# COMMUNICATIONS OF THE ACM

## Departments

- 5 JACM Editor's Letter JACM at the Start of a New Decade By Victor Vianu
- 6 In the Virtual Extension
- 7 Letters To The Editor

CS Expertise for Institutional Review Boards

B BLOGSCACM

The War Against Spam; and More Greg Linden asks if spammers have been defeated; Michael Bernstein discusses Clay Shirky's keynote speech at CSCW 2010; and Erika S. Poole writes about how the digital world can help parents cope with the death of a child.

- 10 CACM Online
  Print is Not Just Ink Anymore
  By David Roman
- 37 Calendar
- 125 Careers

### Last Byte

128 Puzzled

Figures on a Plane By Peter Winkler

# News

11 Mechanism Design Meets Computer Science

> A field emerging from economics is teaming up with computer science to improve auctions, supply chains, and communication protocols. By Gary Anthes

14 Looking Beyond Stereoscopic 3D's Revival

Researchers working in vision and graphics are attempting to develop new techniques and technologies to overcome the current limitations in stereoscopic 3D. By Kirk L. Kroeker

- 17 Making Sense of Real-Time Behavior
  Data captured by sensors worn on
  the human body and analyzed in
  near real-time could transform
  our understanding of human
  behavior, health, and society.
  By Sarah Underwood
- 19 Celebrating the Legacy of PLATO The PLATO@50 Conference marked the semicentennial of the computer system that was the forerunner of today's social media and interactive education. By Kirk L. Kroeker
- 21 Gödel Prize and Other CS Awards
  Sanjeev Arora, Joseph S.B. Mitchell,
  and other researchers are
  recognized for their contributions
  to computer science.
  By Jack Rosenberger

# Viewpoints.

24 Economic and Business Dimensions Is the Internet a Maturing Market?

If so, what does that imply? By Christopher S. Yoo

27 Education

Preparing Computer Science Students for the Robotics Revolution Robotics will inspire dramatic changes in the CS curriculum. By David S. Touretzky

30 Emerging Markets

Has China Caught Up in IT?

An assessment of the relative achievements in IT infrastructure, firms, and innovation in China.

By Ping Gao and Jiang Yu

33 Kode Vicious

Presenting Your Project
The what, the how, and the why of giving an effective presentation.
By George V. Neville-Neil

35 Privacy and Security

Remembrances of Things Pest Recalling malware milestones. By Eugene H. Spafford

- 38 Viewpoint
  - Rights for Autonomous Artificial Agents?

The growing role of artificial agents necessitates modifying legal frameworks to better address human interests.

By Samir Chopra

41 Interview

An Interview with Edsger W. Dijkstra The computer science luminary, in one of his last interviews before his death in 2002, reflects on a programmer's life. By Thomas J. Misa



# Practice

- 48 Software Development
  with Code Maps
  Could ubiquitous hand-drawn
  code map diagrams become
  a thing of the past?
  By Robert DeLine, Gina Venolia,
  and Kael Rowan
- 55 Moving to the Edge:
  A CTO Roundtable on
  Network Virtualization
  Leading experts debate how
  virtualization and clouds impact
  network service architectures.
  By Mache Creeger
- 63 Seven Principles for Selecting
  Software Packages
  Everything you always wanted to
  know but were afraid to ask about
  the decision-making process.
  By Jan Damsgaard and Jan Karisbjerg
- Articles' development led by actinqueue queue.acm.org

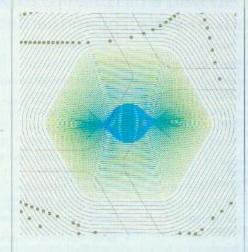
# COMMUNICATIONS ACM The Party Free Communication of the Party

#### About the Cover:

The Singularity system, Microsoft Research's effort to build a microkernel-based operating system, is the focus of this month's cower story as told by the projects' lead researchers. James Larus and Galen Hurtt. The system draws parallels to the singularity model where physical laws as we know them are no longer vabid. Rendering this concept for the cover is

Paul Farrington from Studio Tonne, an illustrative agency based in Brighton, England. For more on the studio's work see http://www.studiotonne.com.

# Contributed Articles



- 72 The Singularity System
  Safe, modern programming
  languages let Microsoft rethink
  the architectural trade-offs in its
  experimental operating system.
  By James Larus and Galen Hunt
- 80 Predicting the Popularity
  of Online Content
  Early patterns of Digg diggs and
  YouTube views reflect long-term
  user interest.
  By Gabor Szabo and
  Bernardo A. Huberman

### Review Articles

90 Memory Models: A Case for Rethinking Parallel Languages and Hardware

> Solving the memory model problem will require an ambitious and crossdisciplinary research direction. By Sarita V. Adve and Hans-J. Boehm

# Research Highlights

- 104 Technical Perspective
  Attacks Target Web Server Logic
  And Prey on XCS Weaknesses
  By Helen Wang
- 105 The Emergence of Cross Channel Scripting By Hristo Bojinov, Elie Bursztein, and Dan Boneh
- 114 Technical Perspective Large-Scale Sound and Precise Program Analysis By Fritz Henglein
- 115 Reasoning About the Unknown in Static Analysis By Isil Dillig, Thomas Dillig, and Alex Aiken

## Virtual Extension

As with all magazines, page limitations often prevent the publication of articles that might otherwise be included in the print edition. To ensure timely publication, ACM created Communications' Virtual Extension (VE).

VE articles undergo the same rigorous review process as those in the print edition and are accepted for publication on their ment. These articles are now available to ACM members in the Digital Library.

Intelligent Service Machine Wei-Feng Tung and Soe-Tsyer Yuan

Thinkflickrthink: A Case Study on Strategic Tagging Eugenio Tisselli

Plat\_Forms: Is There One Best Web Development Technology? Lutz Prechelt

How a Service-Oriented Architecture May Change the Software Development Process Marc N, Haines and Marcus A, Rothenberger