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.

**Internet Computing**

The Internet of Things (IoT) will connect billions of devices to the Internet and create a dynamic, heterogeneous environment. In “Thingsonomy: Tackling Variety in Internet of Things Events” from IEEE Internet Computing’s March/April 2015 issue, Souleiman Hasan and Edward Curry of the National University of Ireland, Galway, write about a system that enables the approximate semantic matching of events for building software that can tackle heterogeneous IoT events.

**Security & Privacy**

Organizations that rely on cyberspace as a mission-critical asset require advanced situational awareness to cope with emerging threats. “Gaining an Advantage in Cyberspace with Advanced Situational Awareness,” from IEEE S&P’s March/April 2015 issue, discusses a new framework that relies on an automated OODA (observe, orient, decide, act) cycle to provide awareness in corporate environments.

**Cloud Computing**

Cloud computing-based traffic has been rapidly growing in recent years, raising concern about the increasing amount of energy the technology uses. “Traffic-Aware Resource Provisioning for Distributed Clouds,” from IEEE Cloud Computing’s January/February 2015 issue, examines important cloud-traffic characteristics and optimizations, and the development of fine-grained traffic-awareness approaches that reduce energy costs for distributed clouds with dynamic, diverse traffic.

**Software**

Java build processes are typically slow, with much of the build time spent executing tests. Researchers are thus devising new approaches to speed up Java testing. In “Vroom: Faster Build Processes for Java,” from IEEE Software’s March/April 2015 issue, researchers from Columbia University and Electric Cloud describe two such approaches. One, known as VMVM (virtual machine in the virtual machine) or “vroom vroom,” avoids the need to inefficiently restart the Java virtual machine before every test by reusing the JVM and reinitializing only the small part of memory needed by the next test. The other approach, called VMVMVM (virtual machine in a virtual machine on a virtual machine) or “vroom vroom vroom,” distributes testing jobs among OS-level VMs and speeds up build times by an average of 51 percent.

**OSS**

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discusses sampling and automated selection techniques that could address these issues in “Increasing Scientific Data Insights about Exascale Class Simulations under Power and Storage Constraints,” which appears in IEEE CG&A’s March/April 2015 issue.

Past election-prediction research relying only on Twitter communications data have proven ineffective. Other work based on polls raised questions about the potential contributions that Twitter data could make to the process. The authors of “Predicting Elections for Multiple Countries Using Twitter and Polls,” from IEEE Intelligent Systems’ March/April 2015 issue, describe how they used polls, tweet-related data, and multiple predictive algorithms to forecast the 2014 European Union elections in three countries more accurately than some research and commercial efforts.

Combining cloud computing and telemedicine introduces new opportunities for transforming healthcare delivery. Cloud-based telemedicine also faces challenges, including high assurance, interoperability, security, privacy, and storage adaptability. The January–March 2015 IEEE Pervasive Computing article “Telemedicine in the Cloud Era: Prospects and Challenges” by Zhanpeng Jin and Yu Chen of Binghamton University, State University of New York, discusses these issues.

Short development cycles and insufficient security development guidelines have led to vulnerabilities in many Android apps. In “VulHunter: Toward Discovering Vulnerabilities in Android Applications” from IEEE Micro’s January/February 2015 issue, researchers from Hong Kong Polytechnic University and Texas A&M University propose a new static-analysis framework for detecting vulnerabilities in Android apps that has proven effective in testing.