Artificial Intelligence & The Economy

Digital Reader

May 2017

Hon. Carroll G. Robinson, Esq.
Dr. Michael O. Adams, Ph.D.
Brandy N. Smart

TSU

Volume 2

“ We are willing to adapt to changing circumstances, when change we must. We are willing to suffer the discomfort of change in order to achieve a better future…

TEXAS SOUTHERN UNIVERSITY
BARBARA JORDAN-MICKEY LELAND
SCHOOL *of* PUBLIC AFFAIRS
Interim Dean Michael O. Adams

Artificial Intelligence and The Economy

DIGITAL READER

Texas Southern University
Barbara Jordan – Mickey Leland School of Public Affairs
Department of Political Science
Dean's Suite Public Affairs Bldg. 415
3100 Cleburne Street, Houston, TX 77004
Phone 713.313.6848 • Fax 713.313.7153

THIS DIGITAL READER WILL BE UPDATED ON A PERIODIC BASIS

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INTRODUCTION

This is the second edition of the TSU School of Public Affairs on-going series of Digital Readers centered on Artificial Intelligence (A.I.). The readers are intended to encourage people of color at the grassroots level, as well as, the elected officials who, represent them, to engage in substantive conversations about the development, deployment and impact of A.I. on governmental decision making, public administration, education, our economy and the world. The digital age is now and artificial intelligence is a driving technology which is changing the world as we know it. This installment of the A.I. Digital Reader focuses on the economy and the impact of A.I. on the future of global employment, our homes and healthcare.

Let's all Become informed.

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@chapter1

#ECONOMY

ARTIFICIAL INTELLIGENCE {A.I.} AND THE ECONOMY

Why Artificial Intelligence is the Future of Growth

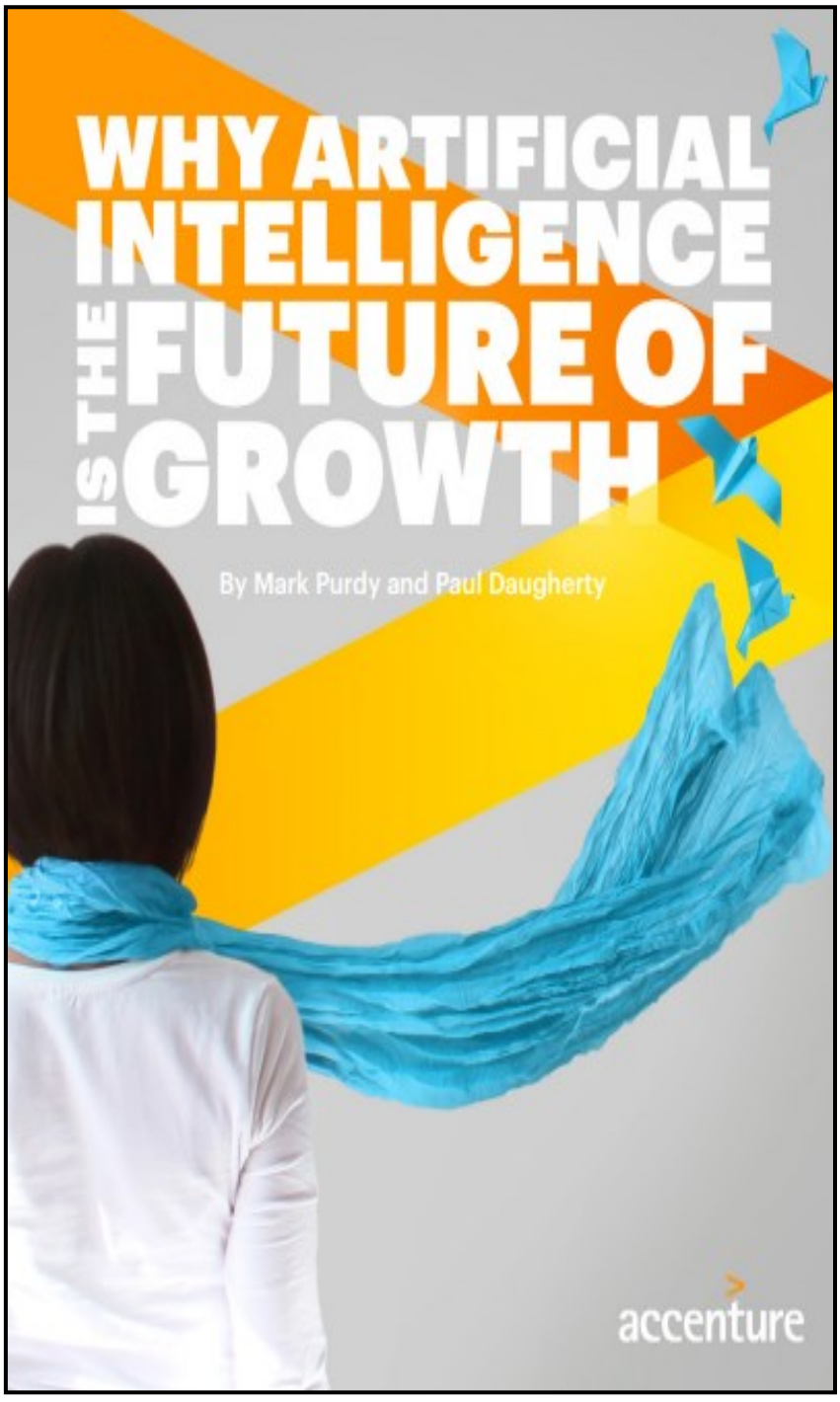
ACCENTURE

Artificial Intelligence, as we see it, is a collection of multiple technologies that enable machines to sense, comprehend and act—and learn, either on their own or to augment human activities.

Compelling data reveal a discouraging truth about growth today. There has been a marked decline in the ability of traditional levers of production—capital investment and labor—to propel economic growth.

Yet, the numbers tell only part of the story. Artificial intelligence (AI) is a new factor of production and has the potential to introduce new sources of growth, changing how work is done and reinforcing the role of people to drive growth in business.

Accenture research on the impact of AI in 12 developed economies reveals that AI could double annual economic growth rates in 2035 by changing the nature of work and creating a new relationship between man and machine. The impact of AI technologies on business is projected to increase labor productivity by up to 40 percent and enable people to make more efficient use of their time.

