Nomadic computing speeds up Big Data analytics

How do Netflix or Facebook know which movies you might like or who you might want to be friends with? Here's a hint: It starts with a few trillion data points and involves some complicated math and a lot of smart computer programming. The ability to make sense of massive amounts of raw data—a process known as data analytics—has already brought benefits to consumers and long-lost friends and is beginning to have a real impact in medicine, law enforcement and public ...

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Buried in ash, ancient Salvadoran village shows images of daily life

A continuing look at a Maya village in El Salvador—frozen in time by a blanket of volcanic ash from 1,400 years ago—shows the farming families who lived there went about their daily lives with virtually no strong-arming by the elite royalty lording over the valley. Instead, archaeological evidence indicates significant interactions at the village of Ceren took place among families, village elders, craftspeople and specialty maintenance workers. This research comes from a new ...

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Grass-planting change boosts coastal wetland restoration success

When restoring coastal wetlands, common practice calls for leaving space between new plants to prevent overcrowding and reduce competition for nutrients and sunlight. That's likely all wrong. A new study, conducted to restore degraded salt marshes in Florida and the Netherlands, has found that clumping newly planted marsh grasses next to each other, with little or no space in between, can spur positive interactions between the plants. In some test plots, plant density ...

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Establishing a brain trust for data science

The ability to access, analyze and draw insights from massive amounts of data already drives innovation in areas ranging from medicine to manufacturing, leading to greater efficiency and a higher quality of life. To accelerate this emerging field, the National Science Foundation (NSF) today announced four awards totaling more than $5 million to establish regional hubs for data science innovation. The consortia are coordinated by top data scientists at ...

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Risk assessment, for the birds

Every year, backyard songbirds across the United States make an arduous journey to warmer winter climes. They migrate hundreds of miles, occasionally braving tough terrain and nasty weather. Sometimes, they have no place to stop and refuel along the way. Birds actually weigh these risks using a combination of factors--fat, weather and date--to make a migration risk assessment, according to new research funded by the National Science Foundation (NSF). The findings can serve as the ...

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New special report highlights NSF-funded cybersecurity research and education

Cybersecurity is one of the defining issues of our time. Can we keep our networks, devices and critical systems open, safe and secure, while maintaining personal privacy? How do we develop tomorrow's cybersecurity solutions? Fundamental research plays a key part. Cutting-edge, National Science Foundation (NSF)-supported social and technical cybersecurity research--as well as education and ...

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The nuanced weapons of electric eels

Electric eels are formidable predators. Growing up to eight feet long and weighing as much as 44 pounds, they can generate 600 volts of electricity--five times the power of a home socket--to stun and kill prey. New research shows that this fearsome weapon is more sophisticated than scientists thought. Electric eels use electricity as a sensory system, and can alter their voltage to overcome struggling prey. Scientists have long known that electric eels have two power modes:

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A beautiful defense for smart grids

The physical infrastructure of the U.S. electric grid is aging, overburdened and vulnerable to natural hazards. That's not the bad news. The bad news is that efforts to solve these issues have opened the door to new vulnerabilities. New approaches that transform how energy is produced, delivered and consumed have created increased reliance on complex data flows, interconnected systems and sophisticated technologies--i.e., the new smart grid.

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Cybersecurity: Tech, tools and training to safeguard the future

Cybersecurity is one of the defining issues of our time. Cutting-edge, NSF-supported social and technical research -- as well as education and workforce development programs--are helping protect our national, and personal, security.

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Warming waters contributed to the collapse of New England's cod fishery

For centuries, cod were the backbone of New England's fisheries and a key species in the Gulf of Maine ecosystem. Today, cod stocks are on the verge of collapse, hovering at 3-4 percent of sustainable levels. Even painful cuts to the fishery have failed to slow this rapid decline, surprising both fishers and fisheries managers. Now a report published this week in the journal Science links the cod collapse directly to rapid warming of ocean waters.

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How much did indigenous peoples alter the Amazon forest?

Before Europeans arrived, indigenous peoples altered the Amazon forest—but primarily along major rivers. Their effects were almost imperceptible in rainforest areas more than a day's walk from a river, according to new research published in the Journal of Biogeography. Lead author Mark Bush, a biologist at the Florida Institute of Technology, says, "No one doubts the importance of human actions along major waterways, but whether humans had a greater effect on the ...

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New electricity meters are smart -- but are they trusted?

The smart grid: It's the power-system modernization effort that U.S. utilities are building to meet the country's growing demands for electricity. But it's not confined to power plants and substations—if you have a smart meter, a key piece of smart grid technology already is attached to your house. That means that Americans' willingness to accept those meters, and use the features they provide, serves an important role in developing a more reliable, secure electrical ...

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Speeding up extreme big brain data analysis

It's tough to unravel the mysteries of the brain when your computer is frozen. To aid frustrated brain researchers, a multidisciplinary team of scientists at the University of Utah has created a faster method for generating and exploring high-resolution, 3-D images of the brain. Alessandra Angelucci, a neuroscientist with the Moran Eye Center at Utah's Ophthalmology Department whose research is ...

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Like being there: The next generation of 3-D holograms

Center for Integrated Access Networks tackles bandwidth challenge to bring 3-D holograms to your living room

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