Information Resources

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Sunlight-powered purifier could clean water for the impoverished: One-tenth of the world's population lacks clean water. Now, researchers report they have developed a cheap solar still, which uses sunlight to purify dirty water up to four times faster than a current commercial version. The raw materials cost less than $2 per square meter. The technology will "allow people to generate their own drinking water much like they generate their own power via solar panels on their house roof," says Zhejun Liu, a visiting scholar at the State University of New York (SUNY) in Buffalo and one of the study's co-authors. https://goo.gl/MifKe8

Special Report: The Full Cost of Electricity (FCe): It is an interdisciplinary initiative of the Energy Institute of the University of Texas. The goal of the project is to identify and quantify the full-system cost of electric power generation and delivery—from the power plant to the wall socket—and inform public policy discourse with comprehensive, rigorous, and impartial analysis. The FCe- study employs a holistic approach to thoroughly examine the key factors affecting the total direct and indirect costs of generating and delivering electricity. The project synthesizes the expert analysis and different perspectives of faculty across the UT Austin campus, from engineering, economics, law, and policy. https://goo.gl/tIu86v

Self-taught artificial intelligence beats doctors at predicting heart attacks: Doctors have lots of tools for predicting a patient's health. But—as even they will tell you—they're no match for the complexity of the human body. Heart attacks in particular are hard to anticipate. Now, scientists have shown that computers capable of teaching themselves can perform even better than standard medical guidelines, significantly increasing prediction rates. If implemented, the new method could save thousands or even millions of lives a year. https://goo.gl/OWWUCn

Take that, Europe. Computer modeler aims to give U.S. lead in weather predictions: From below the conference table comes the thrum of incoming phone alerts. The new weather forecast has rolled in, and the climate scientists, even though it's not typically their business, dig out their phones to look: snow tomorrow—hardly unusual for early February in Princeton, New Jersey. But the weather models have the storm breaking severe, dumping a foot or more. A snow day seems likely. Across the table at the Geophysical Fluid Dynamics Laboratory (GFDL), Shian-Jiann "S. J." Lin is not convinced. He is the master of 20,000 lines of computer code that divide the atmosphere into boxes and, with canny accuracy, solve the equations that describe how air swirls around the globe. For decades, Lin's program has powered the long-term simulations of many climate models, including GFDL's—one of the crown jewels of the U.S. National Oceanic and Atmospheric Administration (NOAA). Now, Lin's domain is expanding to a different side of NOAA: the short-term weather forecasts of the National Weather Service (NWS). By 2018, Lin's program will be powering a unified system for both climate and weather forecasting, one that could predict conditions tomorrow, or a century from now—and do it faster and better than current models. His work will soon be guiding mayors planning not just for snow plows, but also rising seas. https://goo.gl/Fxfy7r

This new solar-powered device can pull water straight from the desert air: You can't squeeze blood from a stone, but wringing water from the desert sky is now possible, thanks to a new spongelike device that uses sunlight to suck water vapor from air, even in low humidity. The device can produce nearly 3 liters of water per day for every kilogram of spongelike absorber it contains, and researchers say future versions will be even better. That means homes in the driest parts of the world could soon have a solar-powered appliance capable of delivering all the water they need, offering relief to billions of people. https://goo.gl/bjLHJn

New software can track many individuals in a crowd: In 2015, more than 2000 people died in a stampede during the Hajj pilgrimage in Saudi Arabia. In 2013, two terrorists deposited backpacks carrying bombs at the Boston Marathon and slipped away, leaving three spectators to die. If technology could in real-time track and analyze the movement of individuals in dense crowds, we might better predict dangerous pileups or spot suspicious behavior, saving many lives a

year. A pair of researchers has just taken a large step in that direction, writing software that for the first time can track hundreds of people in a crowd simultaneously. https://goo.gl/MPzEC7

Treating Depression With Deep Brain Stimulation (DBS) Works—Most of the Time: DBS, which involves brain surgery for the implantation of electrodes and then constant pulses of stimulation to maintain its effects, may sound like a radically experimental treatment to administer to people suffering from depression. But it's based on a successful DBS treatment for Parkinson's disease that improves patients' tremors and other motor symptoms; about 150,000 Parkinson's patients around the world have received an implant. https://goo.gl/fiUGDi