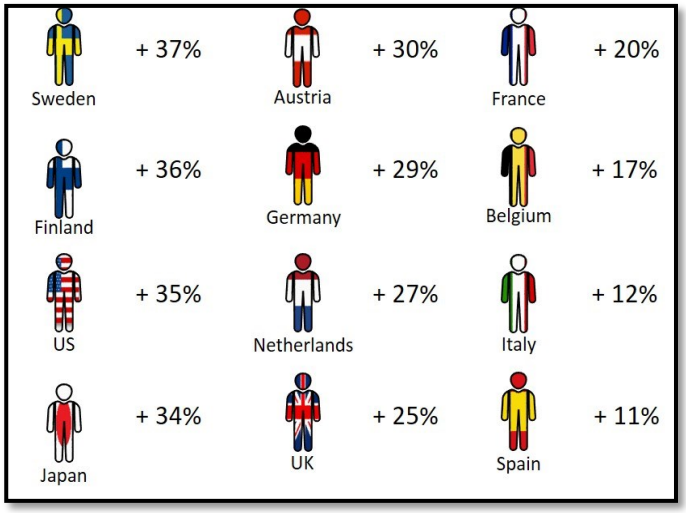


FULL REPORT
SEPTEMBER 28, 2016

Artificial Intelligence Poised to Double Annual Economic Growth Rate in 12 Developed Economies and Boost Labor Productivity by up to 40 Percent by 2035

ACCENTURE

NEW YORK; Sept. 28, 2016 – Research released today from Accenture (NYSE: ACN) reveals that artificial intelligence (AI) could double annual economic growth rates by 2035 by changing the nature of work and spawning a new relationship between man and machine. The impact of AI technologies on business is projected to boost labor productivity by up to 40 percent by fundamentally changing the way work is done and reinforcing the role of people to drive growth in business.



"AI is poised to transform business in ways we've not seen since the impact of computer technology in the late 20th century," said Paul Daugherty, chief technology officer, Accenture. "The combinatorial effect of AI, cloud, sophisticated analytics and other technologies is already starting to change how work is done by humans and computers, and how organizations interact with consumers in startling ways. Our research demonstrates that as AI matures, it can propel economic growth and potentially serve as a powerful remedy for stagnant productivity and labor shortages of recent decades."

The Accenture Institute for High Performance, in collaboration with Frontier Economics, modeled the impact of AI for 12 developed economies that together generate more than 50 percent of the world's economic output. The research compared the size of each country's economy in 2035 in a baseline scenario, which shows expected economic growth under current assumptions and an AI scenario, which shows expected growth once the impact of AI has been absorbed into the economy. AI was found to yield the highest economic benefits for the United States, increasing its annual growth rate from 2.6 percent to 4.6 percent by 2035, translating to an additional USD $8.3 trillion in gross value added (GVA). In the United Kingdom, AI could add an additional USD $814 billion to the economy by 2035, increasing the annual growth rate of GVA from 2.5 to 3.9 percent. Japan has the potential to more than triple its annual rate of GVA growth by 2035, and Finland, Sweden, the Netherlands, Germany and Austria could see their growth rates double.

Annual growth rates by 2035 of gross value added (a close approximation of GDP), comparing baseline growth by 2035 to an artificial intelligence scenario where AI has been

How A.I. and Robots Will Radically Transform the Economy

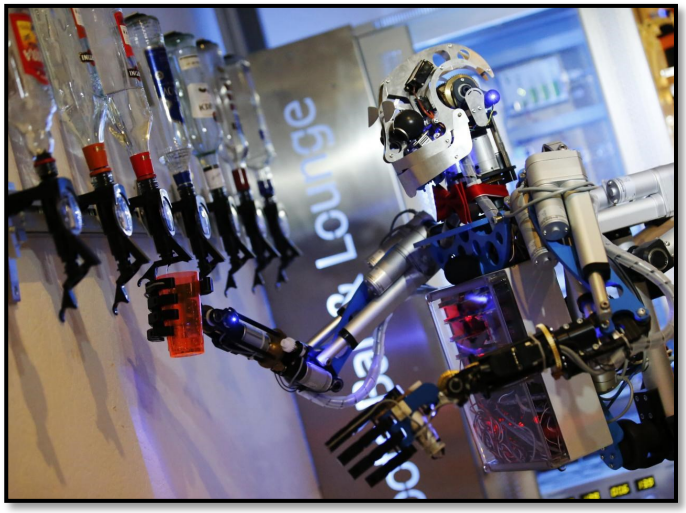
Newsweek

Next time you stop for gas at a self-serve pump, say hello to the robot in front of you. Its life story can tell you a lot about the robot economy roaring toward us like an EF5 tornado on the prairie.

Yeah, your automated gas pump killed a lot of jobs over the years, but its biography might give you hope that the coming wave of automation driven by artificial intelligence (AI) will turn out better for almost all of us than a lot of people seem to think.

The first crude version of an automated gas-delivering robot appeared in 1964 at a station in Westminster, Colorado. Short Stop convenience store owner John Roscoe bought an electric box that let a clerk inside activate any of the pumps outside. Self-serve pumps didn't catch on until the 1970s, when pump-makers added automation that let customers pay at the pump, and over the next 30 years, stations across the nation installed these task-specific robots and fired attendants. By the 2000s, the gas attendant job had all but disappeared. (Two states, New Jersey and Oregon, protect full-service gas by law.)

That's hundreds of thousands of jobs vaporized—there are now 168,000 gas stations in the U.S. The loss of those jobs was undoubtedly devastating for the individuals who had them, but the broader impact has been pretty positive for the



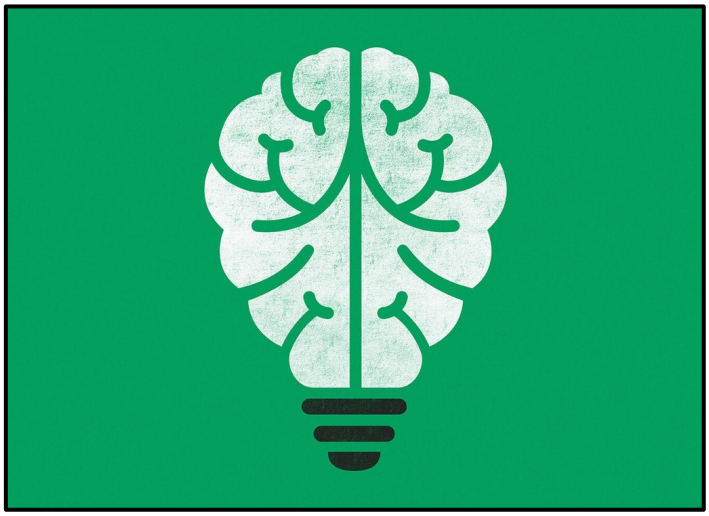
rest of us.

