DEPARTMENT: DEPARTMENTS

Technology for the Most Effective Use of Mankind

In a keynote address (see https://goo.gl/RwkwK1) at the 2016 meeting of the Computing Research Association, Kentaro Toyama argued that persistent societal challenges, such as socio-economic inequality, do not have technology-centric …

Moshe Y. Vardi

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The ACM Future of Computing Academy

I am pleased to announce the establishment of the ACM Future of Computing Academy (ACM-FCA), created to bring together talented young professionals from various computing disciplines to address the most pressing challenges facing …

Vicki L. Hanson

Page 7

Information and Misinformation on the Internet

The Internet influenced the decisions of voters in both the June 2016 U.K. referendum on European Union membership and the November 2016 U.S. elections. The disturbing aspect of these is the quantity of poor-quality content, …

Vinton G. Cerf

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DEPARTMENT:

BLOG@CACM

How We Teach CS2All, and What to Do About Database Decay

Valerie Barr considers how to make computer science education meaningful and relevant to all, while a team from the Massachusetts Institute of Technology Computer Science and Artificial Intelligence Laboratory offers strategies …

Valerie Barr, Michael Stonebraker, Raul Castro Fernandez, Dong Deng, Michael Brodie

Pages 10-11

COLUMN: NEWS

Pure Randomness Extracted from Two Poor Sources

Developments from several disparate areas of computer science provide "a huge jump, both technically and also quantitatively."

Don Monroe

Pages 13-15

Mapping the Internet of Things

Researchers are discovering surprising new risks across the fast-growing IoT.

Alex Wright

Pages 16-18

Bias in Technology

As leading companies release troubling diversity statistics, experts search for solutions.

Gregory Mone

Pages 19-20

COLUMN: TECHNOLOGY

STRATEGY AND MANAGEMENT

Is Google's Alphabet a Good Bet?

A relatively simple query raises myriad complicated issues.

Michael A. Cusumano

Pages 22-25

COLUMN: LAW AND TECHNOLOGY

Why Less Is More When It Comes to Internet Jurisdiction

Considering legal uncertainty in the online environment.

Michael Geist

Pages 26-28

COLUMN: HISTORICAL REFLECTIONS

Colossal Genius: Tutte, Flowers, and a Bad Imitation of Turing

Reflections on pioneering code-breaking efforts.

Thomas Haigh

Pages 29-35

COLUMN: VIEWPOINT

Artificial Intelligence: Think Again

Social and cultural conventions are an often-neglected aspect of intelligent-machine development.

Jerry Kaplan

Pages 36-38

Effects of International Trafficking in Arms Regulations Changes

Considering the impact of recent ITAR changes to the U.S. software industry and software education.

Jeremy Straub

Pages 39-41

SECTION: PRACTICE

Resolving Conflict

Don't "win." Resolve.

Kate Matsudaira

Pages 42-44

Faucet: Deploying SDN in the Enterprise

Using OpenFlow and DevOps for rapid development.

Josh Bailey, Stephen Stuart

Pages 45-49

Research for Practice: Web Security and Mobile Web Computing

Expert-curated guides to the best of CS research.

Peter Bailis, Jean Yang, Vijay Janapa Reddi, Yuhao Zhu

Pages 50-53

SECTION: CONTRIBUTED ARTICLES

Exponential Laws of Computing Growth

Moore's Law is one small component in an exponentially growing planetary computing ecosystem.
Peter J. Denning, Ted G. Lewis
Pages 54-65

Bottom-Up Enterprise Information Systems: Rethinking the Roles of Central IT Departments

Central IT needs to guide functional areas and departments toward effective operational and procurement practices.
Cecil Eng Huang Chua, Veda C. Storey
Pages 66-72

SECTION: REVIEW

ARTICLES

Cell-Graphs: Image-Driven Modeling of Structure-Function Relationship

Cell-graph construction methods are best served when physics-driven and data-driven paradigms are joined.
Bülent Yener
Pages 74-84

SECTION: RESEARCH

HIGHLIGHTS

Technical Perspective: Magnifying Motions the Right Way

"Eulerian Video Magnification and Analysis" demonstrates that phase differences at a given frequency band, due to subtle motions in a video, can be independently amplified and added back into the original signal.
Richard Szeliski
Page 86

Eulerian Video Magnification and Analysis

We present Eulerian Video Magnification, a computational technique for visualizing subtle color and motion variations in ordinary videos by making the variations larger.
Neal Wadhwa, Hao-Yu Wu, Abe Davis, Michael Rubinstein, Eugene Shih, Gautham J. Mysore, Justin G. Chen, Oral Buyukozturk, John V. Guttag, William T. Freeman, Frédo Durand
Pages 87-95

Technical Perspective: Mapping the Universe

"HACC: Extreme Scaling and Performance Across Diverse Architectures" describes the Hardware/Hybrid Accelerated Cosmology Code (HACC) framework, which uses a novel algorithmic structure to map code onto multiple supercomputer …
Valentina Salapura
Page 96

HACC: Extreme Scaling and Performance Across Diverse Architectures

In this Research Highlight, we demonstrate the success of HACC on two very different machines, the CPU/GPU system Titan and the BG/Q systems Sequoia and Mira, attaining very high levels of scalable performance.
Salman Habib, Vitali Morozov, Nicholas Frontiere, Hal Finkel, Adrian Pope, Katrin Heitmann, Kalyan Kumaran, Venkatram Vishwanath, Tom Peterka, Joe Insley, David Daniel, Patricia Fasel, Zarija Lukić
Pages 97-104

COLUMN: LAST BYTE

Open Field Tic-Tac-Toe

In the spirit of Gomoku, two people play a version of the classic paper-and-pencil game tic-tac-toe but on an infinite checkerboard. In it, a player wins by getting four pieces in a row — vertically, horizontally, or diagonally …

Dennis Shasha

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