Computer Highlights Society Magazines

The IEEE Computer Society’s lineup of 13 peer-reviewed technical magazines covers cutting-edge topics in computing, including scientific applications, Internet computing, machine intelligence, pervasive computing, security and privacy, digital graphics, cloud computing, and computer history. Here, we highlight recent issues of other Computer Society magazines.

**Software**

A relatively new approach, continuous delivery involves engineering teams producing valuable software in short cycles to ensure that it can be reliably released at any time. In “Continuous Delivery: Huge Benefits, but Challenges Too,” from IEEE Software’s March/April 2015 issue, Lianping Chen of Irish gambling bookmaker Paddy Power describes why his company adopted continuous delivery, the enhanced capabilities that resulted, and the challenges still to be met.

**Internet Computing**

Networking researchers are considering ways to enable IP-based communication among embedded devices, the control community is devising loops to remedy the woes of wireless communications, and middleware research is tackling scalability problems—efforts that will ultimately provide the building blocks toward a global Internet of Things. How to combine such building blocks in the design, implementation, and validation of Internet of Things software, however, is still unclear. The guest editors of IEEE Internet Computing’s March/April 2015 special issue focus on “Building Software for the Internet of Things.”

**Heterogeneous Computing on Workflows for Biomolecular Simulation and Analysis,” from CiSE’s March/April 2015 issue, distinct aspects of typical biomolecular simulation workflows are facilitated by access to more heterogeneous computational resources.

**Security & Privacy**

For 35 years, the IEEE Symposium on Security and Privacy has provided a venue for leading researchers in security and privacy to share ideas. The March/April 2015 issue of IEEE S&P brings together papers presented at the most recent symposium on topics including system security vulnerabilities and challenges in large-scale untrusted systems.

**Cloud Computing**

Powered by large datacenters comprising numerous virtualized server instances, high-bandwidth networks, and supporting systems such as cooling and power supplies, cloud computing already constitutes more than one percent of the world’s electricity use. In “Recent Trends in Energy-Efficient Cloud Computing,” from IEEE Cloud Computing’s January/February 2015 issue, Toni Mastelic and Ivona Brandic of the Vienna University of Technology survey current approaches for cloud processing energy efficiency and consider future directions in the field.

**Computer Graphics**

The one-size-fits-all strategy that allowed manufacturers to exploit economies of scale has become a disadvantage as customers demand more personalized products. Many industry leaders have thus recognized the need to reinvent the way their factories operate, sparking the Industrie 4.0 and Industrial Internet initiatives, both based on cyber-physical systems and the Internet of Things. In the March/April 2015 issue of IEEE CGA, guest editor André Stork of the Technische Universität Darmstadt, Germany, presents articles focused on “Visual Computing Challenges of Advanced Manufacturing and Industrie 4.0.”
The field of **predictive analytics** uses statistical or machine-learning methods to make predictions about future or unknown outcomes. The data mining community has conducted research on predictive modeling techniques for several decades. But as these techniques have become increasingly pervasive in real-world settings and as data has grown “big,” predictive analytics must now run faster and more accurately in real time, using larger heterogeneous information sources of varying data quality and complexity. The March/April 2015 special issue of *IEEE Intelligent Systems* suggests some exciting emerging possibilities in this expanding field.

Sonification is especially suited to the preliminary exploration of complex, dynamic, multidimensional datasets, especially the large and multivariate time-based datasets that appear in climate science. In “Designing an Interactive Audio Interface for Climate Science,” from *IEEE Multimedia’s* January–March 2015 issue, Visda Goudarzi of the University of Music and Performing Arts in Graz, Austria, describes sonification designs that explore conceptual links between climate science and sound.

Begun in 1969, a **20-year series of ARPANET maps** produced by research technology firm Bolt Beranek and Newman signifies the earliest efforts to represent a central piece of the modern Internet. As Bradley Fidler and Morgan Currie of UCLA recount in “The Production and Interpretation of ARPANET Maps,” from *IEEE Annals*’ January–March 2015 issue, the project—though initially met with skepticism—is regarded as a major success in computer networking.

To achieve their full potential, pervasive computing technologies must allow authorized users easy access to data and services while making access extremely difficult for unauthorized users with bad intentions. In the January–March 2015 special issue of *IEEE Pervasive Computing*, guest editors from Google, Carnegie Mellon University, and Università della Svizzera Italiana present articles that consider **privacy and security** from the perspective of pervasive computing.

An ISO/IEEE 11073 personal health device system enables legacy healthcare devices to transmit vital sign data to an application-hosting device on a network. In the January/February 2015 issue of *IT Pro*, “An Interoperability Solution for Legacy Healthcare Devices” by Yuan-Fa Lee of the Industrial Technology Research Institute, Taiwan, argues that standardizing existing healthcare devices for interoperability will require redesigning current hardware and software.

Mobile CPUs are beginning to impact Web browsing performance and energy consumption. Achieving **energy-efficient mobile Web browsing** requires considering both CPU and network capabilities. In “The Role of the CPU in Energy-Efficient Mobile Web Browsing,” from the January/February 2015 issue of *IEEE Micro*, a team from the University of Texas argues that leveraging efficient interactions between the CPU and network implies looking beyond individual components and taking a full system perspective.