As has happened throughout the history of automation, some jobs got destroyed by automated gas pumps, but new and often better jobs were created. Attendants went away, but to make the sophisticated pumps, companies like Wayne Fueling Systems in Texas, Bennett Pump Co. in Michigan and Gilbarco Veeder-Root in North Carolina hired software coders, engineers, sales staff and project managers. Station owners took their extra profits and turned their stations into mini-marts, which needed clerks, and built more gas stations, which needed more pumps from Wayne, Bennett or Gilbarco, and those companies then hired more people.

Consumers spent less money on gas because they weren't paying for someone else to pump it. That left them more money for iPhones or fish tacos ordered on Seamless, creating more new kinds of employment. Absorbed into the

The AI Threat Isn't Skynet. It's the End of the Middle Class

WIRED



In February 1975, a group of geneticists gathered in a tiny town on the central coast of California to decide if their work would bring about the end of the world. These researchers were just beginning to explore the science of genetic engineering, manipulating DNA to create organisms that didn't exist in nature, and they were unsure how these techniques would affect the health of the planet and its people. So, they descended on a coastal retreat called Asilomar, a name that became synonymous with the guidelines they laid down at this meeting—a strict ethical framework meant to ensure that biotechnology didn't unleash the apocalypse.

Forty-two years on, another group of scientists gathered at Asilomar to consider a similar problem. But this time, the threat wasn't biological. It was digital. In January, the world's top artificial intelligence researchers walked down the same beachside paths as they discussed their rapidly accelerating field and the role it will play in the fate of humanity. It was a private conference—the enormity of the subject deserves some privacy—but in recent days, organizers released several videos from the conference talks, and some participants have been willing to discuss their experience, shedding some light on the way AI researchers view the threat of their own field.

The rise of driverless cars and trucks is just a start. It's not just blue-collar jobs that AI endangers.

Yes, they discussed the possibility of a superintelligence that could somehow escape human control, and at the end of the month, the conference organizers unveiled a set of guidelines, signed by attendees and other AI luminaries, that aim to prevent this possible dystopia. But the researchers at Asilomar were also concerned with more immediate matters: the effect of AI on the economy.

"One of the reasons I don't like the discussions about superintelligence is that they're a distraction from what's real," says Oren Etzioni, CEO of the Allen Institute for Artificial Intelligence, who attended the conference. "As the poet said, have fewer imaginary problems and more real ones."

At a time when the Trump administration is promising to make America great again by restoring old-school manufacturing jobs, AI researchers aren't taking him too seriously. They know that these jobs are never coming back, thanks in no small part to their own research,

FULL TEXT
February 19, 2017

Why Artificial Intelligence Could Soon be Managing Our Finances

BT

Artificial intelligence (AI) is slowly becoming a bigger part of our lives, including our personal finances.

Over the past few years its importance has grown behind the scenes, where AI is deployed in administration and even fraud detection.

Dominic Baliszewski, director of consumer strategy at financial wellbeing company Momentum UK, says: "It is already used in a number of sectors, from banking and advisory to mortgages and pensions, and in many cases, it's led to a quicker, more streamlined customer experience, while easing employee workloads."

RBS, for example, has rolled out a virtual assistant called Luvo for call center staff: when a customer asks a question, the staff member can ask Luvo.

The rise of artificial intelligence

In the past year, however, its presence has moved from the back office to the front line, and we have started to see AI serving customers.

The technologists have identified three primary uses for AI, which constitute its biggest growth areas at the moment. First, it can store information and understand enough about language to use it to assist people.

This led to the Chabot boom of 2016 and 2017.

It is something that the taxman has been working on, with the rollout of its Chabot, Ask Ruth.

It runs partly off a database, with rules: so if you ask when the deadline for filing your self-assessment tax return is, it notes you have included the words 'deadline, 'filing', 'self-assessment' and 'tax return' and answers 'January 31'.

The sheer complexity of the tax system makes an AI tool invaluable, because it can remember rules, deadlines and exceptions that ordinary mortals couldn't possibly hope to memories.

In the world of investment, information storage and communication takes the form of robo-advice. Robot advisers can be programmed with facts and algorithms, so that by asking questions about how much money people have, how much they want it to grow, and their risk tolerance, it can identify suitable investments.

The second theme of AI development is the fact that it can gather more data than a human could manage, and learn how to apply it. We are in the early stages of development here.

AXA Insurance, for example, is experimenting with AI in the Hong Kong market. It uses data from wearable devices and mobile apps to complete a picture of our health and lifestyle: then it makes suggestions to improve it.

If, for example, it notices you are not sleeping for long enough, it will suggest more time in bed, and offer guidance on getting a good night's sleep.

Full Text

May 27, 2016

The Artificial Intelligence Advantage for Investors

EQUITIES.COM

Uber has disrupted the auto industry, Amazon (AMZN) has changed the retail landscape and Expedia (EXPE) has forever altered how we book travel. Similar examples exist for nearly every industry. In the words of the Nobel Prize winning Bob Dylan, "The times they are a changin'." For investors, today's era of sophisticated artificial intelligence and algorithm-based trading systems means that there's no excuse for settling for mediocre returns; but make sure the technology is solid, so that these returns last!

Around the world, investment managers are taking a closer look at artificial intelligence and the ramifications it can and/or will have on their future business models. Some are embracing this new technology while others are just dipping their toes into the water.

BlackRock Inc. (BLK), one of the world's largest fund managers, recently announced that it would replace 40+ human portfolio managers with artificial intelligence as the beginning of its move to fully incorporate new technology and algorithmic approaches. The hedge fund Bridgewater Associates uses AI to predict market trends, Goldman Sachs uses an AI-based financial research platform, and other major companies including UBS (UBS) and Deutsche Bank (DB) also have AI systems in place.

Additional evidence of the importance of AI as a disrupter of the financial services industry is a recent study by Opimas, which reports that

financial companies will spend $1.5 billion+ on AI -related technologies in the near future and up to $2.8 billion by 2021.

It's important to note that it's not just the "big boys" who are using AI. Many smaller, more nimble emerging managers have top tier AI systems in place that are often far surpassing larger firms in terms of investment returns. Through the years there have been many studies touting the proven strong investment performance of smaller funds vs. larger funds and the new world of AI-based investing is no exception.

Mediatrix Capital, an early adapter of advanced algorithms and artificial intelligence, began using this technology to trade high yielding niches in the gold, silver and currency spot markets early on. In fact, they began developing Forex Spot Market algorithms in 2007 and by late-2013, went live trading. As of April 2017, Mediatrix has

FULL TEXT
April 20, 2017

Artificial Intelligence is Monitoring and Evaluating, Potential Borrowers

THE WALL STREET JOURNAL

To judge potential borrowers, lending app Yongqianbao collects more than 1,200 data points, from the usual credit information like a bank-card number to what phone a person uses and how many calls go unanswered.

