The IEEE Computer Society offers a lineup of 12 peer-reviewed technical magazines that cover cutting-edge topics in computing including scientific applications, design and test, security, Internet computing, machine intelligence, digital graphics, and computer history. Select articles from recent issues of Computer Society magazines are highlighted below.

**Software**

Cloud computing’s large-scale, dynamic, and heterogeneous nature poses numerous security challenges. But the cloud’s main challenge is to provide a robust authorization mechanism that incorporates multitenancy and virtualization aspects of resources. The authors of “A Distributed Access Control Architecture for Cloud Computing” in the March/April issue of *Software* present a distributed architecture that incorporates principles from security management and software engineering and propose key requirements and a design model for the architecture.

**Intelligent Systems**

Sharing research data is increasingly difficult in the context of social media. Increasing restrictions from social media sites create an environment where users can’t freely share data, so scientific claims can’t be verified. “Opening Doors to Sharing Social Media Data” in the January/February issue of *IS* presents a novel approach to data sharing that doesn’t require explicitly publishing a dataset. In this framework, researchers share the parameters they used to crawl the dataset along with the code used to collect the data, allowing readers to reassemble the dataset at a later time. The authors aim to start a conversation about data-sharing approaches that the research community can embrace.

**Computer Graphics**

The March/April issue of *CG&A*, introduced by guest editors Pierre Poulin (University of Montreal) and Holly Rushmeier (Yale University), features four articles on material appearance, which is important in many computer graphics applications. Two articles on general methods consider two distinct issues: measurement and efficient rendering. The other articles examine two extremely different types of specialized materials, illustrating the variety of application requirements and constraints.

In “Velo: A Knowledge-Management Framework for Modeling and Simulation,” a team of authors from Pacific Northwest National Laboratory describes how the system leverages, integrates, and extends Web-based open source collaborative and data-management technologies to create a scalable and flexible core platform tailored to specific scientific fields. Velo is a reusable, domain-independent knowledge-management infrastructure for modeling and simulation. As the examples in *CiSE*’s March/April issue describe, researchers have used Velo in both the carbon sequestration and climate modeling domains.

Authentication has been a cornerstone of computer security since ancient times. It’s an area deserving even more attention today. Better authentication will make the Internet, secured workplaces, and connected homes safer and more convenient for all. In “Authentication—Are We Doing Well Enough?,” guest editors Markus Jakobsson, Richard Chow, and Jesus Molina introduce the January/February *S&P* special issue on authentication. The issue includes a roundtable discussion with leaders in
authentication technologies and three articles providing insight into the authentication landscape.

In “Ubicomp Systems at 20: Progress, Opportunities, and Challenges,” in the January-March issue of Pervasive Computing, Ramon Caceres of AT&T Labs and Adrian Friday of Lancaster University look back at 20 years of ubiquitous computing research. Their retrospective identifies opportunities for leveraging utility computing and the Internet of Things to expand the ubicomp infrastructure and discusses remaining challenges to making these systems become ubiquitous.

The theme of Internet Computing’s March/April special issue is context-aware computing with the subtitle, “Beyond Search and Location-Based Services.” Guest editor Pankaj Mehra (Whodini) begins his introduction by describing context as “the unstated actor in human communications, actions, and situations.” Three feature articles show how context awareness is evolving toward Web and mobile services that can address the power of context to support automated reasoning through inference.

In “The Tofu Interconnect,” one of three theme articles in Micro’s January/February Hot Interconnects issue, Japanese researchers describe tradeoffs faced during the Torus Fusion (Tofu) design. Torus fusion is a six-dimensional mesh/torus topology that achieves highly scalable and fault-tolerant interconnection networks for large-scale high-performance computer systems that can exceed 10 Petaflops. Preliminary evaluations show the effectiveness of the Tofu technologies in supporting multiple topology-aware applications and providing a migration path to future exascale system applications.

“Current Developments and Future Trends in Audio Authentication” is one of five feature articles in Multimedia’s January-March theme issue on Multimedia in Forensics, Security, and Intelligence. Authors Swati Gupta of Intel and Seongho Cho and C.-C. Jay Kuo of the University of Southern California review recent developments in detecting forgeries of audio digital files and describe several new applications these advancements may make possible, including a complete authentication system on the Internet that could be used to curb piracy.

The March/April issue of IT Pro features a special theme on NASA’s contributions to IT, introduced by three of the magazine’s editors: Tom Costello (UpStreme), Phillip A. LaPlante (Pennsylvania State University), and Jeffrey Voas (US National Institute of Standards and Technology). They present four feature articles and a personal “Farewell to the Space Shuttle” to celebrate the beneficial technologies that have emerged in computing and information processing through NASA’s space program since its founding more than 60 years ago.

Integrated circuits became the primary components for computer logic, main memory, and I/O systems in the 1960s. The January-March issue of Annals features six articles about the emergence of microcircuitry in the preceding decade. The first is an overview by guest editors David C. Brock of the Chemical Heritage Foundation and David A. Laws of the Computer History Museum, followed by articles describing activities at Fairchild Semiconductor, Texas Instruments, RCA, Westinghouse, and Japan’s MITI Electrotechnical Laboratory. Two more articles accepted for the issue are available as preprints in the Computer Society Digital Library.