Now free: citation data from 14 million papers, and more might come: Consider this: A scientist publishes a study citing other papers. Those cited papers, in turn, cite studies that came before them. But much of that citation information—which is often of great interest to scientists tracking research trends and hot topics—has not been available freely. Enter the Initiative for Open Citations (I4OC), a project aiming to make citation data free to all, formally announced today by six organizations, including the Wikimedia Foundation, publisher Public Library of Science, and the open-access journal eLife. So far, the initiative has partnered with 29 journal publishers to enable anyone to access citation data from about 14 million papers indexed by Crossref, a nonprofit collaboration that promotes the sharing of scholarly information. And more publishers are likely to sign on, says Mark Patterson, executive director of eLife, in Cambridge, U.K. https://goo.gl/y23QbX

Nice Performance Management: Effectiveness Through Accountability: Performance management is clearly becoming a priority for organizations interested in the twin drivers of long-term success – workforce optimization (WFO) and increased customer satisfaction. In fact, SaddleTree Research reported an astounding increase in demand for performance management solutions in 2015. Take an innovative approach to WFO. Evaluate factors in employee behavior that drive success by focusing on these key measurements: Goal Management; Opportunity Identification; Agent Engagement; Agent Guidance; and Agent Collaboration. https://goo.gl/n81f11

What is the Blockchain and Why is it So Important?: Blockchain is growing in importance. Increasingly organisations have to explore what this revolutionary technology will mean for their business. Marc Andreessen from the well-known VC firm Andreessen Horowitz calls it as big an invention as the internet. Last year, in my Big Data Trends prediction for 2016, I already foresaw that 2016 would become the year of the Blockchain and now also Gartner has included in their Hype Cycle for Emerging Technologies. Many organisations are already exploring the possibilities of the Blockchain, although primarily still in the Financial Services industry. The R3 Partnership is a consortium of 45 of the biggest financial institutions, investigating what the Blockchain means for them. Next to the R3 consortium, four of the biggest global banks, led by Swiss bank UBS, have developed a "Utility Settlement Coin" (USC), which is the digital counterpart of each of the major currencies backed by central banks. Their objective is to develop a settlement system that processes transactions in (near) real-time instead of days. A third example is Australia Post, who have released plans for developing a blockchain-based e-voting system for the state of Victoria. The possibilities of the Blockchain are enormous and it seems that almost any industry that deals with some sort of transaction, which would mean any industry, can and will be disrupted by the Blockchain. As a result, it is likely that many of these industries will face job losses since intermediaries will be needed a lot less. https://goo.gl/PIDoOH

Artificial Intelligence, Automation, and the Economy: Accelerating artificial intelligence (AI) capabilities will enable automation of some tasks that have long required human labor. These transformations will open up new opportunities for individuals, the economy, and society, but they have the potential to disrupt the current livelihoods of millions of Americans. Whether AI leads to unemployment and increases in inequality over the long-run depends not only on the technology itself but also on the institutions and policies that are in place. This 59 pages report examines the expected impact of AI-driven automation on the economy, and describes broad strategies that could increase the benefits of AI and mitigate its costs. https://goo.gl/m5a4SE

Kaleidoscope on the Internet of Toys: Safety, security, privacy and societal insights: This paper gives an insight on safety, security, privacy and scoicetal questions emerging from the rise of the Internet of Toys, meaning Internet Connected Toys that participate along with the wave of other domestic connected objects, the Internet of Things in increasing the ubiquity of the ICT within our everyday, closer to ourselves and our children more than ever. What changes and challenges 24/7 Internet connected devices, and Connected Toys particularly, will bring in our Society? What precautionary measures Parents, Teachers, Health Carer but also Industry and Policymakers need to take for protecting our chidlren's play, safety, security, privacy and social life? Based on which considerations? In whish timeframe? The paper offers a kaleidoscope of six experts' views on the Internet of Toys, each exploring the topic and raising questions under a specific angle: Public and industrial discourse; Safety, security and privacy concerns; Social robot-children interactions; Quantified-self of the Childhood; Nature of Play and finally Possible benefits of higher collaboration between research and Internet Connected Toy Industry. https://goo.gl/dBhMfX