Financial-technology upstarts like Yongqianbao are on the leading edge of credit scoring, using artificial intelligence to analyze swells of data, much of it unconventional. "While banks only focus on the tip of the iceberg above the sea, we build algorithms to make sense of the vast amount of data under the sea," says Jiao Ke, founder and chief executive of Yongqianbao, a product of Beijing Smarter Finance Information Technology.

China is an ideal laboratory. The country lacks reliable credit-history systems for individuals, while data-privacy expectations are minimal and smartphones are everywhere and used by young Chinese for nearly everything—including personal finance.

Some 160 million Chinese went online to take out loans worth 1.2 trillion yuan ($173.9 billion) in 2016, according to research firm iResearch. That puts China way ahead of any other country, including the U.S., where online lenders provided more than $36 billion of loans in 2015, according to KPMG. And iResearch forecasts China's total will grow at an annual rate of about 50% for the next three years.

In the U.S., credit reports include bill-payment

and loan histories, current debt, even criminal records. In China, mortgages were barely available before 2000. Americans average 2.6 credit cards each; Chinese, a third of a card. Plus, many Chinese are still paid in cash.

Fintech in China is grappling with fraud and defaults, a result in part of fast growth and spotty regulation. The iResearch report says overdue rates over the past four years ranged from 10% to 20%—the "main factor that prevents online lending from becoming a mainstream channel in China's financial industry."

Fintech champions say the power of artificial intelligence is bringing default rates down by finding correlations between smartphone behavior and risk and using them to create tools that can analyze creditworthiness in an instant.

Yongqianbao crunches its 1,200 data points to generate more than 100,000 risk scenarios in a few seconds. The result: a loan whose terms are

FULL TEXT
April 7, 2017

Algorithms and Bias: What Lenders Need to Know

WHITE & CASE

The algorithms that power fintech may discriminate in ways that can be difficult to anticipate—and financial institutions can be held accountable even when alleged discrimination is clearly unintentional.

Much of the software now revolutionizing the financial services industry depends on algorithms that apply artificial intelligence (AI)—and increasingly, machine learning—to automate everything from simple, rote tasks to activities requiring sophisticated judgment. These algorithms and the analyses that undergird them have become progressively more sophisticated as the pool of potentially meaningful variables within the Big Data universe continues to proliferate.

When properly implemented, algorithmic and AI systems increase processing speed, reduce mistakes due to human error and minimize labor costs, all while improving customer satisfaction rates. Creditscoring algorithms, for example, not only help financial institutions optimize default and prepayment rates, but also streamline the application process, allowing for leaner staffing and an enhanced customer experience. When effective, these algorithms enable lenders to tweak approval criteria quickly and continually, responding in real time to both market conditions and customer needs. Both lenders and borrowers stand to benefit.

For decades, financial services companies have used different types of algorithms to trade

securities, predict financial markets, identify prospective employees and assess potential customers. Although AIdriven algorithms seek to avoid the failures of rigid instructions-based models of the past—such as those linked to the 1987 "Black Monday" stock market crash or 2010's "Flash Crash"—these models continue to present potential financial, reputational and legal risks for financial services companies.

Consumer financial services companies in particular must be vigilant in their use of algorithms that incorporate AI and machine learning. As algorithms become more ingrained in these companies' operations, previously unforeseen risks are beginning to appear—in particular, the risk that a perfectly well-intentioned algorithm may inadvertently generate biased conclusions that discriminate against protected classes of people.

Input bias could occur when the source data itself

FULL TEXT
January 20, 2017

Silicon Valley Hedge Fund Takes on Wall Street with A.I Trader

BLOOMBERG

Babak Hodjat believes humans are too emotional for the stock market. So he's started one of the first hedge funds run completely by artificial intelligence.

"Humans have bias and sensitivities, conscious and unconscious," says Hodjat, a computer scientist who helped lay the groundwork for Apple's Siri. "It's well documented we humans make mistakes. For me, it's scarier to be relying on those human-based intuitions and justifications than relying on purely what the data and statistics are telling you."

Hodjat, with 21 patents to his name, is co-founder and top scientist of Sentient Technologies Inc., a startup that has spent nearly a decade—largely in secret—training an AI system that can scour billions of pieces of data, spot trends, adapt as it learns and make money trading stocks. The team of technology-industry vets is betting that software responsible for teaching computers to drive cars, beat the world's best poker players and translate languages will give their hedge fund an edge on Wall Street pros.

The walls of Sentient's San Francisco office are dotted with posters for robots-come-alive movies such as "Terminator." Inside a small windowless trading room, the only light emanates from computer screens and a virtual fire on a big-screen TV. Two guys are quietly monitoring the machine's trades—just in case the system needs to be shut down.

"If all hell breaks loose," Hodjat says, "there is a red button."

Sentient won't disclose its performance or many details about the technology, and the jury is out on the wisdom of handing off trading to a machine. While traditional hedge funds including Bridgewater Associates, Point72 and Renaissance Technologies have poured money into advanced technology, many use artificial intelligence to generate ideas—not to control their entire trading operations.

All the same, Sentient, which currently trades only its own money, is being closely watched by the finance and AI communities. The venture capital firm owned by Hong Kong's richest man, Li Ka-shing, and India's biggest conglomerate, Tata Group, are among backers who have given the company $143 million. (Beyond trading, Sentient's AI system is being applied to a separate e-commerce product.)

Wells Fargo Sets Up Artificial Intelligence Team in Tech Push

REUTERS

Wells Fargo's AI team will work on creating technology that can help the bank provide more personalized customer service.

Wells Fargo & Co (No. 12 on the DiversityInc Top 50 Companies list) has created a team to develop artificial intelligence-based technology and appointed a lead for its newly combined payments businesses, as part of an ongoing push to strengthen its digital offerings.

Wells Fargo's AI team will work on creating technology that can help the bank provide more personalized customer service through its bankers and online, the bank said on Friday. It will be led by Steve Ellis, head of Wells Fargo's innovation group.

Well Fargo's AI focus comes as banks and other large financial institutions increase their investment in the emerging technology which seeks to train computers to perform tasks that would normally require human intelligence.

Projects range from systems that can spot payments fraud or misconduct by employees, to technology that can make more personal recommendations on financial products to clients.

The bank also announced that it had appointed Danny Peltz, head of treasury, merchant and payment solutions, to head business development and strategy for its combined payments businesses.

Peltz's group, which comprises of the bank's consumer, small business, commercial and corporate banking payments businesses, will also be tasked with establishing relationship with other companies in the payments landscape. It will also be in charge of the bank's new API (application program interface) services, or technology that allows customers to integrate Wells Fargo products and services into their own applications.

