As the flagship publication of the IEEE Computer Society, Computer publishes cutting-edge peer-reviewed technical content that covers all aspects of computer science, computer engineering, technology, and applications.

Because Computer must cover a broad spectrum of topical areas, articles featuring your favorite topics might not appear as often as you would like. If you feel that we have missed a major trend, you could help us by authoring a paper yourself, proposing a special issue, or simply writing to us. Together we are partners in building and sustaining a community that generates timely and pertinent high-quality technical content to help us maintain currency in the field and stay ahead in our careers. To appeal to Computer’s general readership, we must focus on practice or relevant research and present information in ways that are conducive to promoting understanding and applicability.

2007 COVERAGE

Topics covered in 2007 included network security, reconfigurable computing, data management, human-centered computing, multicore processors, 3D visualization, search innovations, Tablet PCs, embedded systems, service orientation, and green computing.

Let me explain again the difference between “special issues” and “theme issues.” Special issues are typically guest edited by experts in the specific area who must submit a proposal that is subject to review and approval. Theme issues are a collection of articles on a related topic but not necessarily the result of a specific call. Special issues typically follow a well-defined development schedule targeted to a specific month, while a theme issue can be put together whenever it is ready and when the editorial space can be allocated.

In addition to special issues and theme issues, we also publish peer-reviewed Computing Practices, Perspectives, and Research Features. Therefore, I encourage potential authors to submit your manuscripts to Computer whenever you think they fit our editorial criteria and would appeal to this broad audience. Our acceptance rate is on the order of 20-25 percent cumulatively, and we do actively seek general submissions.

2008 OUTLOOK ISSUE AND BEYOND

As is our tradition, we open the New Year with our January Outlook issue, featuring forward-looking articles from across the computer science and engineering disciplines.

Michael A. Cusumano leads off with a fascinating analysis of the dramatic shift under way in the enterprise-software industry. In “The Changing Software Business: Moving from Products to Services,” Cusumano observes that traditional product sales and license fees have declined, and product company revenues have shifted to services such as annual maintenance payments and technical support. A complicating factor is the rise of new business and pricing models such as software as a service and “free, but not free” software. It remains to be seen whether this is a life-cycle issue or a business choice, whether it is a temporary or permanent trend, but managers of software product companies nevertheless face a threefold challenge: managing the crossover, “servitizing” products, and “productizing” services.

In “Can Programming be Liberated, Period?” David Harel describes his now nine-year-old dream about freeing ourselves from the straightjackets of programming and of being able to move intuitively from “played-in” scenarios to running code. Quite a bit of work has been carried out since then, which, while still a far cry from justifying the replacement of a dream with a plan, now seems to offer some preliminary evidence of feasibility. The bottom line is this, says Harel: There is no reason why developers shouldn’t make great efforts to bring widely researched and deeply worked-out ideas in computer science to bear upon the most basic and profound activity that involves computers, namely, programming them and running the resulting programs.

In “An Assessment of Integrated Digital Cellular Automata Architectures,” Victor Zhirnov and colleagues examine cellular automata as a possible alternative to traditional von Neumann architectures as technology reaches the limits of CMOS and beyond. As computing...
technology approaches the physical limits of scaling, the authors argue that it will naturally drive architectures of practical interest toward regular arrays of locally connected computational elements.

In “Toward a Competitive Pool-Playing Robot,” Michael Green span and colleagues introduce Deep Green, a vision-based, intelligent robotic system developed to play competitive pool. It currently plays at a better-than-amateur level, planning and executing difficult combinations and rail shots from across the table. It has pocketed runs of four consecutive balls, and it’s only a matter of time before it can consistently run the table.

Nearly 150 years ago, Charles Darwin theorized how evolution and natural selection transformed the earliest life forms into the rich panoply of life seen today. In “Harnessing Digital Evolution,” Philip McKinley and colleagues describe the dawn of evolution in a world we created: the world of computing. Digital evolution is a form of evolutionary computation in which self-replicating computer programs evolve within a user-defined computational environment. Over generations, natural selection can produce instruction sequences that can realize complex behaviors, sometimes revealing unexpected and strikingly clever strategies for solving problems.

Finally, in “Mining the Social Fabric of Archaic Urban Centers with Cultural Algorithms,” Robert G. Reynolds and colleagues apply a suite of tools from artificial intelligence and data mining to existing archaeological data from Monte Albán, a prehistoric urban center. Specifically, the authors examine the period of occupation associated with the emergence of this early site, seeking to generate a set of decision rules using data-mining techniques and then using their cultural algorithm toolkit to express the underlying social interaction between the initial inhabitants.

Topics to be covered in other 2008 issues include Web 2.0, data-intensive computing, multicores, high-assurance service-oriented architectures, computational intelligence, mobile computing, cyberinfrastructure, e-science, and more.

APPRECIATION FOR SUSTAINED SERVICE

During my first year as editor in chief of Computer, I witnessed, with deep appreciation, the great expertise and commitment of editorial board members as well as the exceptionally professional and dedicated editorial staff members whose collaboration has resulted in outstanding issues, month after month.

As we have a policy limiting the term of service so that we can appoint new members to the editorial board on a rotating basis, the following editors have completed their dedicated service: Michael Blaha, area editor for databases/software; Jonathan Liu, area editor for networking; Michael Lutz, advisory panel member; Michael Macedonia, area editor for entertainment computing; and H. Dieter Rombach, area editor for software. Please join me in expressing appreciation to these dedicated volunteers for their service to Computer and to the Computer Society.

NEW EDITORIAL BOARD MEMBERS

To keep pace with rapid technology evolution, Computer must constantly build and rebuild its editorial board to ensure that it provides expertise in current and emerging technical areas. During 2007, I recruited Steven Reinhardt as area editor for computer architecture and Michael van Lent as area editor for entertainment computing. The following area editors will be joining the editorial board in 2008: Jean Bacon, distributed systems; Vladimir Getov, high-performance computing; and Sumi Helal, networking. Also, beginning with this issue, David Grier, formerly editor of the In Our Time column, will serve as editor of a new column, The Known World.

JOIN THE TEAM

There are numerous opportunities to volunteer for, participate in, and contribute to the development of each issue of Computer. Join the team in one or more of the following ways.

• Submit your manuscript for consideration for publication. Manuscript Central (https://mc.manuscriptcentral.com/cs-ieee), our totally electronic online service for processing manuscript submissions, provides complete author information and submission details.
• Propose a special issue. Contact Bill Schilit (schilit@computer.org), Special Issues Editor, to offer your suggestion or to receive information about submitting a special issue proposal.
• Serve as a reviewer. Indicate your interest in serving as a reviewer by sending an e-mail message containing your vita to computer-ma@computer.org.
• Provide feedback. We welcome your comments, and we encourage you to submit suggestions for topics to be covered in future issues of Computer. Send an e-mail message to chang@cs.iastate.edu.

We look forward to hearing from you, and we welcome your participation.

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