Introduction (p. 11) “Driven by requirements for faster production cycles and better quality products, CAD/CAM has emerged as a key technology. … This special issue presents … six articles from the US, France, and Japan, which span diverse fields from factory automation and cartographic applications to their theoretical background.”

Interactive Simulation (p. 14) “Conceptual design, the most important and difficult part of the design process, is normally considered to be beyond the scope of conventional CAD systems. Our system overcomes this difficulty by the use of surface definition, shading, and texture simulation techniques to present realistic models.”

Simulated Aviation (p. 25) “We devised at Paris VII University a general command system [called Geomatic] for the simulation and display of 3D relief maps. … It can be adapted and inserted as a software tool in a wide range of operations …; it also provides the user an opportunity for genuine interaction with the system in the choice and display of representations.”

CAD and Language (p. 39) “We have proposed a new method for generating 3D images of solid objects from projections by using natural language. This approach simplifies input processes and makes it possible to deal with abbreviations, thus facilitating communication between designers. … We have discussed how natural language is used for top-down construction, and how derived meaning is applied to 2D geometrical structures. The overall design configuration has been completed, and a preliminary performance analysis has shown the viability of this approach.”

Solid Decomposition (p. 44) “Because of their many possible uses, geometric models must be application independent as well as informationally complete. This article examines four data structure conversions using two types of internal representation: a CSG [constructive solid geometry] tree and a boundary representation graph.”

Factory Automation I (p. 50) “Aiming at complete unmanned production, we have been automating the Takasaki plant through a number of stages: the ‘point’ stage for automation of a single product, the ‘line’ stage for automation of subassembly lines for various products, and the ‘plane’ stage for automation of the entire factory floor. We have now developed and implemented an automatic production line for 18-pin and 24-pin dot impact printers, and we believe this line will lead to our target of total plant automation.”

Factory Automation II (p. 73) “Hitachi’s total factory automation systems are based on distributed workstations adaptable enough for use in a variety of industries. Key components are the flexible manufacturing cell controller and a process local area network.”

Speech Recognition (p. 88) “Voice Recognizer allows customers to use voice data entry to replace or augment existing manual or automated data entry procedures, including keypunch input, keyboard terminals, and barcode and laser scanners. It might be used simultaneously with keyboard input terminals, without software changes.”

Copyright (p. 108) “Copyright laws protecting computer software and hardware will be tested for the first time in a federal court case stemming from the importation of imitation Apple computers.”

Letter 1 (p. 4) “I note that my student daughters and their friends seem to be part of a widespread youth trend to use fairly cheap phones (often ‘pay as you go’) and to employ the text messaging facility as a form of email, usually using abbreviated forms of spelling.”

Letter 2 (p. 6) “To me, the most important lesson learned from this work is that the average differences from one language to another are quite often much smaller than typical variations from one programmer to the next within one language. People matter most.”
Internet Security 1 (p. 13) “One key proposal, the public-key infrastructure (PKI), provides a set of technologies that relies on encryption and digital certificates—message attachments that authenticate a sender’s identity and provide encryption keys. One of PKI’s chief values is that it enables the centralized creation, distribution, tracking, and revocation of keys.”

Mobile Malice (p. 16) “Now, malicious-code writers apparently realize that the relatively new intelligent-mobile technology has security weaknesses. Liberty Crack thus might serve as a wake-up call for the handheld-device and network-security industries.”

Internet Security 2 (p. 20) “After four years of work and an international cryptic competition, the US Department of Commerce’s NIST has selected an algorithm to serve as the Advanced Encryption Standard (AES).”

Haptic Mice (p. 23) “Improvements in technology have added sound, 3D images, and video to the web, directed to our senses of hearing and sight. And now, Logitech is adding something for our sense of touch with the iFeel Mouse: Man haptic mouse.”

Autobiography (p. 26) “On 1 June 1982, I [T. Michael Elliott] moved from Arkansas to Washington, DC, to become the Computer Society’s first executive director—the CEO title was added later. Indeed, my diverse past experience did not really prepare me for this extraordinary job, and over the next 18 years, a good deal had to be learned (or invented) on the fly, sometimes painfully.”

Software Reliability (p. 36) “Software reliability theory is one of industry’s seminal approaches for predicting the likelihood of software field failures. Unfortunately, the assumptions that software reliability measurement models make do not address the complexities of most software, resulting in far less adoption of theory into practice than is possible.”

Dealing with Risk (p. 43) “For all practical purposes, international boundaries have been eliminated in cyberspace. The growth of IT and almost universal access to computers have enabled hackers and would-be terrorists to attack information systems and critical infrastructures worldwide.”

Vulnerability (p. 52) “Here we propose a lifecycle model that describes the states a vulnerability can enter during its lifetime. We then use our vulnerability model to present a case study analysis of specific computer vulnerabilities.”

Authenticity (p. 60) “Our group has created and deployed an authentication and authorization infrastructure that meets these [above] requirements: the Grid Security Infrastructure. GSI offers secure single sign-ons and preserves site control over access policies and local security. It provides its own versions of common applications, such as FTP and remote login, and a programming interface for creating secure applications.”

Locating Data (p. 74) “We propose another, more incremental approach of cache-conscious data layout, which uses techniques such as clustering, coloring, and compression to enhance data locality by placing structure elements more carefully in the cache.”

Mobile Commerce (p. 148) “According to independent research findings, m-commerce—the conduct of business and services over portable, wireless devices—will soon be a dominant force in business and society.”

Small Interfacing (p. 152) “Since work first began in 1981 on an I/O technology that was later named the Small Computer System Interface, this set of standard electronic interfaces has evolved to keep pace with a runaway storage industry that demands more performance, manageability, flexibility, and features for high-end desktop connectivity each year.”

Games’ Influence (p. 154) “Regardless of their differences, each [computer] game type facilitates the development of visual thinking concepts. Thinking visually—in three dimensions—beneﬁts the sense of wonder and user interaction connected with the application of scientiﬁc and information visualization technologies.”

Educating Programmers (p. 160) “Although written nearly a year ago, this column quite neatly follows last month’s, in which I [Neville Holmes] charged that misguided attitudes to programming restrict the layout of program code too much. This month, I claim that programmers are not educated well enough to code really good programs.”