Both teams will report into Avid Modjtabai, head of payments, virtual solutions and innovation. Modjtabai's division was set up in October as part of efforts to enhance the bank's digital products and services by combining its innovation teams with some of the businesses most affected by changes in technology such as payments.

FULL TEXT
February 10, 2017

Bill Gates Calls for Income Tax on Robots

FINANCIAL TIMES

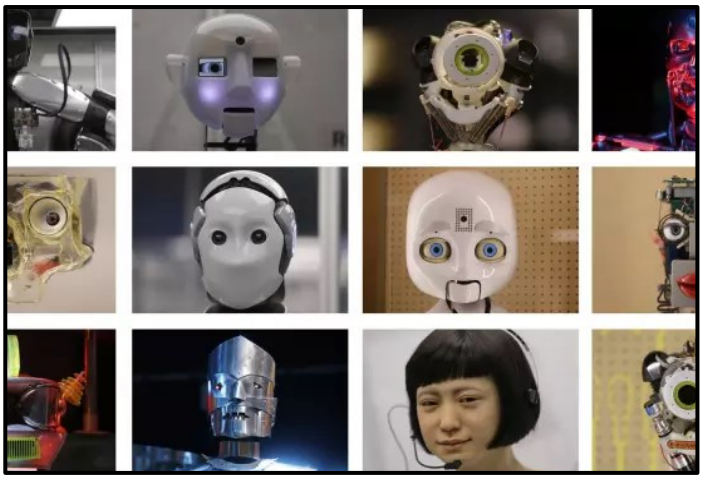
Robots have at least one unfair advantage over human workers: they do not pay income tax.

Bill Gates, co-founder of Microsoft and the world's richest man, thinks that should change. It is an idea that until now has been associated more with European socialists than tech industry leaders, and puts him in the unusual position of explicitly arguing for taxes to slow the adoption of new technology.

Mr. Gates made his fortune from the spread of PCs, which helped to erase whole categories of workers, from typists to travel agents. But, speaking in an interview with Quartz, he argued that it may be time to deliberately slow the advance of the next job-killing technologies.

"It is really bad if people overall have more fear about what innovation is going to do than they have enthusiasm," he said. "That means they won't shape it for the positive things it can do. And, you know, taxation is certainly a better way to handle it than just banning some elements of it."

The idea of using taxes to support people put out of work by automation has been catching on in the tech world, but Mr. Gates went further, pushing for a direct levy on robots that would match what human workers pay. "Right now, the human worker who does, say, $50,000 worth of work in a factory, that income is taxed and you get income tax, social security tax, all those things," he said. "If a robot comes in to do the same thing, you'd think that we'd tax the robot at a similar level." The extra money should be used



to retrain people the robots have replaced, Mr. Gates said, with "communities where this has a particularly big impact" first in line for support.

Some politicians have also joined the fray. Benoît Hamon, France's Socialist candidate in this year's presidential elections, has called for a tax on robots to fund a minimum income for all. Anne-Marie Slaughter New capitalism nurtures people, not products Future prosperity may hinge on creativity and caring and the desire to share skills

Some tech leaders have hinted that the tech companies' customers — rather than the industry itself — should foot a higher tax bill. In a recent interview with the Financial Times, Satya Nadella, Microsoft's current chief executive, said: "Whenever somebody cuts cost, that means, hopefully, a surplus is getting created. You can always tax surplus." Mr. Gates echoed that suggestion, though he also struck a more radical stance with his levy on the machines' producers. "I don't think the robot companies are going to be outraged that there might be a tax," he said.

FULL TEXT

February 19, 2017

Lawmakers Mull U.S. Role in A.I. Technology

THE HILL

Lawmakers and experts voiced concerns Wednesday about America's future as a leader in artificial intelligence technology.

Sen. Ted Cruz (R-Texas) cautioned during a Senate Commerce, Science and Transportation subcommittee hearing that the U.S. could lose its spot as a leader in developing AI technology.

"Today, the United States is the preeminent leader in developing artificial intelligence. But that could soon change," warned Cruz, the chair of the Space, Science and Competitiveness subcommittee.

"Ceding leadership in developing artificial intelligence to China, Russia and other foreign governments will not only place the United States at a technological disadvantage, but it could also have implications for national security," he said in opening remarks.

Experts on a panel expressed similar sentiments.

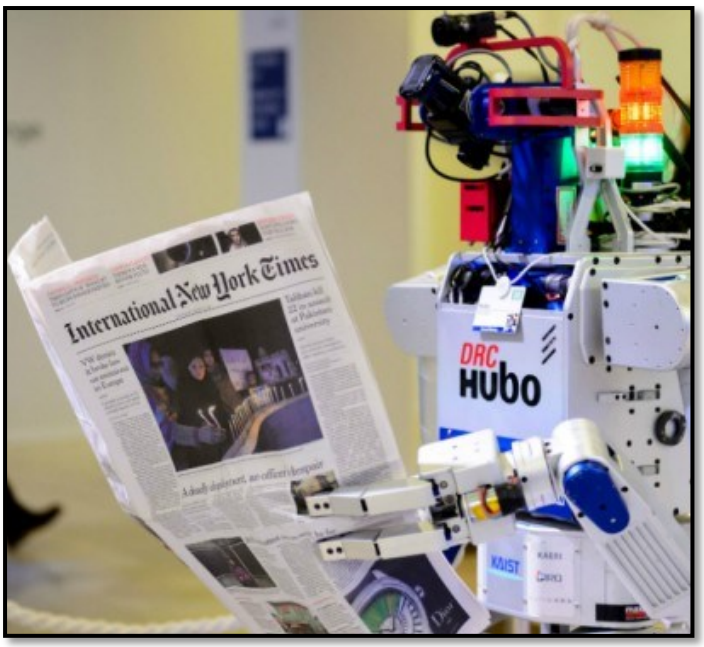
"I do think it's important that we grow our AI workforce quickly," said Andrew Moore, dean of the School of Computer Science at Carnegie Mellon University.

"We're so short of experts here. Frankly, I look at some of the other major players, and China and India are pumping out major scientists that can do good work here," Moore said.

He called the current hiring situation "unsustainable."

Moore argued that not adequately addressing hiring pool concerns could eventually snowball into national security problems if the U.S. did not continue to lead AI development.

"This AI tech is available to bad guys too," Moore said when asked by Sen. Brian Schatz (D-Hawaii)



about immediate AI policy concerns. "It is possible to set up homemade rooms in a bad way. Repressive regimes can now face recognition tools. We need to stay ahead."

"The biggest thing to watch for is the openness," said Greg Brockman, with research company OpenAI. "We can attract the world's best talent by keeping things open."

