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

**Software**

Software’s November/December theme is technical debt, a term coined by Ward Cunningham in 1992 to describe “not quite right code which we postpone making right.” In their introduction, “Technical Debt: From Metaphor to Theory and Practice,” guest editors Philippe Kruchten of the University of British Columbia, Vancouver, and Robert L. Nord and Ipek Ozkaya of the Software Engineering Institute argue that the term has become diluted over the years. They propose some structures to establish a theoretical foundation for defining and applying technical debt to software development and introduce four feature articles addressing various aspects of the concept.

**Intelligent Systems**

In “Using Social Media to Enhance Emergency Situation Awareness,” from IS’s November/December issue, researchers from CSIRO ICT Centre and Palantir Technologies describe a system using natural language processing and data mining techniques to extract situation awareness information from Twitter messages generated during various disasters and crises. This type of on-the-ground information can help establish timely situation awareness and response times for a range of crisis types.

**SECURITY & PRIVACY**

S&P’s November/December special issue, titled “Lost Treasures,” is guest edited by Dan Thomsen of Smart Information Flow Technologies and Jeremy Epstein and Peter G. Neumann of SRI International. They present five articles focused on key moments in the history of secure systems—not for posterity’s sake, but to highlight shifts in thinking that new security engineers must experience to build on the past rather than reinventing it as the latest fad.

**Internet Computing**

In their introduction to IC’s November/December special issue on future Internet protocols, editorial board members and guest editors Charles Petrie and Oliver Spatscheck review some false predictions of the Internet’s demise as well as real challenges such as the exhaustion of IPv4’s address space. “Given how long it took to adopt IPv6,” they write, “it’s clearly not too early to start considering the issues and alternatives.” They introduce three articles that address the challenges of scalability in the routing domain, spam in IPv6, and design principles for evolving the transport protocol architecture.

**IT Pro**

IT Pro features two articles on social computing in its November/December issue. In “E-Government Meets Social Media: Realities and Risks,” Rhoda C. Joseph of Pennsylvania State University analyzes 100 US e-government websites and relevant social media accounts to assess how state government portals and state governors are using social media. In “Internet Diffusion in China: Economic and Social Implications,” Linda S.L. Lai and Wai-Ming To of the Macao Polytechnic Institute explore the IT implications of the expected surge in e-commerce applications over the next three years.

**Performance and total cost of ownership (TCO) are key optimization metrics in large-scale datacenters, and servers present a prime optimization target in the quest for more efficient operations. “Optimizing Data-Center TCO with Scale-Out Processors” is a Micro September/October issue.”
special issue article on energy-aware computing. European researchers describe a methodology they developed for designing performance-density-optimal server chips called scale-out-processors (SOPs). They present evaluation results showing the performance and TCO advantages of SOPs in fully leveraging existing software stacks in a nondisruptive manner.

“Presence” is the sensation of being in a virtual place, operationalized by responding to the virtual environment as if it were real. “Visual Realism Enhances Realistic Response in an Immersive Virtual Environment—Part 2,” a feature article in CG&A’s November/December issue, extends an experiment reported earlier in CG&A that compared presence in a virtual environment illuminated by either ray casting or real-time ray tracing. Part 1 concluded that ray tracing was the more effective technique. However, ray casting doesn’t produce dynamic changes such as shadows and reflections, so Part 2 isolates the relative contributions of realistic lighting and dynamic effects to presence.

“The Computational Materials Repository” in CiSE’s November/December issue describes an eponymous software infrastructure for use in addressing the challenges of calculations based on quantum physics in the design of new materials. The CMR implements a modular framework in Python that provides tools for collecting, storing, grouping, searching, retrieving, and analyzing the huge amounts of data that modern electronic-structure simulators generate. The result of a collaboration under the Quantum Materials Informatics Project (www.qmip.org), the CMR is available under an open source license to any group or individual who might find it useful.

Surveillance systems record and archive multiple streams of video 24 hours a day, every day. In “Posterity Logging of Face Imagery for Video Surveillance” from Multimedia’s October-December issue, Italian academic and industry researchers report their work developing a robust face-logging system that associates an “identity” in the form of a high-resolution face image with each individual entering a surveillance area. Evaluation results show the system outperforming other face-logging methods described in the literature.

In PVoC’s October-December Smartphones department, researchers from Microsoft, the University of California at Santa Barbara, and Purdue University present “Swordfight: Exploring Phone-to-Phone Motion Games.” The authors describe this novel class of games, drawing inspiration from the Nintendo Wii and Xbox Kinect, and illustrate the challenges of utilizing localization techniques and existing hardware to facilitate a new class of mobile-to-mobile interaction.

Annals’ October-December issue is the fifth in a special series on software history edited by Burton Grad and Luanne Johnson, cofounders of the Computer History Museum’s Software Industry Special Interest Group. “Relational Database Management Systems: The Formative Years” features six articles: an overview, two histories by eminent computer historians, and three recollections by industry pioneers about the companies they worked for—IBM, Oracle, and Ingres. Additionally, the Anecdotes department features “The Early History of SQL” by Donald Chamberlin, who received ACM’s SIGMOD Innovation Award for his work at IBM on SQL and System R.

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