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.

With the explosive rise in data and information in current research areas, there’s an ever-increasing need for computational science programs that prepare the current and next generation of researchers, educators, and practitioners to effectively utilize digital services in support of science, technology, engineering, and mathematics. In “Advancing Computational Science Education through XSEDE,” from CiSE’s January/February 2013 issue, Steven I. Gordon from the Ohio Supercomputer Center discusses how the Extreme Science and Engineering Discovery Environment (XSEDE) collection of integrated advanced digital resources and services helps facilitate the founding and expansion of such programs.

To bring the advantages of network-centric operations to coalition military, peacekeeping, and humanitarian efforts, we must significantly improve our ability to quickly share critical information while still satisfying security requirements. In “Knowledge Systems for Coalition Operations,” from IS’s January/February 2013 issue, researchers from the Florida Institute for Human and Machine Cognition and the US Air Force Research Laboratory explore a services-based approach to such information management.

Sophisticated metadata and content semantics are essential for retrieving multimedia resources, but multimedia resources are typically indexed by using divergent standards. An article in MultiMedia’s April-June 2013 issue—“Unified Access to Media Metadata on the Web”—describes the work of the World Wide Web Consortium (W3C) and its Media Annotation Working Group (MAWG) to address the interoperability problem between different metadata formats. MAWG’s Ontology for Media Resources 1.0, an official W3C recommendation, provides a set of properties, agnostic to any representation, specifying the basic metadata that media resources need and the syntactic and semantic links between their values. It’s accompanied by the API for Media Resources 1.0, defining uniform access to the ontology elements.

Soon, many new users will wear Google Glass as part of the Glass Explorers Program. However, to get to this point, Google first hired academics to wear such devices as part of their everyday lives. In “Project Glass: An Extension of the Self,” from Pervasive’s April-June 2013 Wearables department, Thad Starner—a technical lead/manager on Google’s Project Glass and a Georgia Tech professor—discusses why he thinks wearable interfaces will help users pay attention to the real world as opposed to re-treating from it.
In “Running AMOOC,” from IC’s May/June 2013 issue, Internet pioneer and Google evangelist Vint Cerf uses his Backspace column to review the open questions, economics, and educational potential of massive online open courses (MOOCs). “Although all such new notions are subject to hyperbolic anticipation,” he concludes, “it seems to me worthwhile to strongly encourage exploration of these ideas in the expectation that the benefits of advanced education might become available, at reasonable cost, to a much larger audience than has heretofore been able to participate.”

When should software providers maintain their traditional licensing model versus offering software as a service, and which SaaS revenue model is more profitable for them: rental or pay per use? From the customer’s viewpoint, how do you trade off traditional licensing, renting, and paying per use? IT Pro’s May/June 2013 issue includes a feature article, “Software-as-a-Service Revenue Models,” in which author Arto Ojala of Finland’s University of Jyväskylä reviews three cloud computing revenue models. In particular, he focuses on the advantages and disadvantages of each model—for both SaaS providers and their customers—and identifies the most effective model for particular situations.

In its May/June 2013 issue, Micro presents its 10th annual edition of “Top Picks from Computer Architecture Conferences.” Guest editors Babek Falsafi of EPFL and Gabriel H. Loh of Advanced Micro Devices introduce 11 articles culled from an elaborate review of 78 submissions from the computer architecture conferences that occurred in 2012. The conference papers, revised for this Top Picks issue, represent the current state of leading research in computer architecture. The guest editors group the articles in three categories: energy and efficiency, safety and security, and parallelism and memory.

Almost all fields of study and practice sooner or later will confront the big data problem. CG&A’s July/August 2013 issue considers how big data visualization has proven effective for not only presenting essential information in vast amounts of data but also for driving complex analyses. Big data analytics and discovery present new research opportunities to the computer graphics and visualization community. This special issue highlights the latest advancements in solving the big data problem through visual means, with four articles on new techniques, systems, or applications.

Software’s July/August 2013 special issue considers the benefits (and drawbacks) of software analytics. Big data is an area of explosive growth, and to handle this data, many practitioners and researchers have turned to analytics—that is, the use of analysis, data, and systematic reasoning for making decisions. Analytics can provide insights including actionable advice on how to improve software projects. Due to the volume of data, finding these insights typically requires some degree of automation, usually combined with human involvement.

Is privacy possible when everyone’s interests are visible via their postings—and those of their friends—on such online social networks as Facebook and Twitter? S&P’s May/June 2013 special issue on Privacy and Online Social Networks explores several aspects of online privacy, including facial recognition technology, job searches, and tweeting, as well as how to build an online social network that protects user privacy.