The subcommittee's hearing comes just over a month after the White House released a report on the future of artificial intelligence, outlining 23 policy recommendations to help the U.S. stay at the forefront of AI technology.

Among those recommendations was monitoring the state of AI in other countries and teaching ethics as a part of the AI curricula in higher education.

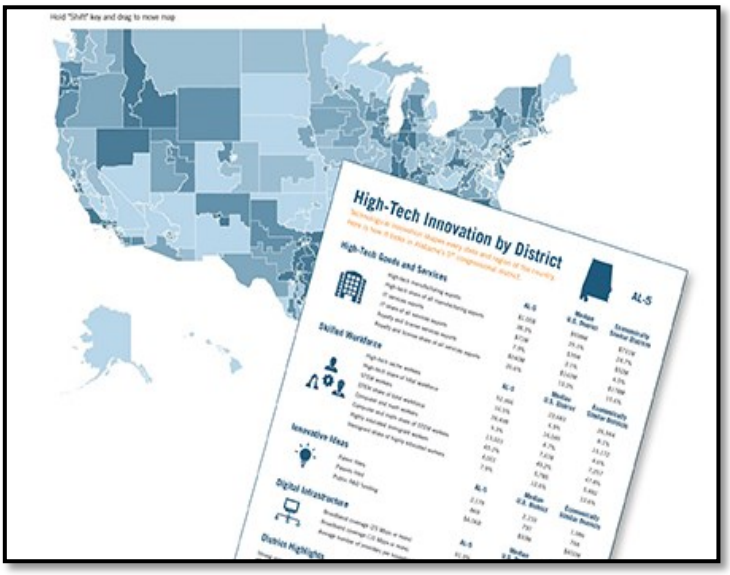
AI technology has garnered increasing public attention — and stoked fears — amid rapid advancements in recent years.

Sen. Gary Peters (D-Mich.) noted the importance

FULL TEXT

November 30, 2016

High-Tech Nation: How Technological Innovation Shapes America's 435 Congressional Districts



For years, policy discussions about America's innovation-driven, high-tech economy have focused on just a few iconic places, such as the Route 128 tech corridor around Boston, Massachusetts; Research Triangle Park in Raleigh, Durham, and Chapel Hill, North Carolina; Austin, Texas; Seattle, Washington; and, of course, California's white-hot Silicon Valley. This has always been too myopic a view of how innovation is distributed across the country, because many other metropolitan areas and regions—from Phoenix to Salt Lake City to Philadelphia—are innovative hot spots, too, and many more areas are developing tech capabilities. An unfortunate result of this myopia has been that policy debates about how to bolster the country's innovative capacity have often been seen as the province of only the few members of Congress who represent districts or states that are recognizably tech-heavy, while many members from other districts focus on other issues. This needs to change, not only because the premise is incorrect, but also because the country's competitive position in the global economy hinges on developing a broad-based, bipartisan, bicameral understanding and support for federal policies to spur innovation and growth.

A defining trend of the last decade is the degree to which technology—information technology, in particular—has become a critical driver of productivity and competitiveness for the whole economy, not just the tech sector itself. This is abundantly clear throughout the United States, as revealed in both traditional economic data, such as high-tech export activity, and in newer metrics, such as broadband deployment. Indeed, all districts have some kind of technology and innovation-driven activity occurring locally, either because long-established industries such as agriculture, mining, manufacturing, and professional services are rapidly evolving into tech-enabled industries, or because new developments such as cloud computing and ubiquitous access to broadband Internet service allow innovators to create new, IT-enabled enterprises in any small town or rural area they may choose, not just in Silicon Valley or Boston.

The purpose of this report is to shed light on just how widely diffused the country's innovation-driven, high-tech economy really is, so members of Congress and other policymakers can find common cause in advancing an agenda that builds up the shared foundations of national

FULL TEXT
November 28, 2016

2

@chapter2

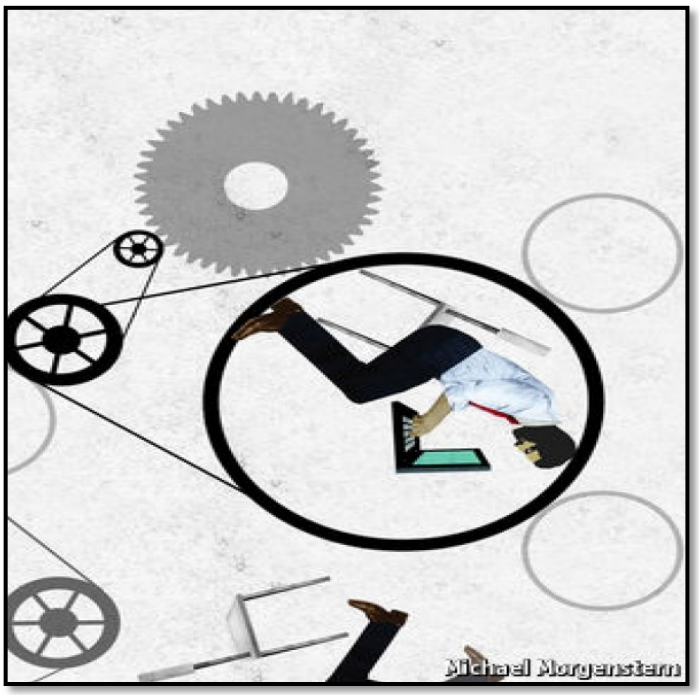
#EMPLOYMENT

ARTIFICIAL INTELLIGENCE {A.I.} AND THE ECONOMY

Artificial Intelligence: The Impact on Jobs: Automation and Anxiety

THE ECONOMIST

SITTING IN AN office in San Francisco, Igor Barani calls up some medical scans on his screen. He is the chief executive of Enlitic, one of a host of startups applying deep learning to medicine, starting with the analysis of images such as X-rays and CT scans. It is an obvious use of the technology. Deep learning is renowned for its superhuman prowess at certain forms of image recognition; there are large sets of labelled training data to crunch; and there is tremendous potential to make health care more accurate and efficient.



Dr Barani (who used to be an oncologist) points to some CT scans of a patient's lungs, taken from three different angles. Red blobs flicker on the screen as Enlitic's deep-learning system examines and compares them to see if they are blood vessels, harmless imaging artefacts or malignant lung nodules. The system ends up highlighting a particular feature for further investigation. In a test against three expert human radiologists working together, Enlitic's system was 50% better at classifying malignant tumors and had a false-negative rate (where a cancer is missed) of zero, compared with 7% for the humans. Another of Enlitic's systems, which examines X-rays to detect wrist fractures, also handily outperformed human experts. The firm's technology is currently being tested in 40 clinics across Australia.

