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

Crowdsourcing is disrupting business models and work practices, and could have a profound impact on software development. *IEEE Software*’s March/April 2017 special issue explores various ways that developers and managers could benefit by using crowdsourcing for software engineering.

The authors of “Improving Quality of Experience in Future Wireless Access Networks through Fog Computing,” from *IEEE Internet Computing*’s March/April 2017 issue, propose a novel Internet-access-network model. This model hosts applications close to users by relying on virtual machines to dynamically move cloud or web content to nodes located at the access network’s edge. It then proactively caches and enforces traffic policies based on the interaction between the access infrastructure and external applications. The authors quantify the benefits of this approach for bandwidth-usage optimization, latency reduction, and quality-of-experience enhancement.


The US National Cancer Institute and the US Department of Energy (DOE) will use DOE supercomputers to fight cancer by building sophisticated models based on population, patient, and molecular data. During a three-year pilot project, four participating national laboratories will focus on three key cancer-research problems. This is examined in “Cancer’s Big Data Problem,” from *CiSE*’s March/April 2017 issue.

Cloud Computing

As Internet of Things (IoT) technology becomes increasingly popular, large sensor-based systems could permeate society. Some experts estimate that IoT technology will connect up to 100 billion devices and generate about $1.7 trillion in revenue by 2020. Novel methodologies will be necessary to design, test, and operate these systems, according to “Modelling and Simulation Challenges in Internet of Things,” from *IEEE Cloud Computing*’s January/February 2017 issue.

Two key concerns for wearable devices are how their user interfaces should look in a post-smartphone world and whether they will support sophisticated mobile interactions and information management. The authors of “Spatial Analytic Interfaces: Spatial User Interfaces for In Situ Visual Analytics,” from CG&A’s March/April 2017 issue, explore an approach that addresses these concerns.

Intelligent Systems

Big data has enabled innovation and advancement in many areas and is receiving growing attention from researchers and practitioners. However, its widespread use still faces many challenges. *IEEE Intelligent Systems*’ March/April 2017 special issue on big data examines these challenges.
Most contemporary Western performing-arts practices restrict creative audience interaction. The authors of “Open Symphony: Creative Participation for Audiences of Live Music Performances,” from IEEE MultiMedia’s January–March 2017 issue, discuss a system they developed to explore audience–performer interaction in live music presentations.

Published scholarship about race and computing has lagged because of the absence of archival source materials. The author of “Race and Computing: The Problem of Sources, the Potential of Prosopography, and the Lesson of Ebony Magazine,” from IEEE Annals’ January–March 2017 issue, say that this is a problem and that archives and libraries should identify, collect, and make available relevant materials from people of color. The author says scholars could find material in nontraditional sources and might try using prosopography—the investigation of the common characteristics of a historical group whose individual biographies might be largely untraceable.

Today’s data revolution is providing new insights, allowing us to better understand citizen expectations regarding smart buildings and cities. The articles in IEEE Pervasive Computing’s April–June 2017 special issue explore what infrastructure is necessary to support smart environments, how cities can measure their return on these investments, and how citizens should interact with these environments.

Researchers and designers have begun developing fifth-generation (5G) mobile networks. “Technologies for 5G Networks: Challenges and Opportunities,” from IT Professional’s January/February 2017 issue, reviews potential 5G approaches and concludes that radical network paradigm changes will be necessary.

The authors of “Low-Power Automatic Speech Recognition Through a Mobile GPU and a Viterbi Accelerator,” from IEEE Micro’s January/February 2017 issue, propose an automatic speech-recognition system for low-power devices. The system combines a mobile graphics processing unit (GPU) for running a deep neural network and a dedicated hardware accelerator for a Viterbi search that generates the sequence of words that a speaker most likely used.

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