

## AUGUST 1981

[www.computer.org/csdl/mags/co/1981/08/index.html](http://www.computer.org/csdl/mags/co/1981/08/index.html)

**MOVIES** (p. 7) "Computer analysis of time-varying images, or CATVI, implies the processing of a time-sequence of images in order to extract some property which changes in time. This special issue of *Computer* is intended to present the reader with a tutorial review of this new and challenging area of computer application."

**SCENE ANALYSIS** (p. 12) "In this article, we discuss various methods to extract relevant information using low-level processes in machine perception of motion and then apply difference pictures in a system for dynamic scene analysis."

**SCENE STRUCTURE** (p. 20) "This article surveys several lower-level approaches to the analysis of time-varying imagery, including two classes of techniques for estimating motion across an image. ... Discussion of these techniques is followed by an outline of intermediate-level methods for inferring the three-dimensional structure of the scene from these differences."

**MOTION ANALYSIS** (p. 27) "There are ... promising approaches in the development of machine vision capabilities that concentrate on careful evaluation of changes in the visually perceptible environment—changes caused by a moving observer, a moving object, or both. These approaches include the decomposition of observed changes into manageable computational subproblems and algorithms for the solution of these subproblems."

**ONE-EYED ANALYSIS** (p. 40) "In this article, we concentrate on the use of a single, fixed camera to interpret the movement of objects in space, and we present a new method for interpreting the motion of rigid and jointed objects."

**OBJECT TRACKING** (p. 50) "The ability to convert video images into useful tracking information has led to modified optical instruments that deliver data faster and at lower cost than conventional systems. The result has been the development of new tracking systems for military and industrial applications."

**BIOLOGICAL IMITATION** (p. 57) "The use of motion by biological systems—in particular the human visual system—demonstrates the feasibility of carrying out certain information processing tasks and helps to establish specific goals for computer analysis of time-varying imagery."

**DATA STRUCTURE** (p. 72) "Data organization facilities are a major part of videotex system design. In this article, we first summarize the facilities for interrelating pages of

information within the major current videotex systems. ... We then describe the data structure requirements imposed by additional videotex facilities. ..."

**TUTORIAL** (p. 83) "The digital electronics industry is engaged in a revolution, making it possible to construct sophisticated circuits that perform very complex functions in very small packages. ... As a result, modular building blocks for electronic systems are becoming more functional, requiring the system designer to plan system functions as functional blocks rather than as discrete devices or other elementary blocks."

**SIMPLE DISPLAY** (p. 102) "We would like to suggest a seven-segment representation of the alphabet, numerals, and normally used special symbols."

**OFFICE SYSTEM** (p. 104) "Nixdorf Computer Corporation's Model 8845 integrated office system is a multifunction computer system that supports data entry, word processing, and business data processing by implementing multiple capabilities in its operating system."

**RESOURCE EVALUATION** (p. 120) "At first, Landsat imagery was solely a service of the US Department of the Interior. However, the time delay between ordering and receiving maps made the service impractical for many applications. For example, a country requesting maps to monitor Arctic Ocean ice movement to determine safe routes for its ships needs updated maps daily. In such time-critical applications, a local self-contained ground station is necessary."

**VIDEOTEX** (p. 124) "British Telecom has launched Prestel as a world videotex service in The Netherlands, Sweden, West Germany, Switzerland, Australia, and Hong Kong, marking the end of the market trial. According to last month's announcement by British Videotex and Teletext, Prestel will be launched in the US later this year. Since the fall of 1979, Prestel has been a commercially operating service in the UK, providing access through tv sets and telephone lines to a worldwide computerized data base."



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**OBJECT OCCIDENTATION** (p. 8) “Objects have no part in software; they are real-world concepts and artifacts that we model with software. Computer programs are ‘object-oriented’ only to the extent that they faithfully model real-world objects. Object-oriented programming then, is an attempt to model real-world objects by designing programs whose logic, structure, and behavior model the logic, structure, and behavior of real-world concepts and artifacts.”

**SEVEN APHORISMS** (p. 9) “Software development involves people with different skills, attitudes, backgrounds, and education. So difficult communication may hinder the development process more than any technological issue. An old-time strategy to foster new ideas is the use of metaphors or aphorisms—short, concise sayings.”

**DIGITAL LIBRARY** (p. 10) “The IEEE Computer Society is among the first scientific and engineering publishers in the world to offer electronic subscriptions to its periodicals via the World Wide Web. The Computer Society Digital Library is now available for member testing at <http://computer.org>. At the site, subscribers can use a standard Web browser to view or search the society’s magazines and transactions published since 1995.”

**SPEECH RECOGNITION** (p. 14) “Researchers have recently developed interfaces that let users input material with normal, rather than unnaturally slow and careful, speech.”

**PATENT INFRINGEMENT** (p. 22) “Three major microprocessor vendors have sued each other, beginning a battle that may extend beyond the courtroom into the marketplace.”

**COOKIES** (p. 24) “A proposal by the Internet Engineering Task Force (IETF) has sparked a battle over cookie technology.”

**EASY PCs** (p. 25) “Efforts to make PCs easier to use could also permit the integration of computer, telecommunications, and audio and video devices. This would remake the home electronics industry.”

**A CASE STUDY** (p. 29) “Reengineering large and complex software systems is often very costly. Reflexion models let software engineers begin with a structural high-level model that they can selectively refine to rapidly gain task-specific knowledge about the source code.”

**QUALITY** (p. 38) “Poor information quality can create chaos. Unless its root cause is diagnosed, efforts to address it are

akin to patching potholes. This article describes 10 key causes, warning signs, and typical patches.”

**SOFTWARE ARCHITECTURE** (p. 49) “Sharing a common software architecture across a product line brings a core set of knowledge and assets to the development process. Product-line architecture not only reduces the complexity and cost of developing and maintaining code, but also streamlines the production of documentation, training materials, and product literature.”

**GENETIC NETWORKS** (p. 56) “We present a total solution to mesh network design using a genetic algorithm approach. Not only does our method optimize network topology, it also optimizes routing and capacity assignment.”

**OBJECT STRUCTURES** (p. 62) “Objects are natural building blocks for modular, logical systems, but conventional object models cannot flexibly and accurately represent the temporal behavior of complex, dynamic systems. The real-time object structure described in this article supports the uniform, integrated design of computer systems and their application environment simulators.”

**COMPONENT REUSE** (p. 93) “Design for reuse means that a component from a current project should require a minimum of modification for use in a future project. Ideally, reuse should require no modifications, but this is rarely the case. There is, however, a path that takes us as near as possible to this ideal.”

**GOOD ENOUGH QUALITY** (p. 98) “The big new force that is propelling the Good Enough idea is the explosion of market-driven software. With a passion roughly proportional to the price of Microsoft stock, companies are looking for the shortest path to better software, faster, and cheaper. They are willing to take risks, and they have little patience for the traditional moralistic arguments in favor of so-called good practices.”

**GRAPHIC NETWORKING** (p. 99) “Although the networking and computer graphics fields are considered to be distinct disciplines, they must begin to converge in order to support collaborative exploration and information visualization on the Internet and the World Wide Web.”

**SYSTEMS ENGINEERING** (p. 104) “Systems engineering makes sense, but its financial benefits are often hard to pin down. Although many high-cost, project runaways stem from mistakes in requirements definition, accountants and managers continue to balk at investing in cost avoidance, risk reduction, and customer understanding. ... Put another way, systems engineers want to avoid risk (future costs), while accountants want to save money today.”