A computer that dispenses expert radiology advice is just one example of how jobs currently done by highly trained white-collar workers can be automated, thanks to the advance of deep learning and other forms of artificial intelligence. The idea that manual work can be carried out by machines is already familiar; now ever-smarter machines can perform tasks done by information workers, too. What determines vulnerability to automation, experts say, is not so much whether the work concerned is manual or white-collar but whether or not it is routine. Machines can already do many forms of routine manual labor, and are now able to perform some routine cognitive tasks too. As a result, says Andrew Ng, a highly trained and specialized radiologist may now be in greater danger of being replaced by a machine than his own executive assistant: "She does so many different things that I don't see a machine being able to automate everything she does any time

FULL TEXT
June 25, 2016

Bill Gates is Wrong: The Solution to AI Taking Jobs is Training, Not Taxes

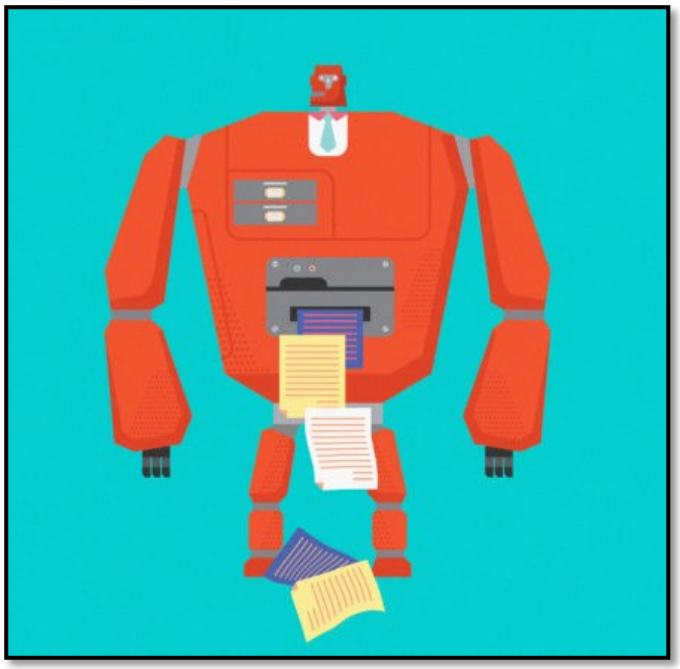
WIRED

AI has massive potential. Taxing this promising field of innovation is not only reactionary and antithetical to progress, it would discourage the development of technologies and systems that can improve everyday life.

Imagine where we would be today if policy makers, fearing the unknown, had feverishly taxed personal computer software to protect the typewriter industry, or slapped imposts on digital cameras to preserve jobs for darkroom technicians. Taxes to insulate telephone switchboard operators from the march of progress could have trapped our ever-present mobile devices on a piece of paper in an inventor's filing cabinet.

There simply is no proof that levying taxes on technology protects workers. In fact, as former US treasury secretary Lawrence Summers recently wrote, "Taxes on technology are more likely to drive production offshore than create jobs at home."

Calls to tax AI are even more stunning because they represent a fundamental abandonment of any responsibility to prepare employees to work with AI systems. Those of us fortunate enough to influence policy in this space should demonstrate real faith in the ability of people to embrace and prepare for change. The right approach is to focus on training workers in the right skills, not taxing robots.



There are more than half a million open technology jobs in the United States, according to the Department of Labor, but our schools and universities are not producing enough graduates with the right skills to fill them. In many cases, these are "new collar jobs" that, rather than calling for a four-year college degree, require sought-after skills that can be learned through 21stcentury vocational training, innovative public education models like P-TECH (which IBM pioneered), coding camps, professional certification programs and more. These programs can prepare both students and mid-career professionals for new collar roles ranging from cybersecurity analyst to cloud infrastructure engineer.

At IBM, we have seen countless stories of

FULL TEXT
April 11, 2017

This Company's Productivity Soared After Replacing 90% of Employees with Robots

BUSINESS INSIDER

DURING HIS EIGHT years in office, President Barack Obama has seen hackers grow into a threat no president has faced before. US intelligence and law enforcement agencies have responded to everything from a Chinese hack of Google in 2009 to Russian digital meddling in this election. He's learned, as a result, to think a few moves ahead. And that includes preparing for possibilities that others might consider science fiction—like the possibility of an artificial intelligence trained through machine learning and tasked with stealing US nuclear codes.

In an exclusive interview with MIT Media Lab director Joi Itoand WIRED Editor-in-Chief Scott Dadich, Obama discusses the possibilities—and possible dangers—of AI. In an era when hackers can steal the fingerprints of 5.6 million federal employees and or pull off a modern version of Watergate, he wonders whether sophisticated adversaries might use AI to infiltrate the government's most sensitive systems.

"There could be an algorithm that said, 'Go penetrate the nuclear codes and figure out how to launch some missiles,'" Obama says. "If that's its only job, if it's self-teaching and it's just a really effective algorithm, then you've got problems."

This notion of an artificially intelligent hacker or hacking tool is more than prognostication. The Pentagon's Defense Advanced Research Projects Agency is developing AI software for both offense and defense. During its Darpa Grand

Challenge competition at the Defcon hacker conference this summer, the agency pitted AI systems against each other to find, exploit, and patch software security vulnerabilities in real time.

Obama argues the potential for an AI attack doesn't represent a cyber doomsday. But it does require strengthening America's defenses against all hackers, human and bot. "My directive to my national security team is, don't worry as much yet about machines taking over the world," he says. "Worry about the capacity of either nonstate actors or hostile actors to penetrate systems. In that sense it is not conceptually different than a lot of the cybersecurity work we're doing. It just means that we're gonna have to be better, because those who deploy these systems are going to be a lot better now."

The sort of machine learning-based AI that

More Black and Latino Students Learn to Code as Code.org Classes Swell

USA TODAY

SAN FRANCISCO — Giovanna Munoz Ortiz is a 10th grader at Madison Park Academy, and every day, she learns to code.

Her public school in East Oakland, Calif., mirrors the neighborhood that surrounds it. It's nearly entirely Latino and African American. Almost all the students qualify for free and reduced lunch. And, until 2015, it didn't offer any computer science classes.

"I had never really thought about it much before," Ortiz, 15, says. "Now that I am being exposed to it, I find it really interesting."

Ortiz is one of a growing number of students from underrepresented backgrounds gaining access for the first time to curriculum from Code.org, which gives them the knowledge and skills to pursue an education and career in computer science.

Code.org said Thursday that it has enrolled more than 18,600 high school students in its CS Principles advanced placement computer science course. About half of the students are Latino or African American. That could more than double the number of underrepresented minorities in AP computer science classes nationwide this year.

