CACM Reports: Stopping Snowden with Better Security

May 2014 Issue Reports on the End of Moore’s Law; the Future of Bitcoin; How Computers Are Changing Biology; and Cloud Security

Despite the National Security Agency’s virtually unlimited resources and access to the best computer security experts in the country, NSA had become lax in utilizing even the most important, simple, and cheap good computer security practices, reports Bob Toxen, chief technical officer at Horizon Network Security in this month’s cover story. He recounts how Edward Snowden copied up to 1.7 million top-secret documents, and examines the computer security aspects of how NSA could have prevented this from happening.

- CACM Editor-in-Chief Moshe Y. Vardi points to increasing signs that Moore’s Law is in serious trouble. The real question, he says, is what happens when the improved cost-performance delivered by harnessing transistor density is no more. He predicts that we will have to deliver performance the hard way, by improved algorithms and systems.

- If Bitcoins are nothing but information, why are they not free? asks Marshall Van Alstyne of Boston University. He recounts his experience with a startup that developed a new kind of enterprise software based on people voluntarily sharing knowledge, and concludes that the real question is whether the efficiencies of a cyber-currency like Bitcoin can be merged with the certainties of an honest central bank.

- Addressing the growing demand for software solutions at no extra cost, business consultants Shimeon Pass and Boaz Ronen assess the root causes of this problem. They outline a comprehensive approach that enables a breakthrough toward reducing the software value gap through existing resources.

- Technology writer Samuel Greengard notes that perhaps no discipline is witnessing more tangible benefits from computer modeling than biology. He cites the work of David Shaw, chief scientist at D.E. Shaw Research, in tackling the riddles of biology in innovative ways. This revolution in biology research, he says, is redefining medicine, agriculture, and manufacturing.

- Cloud computing has fundamentally changed the way people view computing resources, according to researchers at the University of British Columbia. They warn that modern cloud deployments require an unprecedented degree of trust on the part of users, and argue for greater transparency in security policies.

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