try to solve this problem."

Wireless Data (p. 8) "The industry is preparing standards for a third generation of wireless technology designed to be faster and, therefore, more useful for data communications. And unlike current wireless technology—which is based on divergent standards, each of which are used in different parts of the world—proponents hope a set of different third-generation (3G) wireless standards will be interoperable throughout the world."

ExploreZip (p. 15) "Computer users throughout the world were attacked by malicious email attachments for the second time this year, demonstrating a new generation of viruses and worms designed to take advantage of network-based computing's vulnerabilities."

Responsibility (p. 16) "When is a software bug just a glitch, and when is it a design flaw for which the manufacturer is legally responsible? That question, of central importance to software users and the software industry, was the subject of a recent US lawsuit and is the focus of proposed legislation."

Y2K News (p. 18) "If money makes the world go 'round, the Earth most likely won't stop spinning next January. That's because a global exercise has determined that Y2K-related upgrades to international payment and settlement systems should work as planned."

Systems Research (p. 27) "We need to rethink the types of problems we should be addressing in terms of how we exploit parallelism within processors and how we build memory hierarchies. We need to move toward a more integrated approach that doesn't treat hardware and software as separate entities. And we need to look for new focuses for research."

Algorithms (p. 38) "Traditionally, algorithms for data analysis assume that the input data contains relatively few records. Current databases, however, are much too large to be held in main memory. Retrieving data from disk is markedly slower than accessing data in RAM. Thus, to be efficient, the data-mining techniques applied to very large databases must be highly scalable."

Ad Hoc Questions (p. 46) "Together, constraint-based and multidimensional techniques can provide a more ad hoc, query-driven process that exploits the semantics of data more effectively than current stand-alone data-mining systems."

Interactive Queries (p. 51) "In the Control (Continuous Output and Navigation Technology with Refinement Online) project at Berkeley, we are working with collaborators at IBM, Informix, and elsewhere to explore ways to improve human–computer interaction during data analysis. The Control project's goal is to develop interactive, intuitive techniques for analyzing massive data sets."

Linked Answers (p. 60) "We began development of the Clever system three years ago. Clever is a search engine that analyzes hyperlinks to uncover two types of pages: authorities ... and hubs ... In this article, we outline the thinking that went into Clever's design, report briefly on a study that compared Clever's performance to that of Yahoo and AltaVista, and examine how our system is being extended and updated."

Clustered Answers (p. 68) "Chameleon is a new agglomerative hierarchical clustering algorithm that overcomes the limitations of existing clustering algorithms."

What Else? (p. 93) "To compete with Microsoft's WebTV set-top box, Planetweb and Paradise Innovations recently created AiTV, an Internet appliance that includes an electronic TV programming guide, Web browsing, email, Internet relay chat, TV tuner, picture-in-picture, six-channel simultaneous viewing, and an external video-in connector for future upgrades to Internet video conferencing."

Cryptography (p. 94) "In a very real and practical sense, there is no proven cryptography. And this is not just an issue of mathematical proof: the cryptographic profession simply can't tell whether or not a cipher really is protecting data."

System-on-Chip (p. 96) "... current hardware and software development methods are neither sufficient nor appropriate for SoC [System-on-Chip] design. Instead, the industry needs a synergistic approach to SoC deployment that integrates a fixed-hardware platform with innovative application development methodology."

Immortality? (p. 104) "Mainframes are here to stay, because Internet computing demands levels of reliability, security, and raw processing power that they alone can deliver."