

DEPARTMENT: EDITOR'S LETTER

## Computer Architecture: Disruption from Above

For the research community, opportunities to shape a profoundly different, new age of computer architecture are emerging.

*Andrew A. Chien*

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DEPARTMENT: CERF'S UP

## The Peace of Westphalia

A look at today's headlines suggests the transnational Internet and World Wide Web have become avenues through which the Peace of Westphalia agreement is regularly violated.

*Vinton G. Cerf*

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DEPARTMENT: VARDI'S INSIGHTS

## Move Fast and Break Things

Whether or not the theory of disruptive innovation has predictive power, it is a powerful story that explains the rise and fall of tech empires. It is deeply embedded in the psyche of Silicon Valley.

*Moshe Y. Vardi*

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DEPARTMENT: LETTERS TO THE EDITOR

## Hippie Values Really Did Build the Internet

Moshe Y. Vardi's column "How the Hippies Destroyed the Internet" (July 2018) sent me to my computer in shock where I was relieved to find that nobody has actually yet destroyed the Internet.

*CACM Staff*

Pages 9-11

DEPARTMENT: BLOG@CACM

## Discovering Bugs, or Ensuring Success?

Finding errors is not the same as making certain a software product works correctly.

*Yegor Bugayenko*

Pages 12-13

COLUMN: NEWS

## AI Holds the Better Hand

Exploiting the techniques of game theory to come up with the superior poker hand.

*Don Monroe*

Pages 14-16

## Robotic Implants

Scientists are developing tiny medical machines that stretch the definition of the term "robot."

*Gregory Mone*

Pages 17-18

## **Borders in the Cloud**

New data protection laws raise questions about whether certain jurisdictions are trying to thwart the ability of foreign governments to obtain data on their citizens.

*Keith Kirkpatrick*

Pages 19-21

### **COLUMN: COMPUTING ETHICS**

## **Overtrust in the Robotic Age**

A contemporary ethical challenge.

*Alan R. Wagner, Jason Borenstein, Ayanna Howard*

Pages 22-24

### **COLUMN: LAW AND TECHNOLOGY**

## **When Machine Learning is Facially Invalid**

Observations on the use of machine learning and facial inferences to classify people using inexplicable data.

*Frank Pasquale*

Pages 25-27

### **COLUMN: THE PROFESSION OF IT**

## **Navigating with Accelerating Technology Change**

Mathematical tools such as S-curves locate inflection points in technology-accelerated social spaces; where we move next depends on our navigational skills.

*Peter J. Denning*

Pages 28-30

### **COLUMN: VIEWPOINT**

## **An Academic's Observations from a Sabbatical at Google**

How experiences gained in industry can improve academic research and teaching.

*Adam Barker*

Pages 31-33

## **Is Software the Result of Top-Down Intelligent Design or Evolution?**

Considering the potential danger to individuals of rapid coevolution.

*Edward A. Lee*

Pages 34-36

### **SECTION: PRACTICE**

## **GitOps: A Path to More Self-Service IT**

IaC + PR = GitOps

*Thomas A. Limoncelli*

Pages 38-42

## **Workload Frequency Scaling Law: Derivation and Verification**

Workload scalability has a cascade relation via the scale factor.

*Noor Mubeen*

Pages 43-47

## Research for Practice: FPGAs in Datacenters

Expert-curated guides to the best of CS research.

*Gustavo Alonso, Peter Bailis*

Pages 48-49

### SECTION: CONTRIBUTED ARTICLES

## A Domain-Specific Architecture for Deep Neural Networks

Tensor processing units improve performance per watt of neural networks in Google datacenters by roughly 50x.

*Norman P. Jouppi, Cliff Young, Nishant Patil, David Patterson*

Pages 50-59

## Can Beyond-CMOS Devices Illuminate Dark Silicon?

The "new Dark Silicon" model benchmarks transistor technologies at the architectural level for multi-core processors.

*Robert Perricone, X. Sharon Hu, Joseph Nahas, Michael Niemier*

Pages 60-69

## Peer Assessment of CS Doctoral Programs Shows Strong Correlation with Faculty Citations

Strong correlation indicates notable research productivity of individual faculty members in turn boosts the standing of their programs.

*Slobodan Vucetic, Ashis Kumar Chanda, Shanshan Zhang, Tian Bai, Aniruddha Maiti*

Pages 70-76

### SECTION: REVIEW ARTICLES

## An Overview of Deterministic Database Systems

Deterministic database systems show great promise, but their deployment may require changes in the way developers interact with the database.

*Daniel J. Abadi, Jose M. Faleiro*

Pages 78-88

### SECTION: RESEARCH HIGHLIGHTS

## Technical Perspective: Is Your WiFi a Sensor?

"Emotion Recognition Using Wireless Signals" shows that not only can the heartrate be counted with accuracy comparable to ECG devices, but the variabilities of the heart signals—in each pulse—can be recognized as well.

*Romit Roy Choudhury*

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## Emotion Recognition Using Wireless Signals

This paper demonstrates a new technology that can infer a person's emotions from RF signals reflected off his body.

*Mingmin Zhao, Fadel Adib, Dina Katabi*

Pages 91-100

### COLUMN: LAST BYTE

## Bounce Blockchain

There is a simple energy-parsimonious solution to ensure the integrity of blockchains that, incidentally, also gives rise to some cool puzzles.

**Dennis Shasha**

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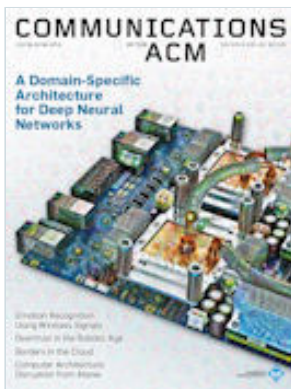
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