Watch this robotic manta ray speed through the water: Building a robot is easy. Building a robot with soft, bendable parts is still doable. But building a soft robot "fish" that can swim as well as the real thing: a much trickier

task. But now, a team of scientists in China has gotten much closer, creating a robotic fish that can swim twice as fast as the next best bot of its kind. The 9.3-centimeter-long fish (18.5 centimeters including its tail) can also swim for more than 3 hours on one battery charge, thanks to a clever propulsion system that acts like a muscle. The new system could lead to lifelike bots that can explore the ocean, monitor water quality, and discover new creatures. https://goo.gl/42koT2

8 Ways Business Intelligence Software Improves the Bottom Line: Can business intelligence (BI) solutions, software that helps organizations mine and analyze big data and small, help your company improve its bottom line? To find out, CIO.com asked dozens of BI experts and IT executives. Here are their eight top suggestions regarding how you can get a positive return on your BI software investment. https://goo.gl/0AbV7r

Serverless computing: the basics: The cloud, goes the old joke, is just someone else's computer. That's true; except that it's a computer that's probably better run and more frequently patched and better secured than yours, that you didn't have to pay for, that you can rent by the second and that offers services that let you work at a much higher level than powering on a server and installing software on it yourself. You may think of the cloud as being about scale and cost savings, but even more important are the abstractions it introduces: storage services and data services rather than hard drives, application services rather than virtual machines, software-controlled networks rather than physical cards and cables you have to connect. As cloud has moved from IaaS to SaaS to PaaS, adding monitoring, data analytics and machine learning as well as development frameworks and application services, the level of abstraction has kept increasing. https://goo.gl/T0vFA3

Ransomware: It Makes You 'WannaCry': It may be a silly name, but it certainly is not a silly topic. You are likely aware of the recent ransomware attack known as WannaCry that has infected more than 230,000 computers in 150 countries since Friday, May 12th. Among the notable victims are the National Health Service and FedEx, that have been asked for ransom payments in bitcoin. Recent attacks like these have brought to our attention the importance of enterprises to protect themselves and their customers. https://goo.gl/npLRw5

Container Technologies Overview: Containers are lightweight OS-level virtualizations that allow us to run an application and its dependencies in a resource-isolated process. All the necessary components that are required to run an application are packaged as a single image and can be re-used. While an image is executed, it runs in an isolated environment and does not share memory, CPU, or the disk of the host OS. This guarantees that processes inside the container cannot watch any processes outside the container. https://goo.gl/3V6Qx0

Solving the "IoT Is Hard" Problem: Have you ever tried something that looked easy but turned out to be hard (or damn near impossible)? An IoT developer platform comes to mind.Assembling an IoT solution is one of those things that appears deceptively simple. Connect a device to the Wi-Fi and send data to an Internet software application. Recent evidence has suggested that IoT is a lot harder than it looks. CBInsights has reported a slowdown in IoT investments. While this could be a coincidence, it could also indicate that IoT is surprisingly difficult to pull off. https://goo.gl/BfTwPO

Tech resume samples and resources: Examples, expert advice, formatting and more: When it's time to update your resume, you may find it difficult to figure out how to effectively highlight your accomplishments while keeping the document concise. With the tech resume resources available here, you'll see how to rework your technical resume to make it stand out from the crowd. https://goo.gl/szbQMJ

Here's Why Every Millennial Needs a Mentor in the Tech Industry: Millennials are often unfairly given a bad rap for doing things that other generations also do on a regular basis. They're easy targets and older professionals like to give them a hard time. So, this article isn't meant to be a hit piece on millennials. Rather, it's meant to expose something that's true: Every millennial who has aspirations of being successful in the tech space needs an older mentor. https://goo.gl/Vrizhp

50 Tools Your Startup Probably Needs: Your startup is all about disruptive, game-changing ideas. However, to make that idea into a business you not only need your strategy, but you also need many tools to build your business out. Think about adding these 50 tools. https://goo.gl/Sek69b

How to Write Email with Military Precision: In the military, a poorly formatted email may be the difference between mission accomplished and mission failure. During my active duty service, I learned how to structure emails to maximize a mission's chances for success. Since returning from duty, I have applied these lessons to emails that I write for my corporate job, and my missives have consequently become crisper and cleaner, eliciting quicker and higher-quality responses from colleagues and clients. Here are three of the main tips I learned on how to format your emails with military precision. https://goo.gl/2Dqauu