Though the numbers are still small, they are growing and the trajectory shows promise for Code.org's mission to reach students in urban and rural areas who have never before had the opportunity to study computer science.

Code.org is a nonprofit group backed by tech companies such as Facebook and Microsoft. Its mission is to get every school to add computer science to its curriculum, part of a growing effort to address the nation's shortage of computer scientists and the systemic lack of diversity in the tech industry.

That gender and racial gap has its roots in unequal access to computer science education. And that's something Partovi says he's determined to change so that students of all backgrounds have a shot at the plentiful jobs and high-paying careers in the field, just as he did.

Partovi, born in Tehran, taught himself to code on a Commodore 64. After immigrating to the U.S. as a child, he used his programming chops to land jobs as a software engineer during high school and college while his friends worked as busboys and babysitters. With a degree in

FULL REPORT

December 2, 2016

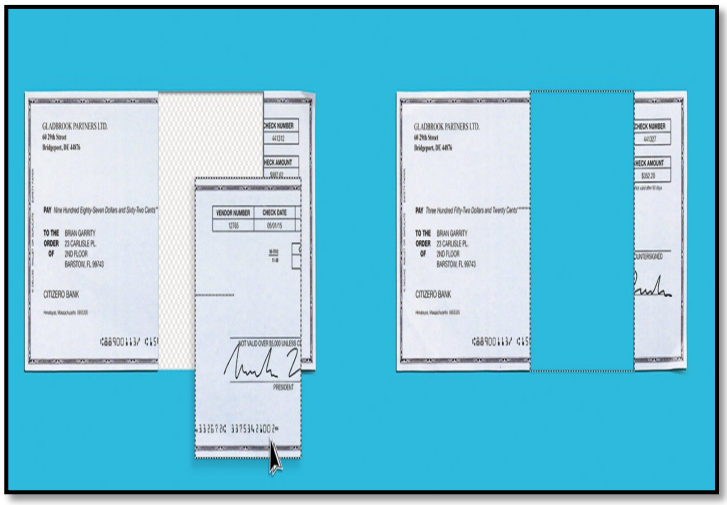
Want a Steady Income? There's an App for That

NEW YORK TIMES

Heather Jacobs, a chain--spa masseuse in Simi Valley, Calif., never knows how much money is coming her way. When her spa charges $99 for a 55--minute massage, she makes $18. But if she books just two massages in a six--hour workday, the spa must raise her day's pay to minimum wage, which is $9 an hour. Jacobs, who is 28, can't be sure how many hours she will get or how many walk--ins will choose her — a 5-foot--2, 96--pound masseuse who looks as if she could manage only a 1 on the four--point pressure scale, though she is really a 3, verging on a 4. Her paychecks, which come every two weeks, have been as high as $700 and as low as $90. She also freelances for a gym, offering passers--by free massages on the chance they might join; the gym doesn't pay her, so for that she earns only tips. She seeks out private clients too, especially around the 27th of the month, when her credit--card bill, with its $90 minimum payment, is due.

"That's when I'm desperate," she said, "going everywhere I can, just to find people to rub."

Jacobs, in her habitual bright pink lipstick and matching headband, was explaining all this via Skype, from her "little box of a house" in Simi Valley, to Jane Leibrock, 33, who had the more muted look of the fortunate and was sitting in the Oakland headquarters of Even, the start--up where she works. Leibrock — an alumna of Yale; a onetime Beijing resident and Mandarin speaker; a street--fashion blogger; a tweeter of first--world problems ("My personal hell would be having my



earbuds pulled out over and over throughout eternity") — used to study the user experience of privacy settings for Facebook. Now she is a researcher for Even, which proposes, for a fee, to help solve the problem of income volatility.

Leibrock wanted to know everything about Jacobs's financial life. Jacobs gamely obliged, though at times she became flustered or teary. Thinking about money gives her a jolt, "like you're about to get into a car accident," she later told me. There's the $3,700 for massage--school tuition that she still owes on her credit card; the $60 a month for drugs for her anxiety and bipolar disorder, which she might skimp on again; the old debt she is paying down for her husband, a student and part--time delivery driver for a Red's BBQ. Splurge on Walmart groceries this week or stick to the dollar store? Because bills come like clockwork and income does not, Jacobs never knows.

FULL REPORT
April 29, 2015

Warehouses Promise Lots of Jobs but Robot Workforce Slows Hiring

THE LOS ANGELES TIMES

When Skechers started building a colossal distribution center in Moreno Valley six years ago, backers promised a wave of new jobs.

Instead, by the time the company moved to the Moreno Valley, it had closed five facilities in Ontario that employed 1,200 people and cut its workforce by more than half. Today, spotting a human on the premises can feel like an accomplishment.

There are now only about 550 people working at one cavernous warehouse, which is about as big as two Staples Centers combined. Many of them sit behind computer screens, monitoring the activities of the facility's true workhorses: robotic machines.

It's a sign of things to come.

In the last five years, online shopping has produced tens of thousands of new warehouse jobs in California, many of them in Riverside and San Bernardino counties. The bulk of them paid blue collar people decent wages to do menial tasks – putting things in boxes and sending them out to the world.

But automated machines and software have been taking up more and more space in the region's warehouses, and taking over jobs that were once done by humans. Today, fewer jobs are being added, though some of them pay more.

Amazon, one of the biggest dogs in warehousing,

has built 20 new fulfillment centers outfitted with robotics in the last three years, four in California. Since 2014, the company has added 50,000 warehouse workers nationwide — and more than 30,000 robots.

Robots are muscling their way into almost every single occupation, but they pose a direct and immediate threat to people working in storage, industry experts say. That work is repetitive and fits into a chain of supply and delivery that generates reams of data.

For the nation's 879,800 warehouse workers, 102,800 of whom are in California, profound change is already here.

"The modern warehouse tends to be creating fewer jobs…. Automation is replacing the lowest-end jobs," said Chris Thornberg, a founding partner at Beacon Economics, a Los Angeles consulting firm.

FULL TEXT
December 4, 2016

Fedex, UPS, Use Tech to Help Keep Hiring Flat

THE WALL STREET JOURNAL

Holiday hiring is expected to be flat at package-delivery giants FedEx Corp. and United Parcel Service Inc., but that masks efforts behind the scenes to prepare for the coming wave of e-commerce orders.

FedEx is opening four new hubs and "dozens" of small, satellite facilities to receive, sort and ship an expected surge in packages between Thanksgiving and Christmas, executives said this week. UPS is expanding a network of temporary sorting hubs and is increasing its use of software to help sort packages faster, a spokeswoman said.

Both companies have also invested in automation so they can process more packages over the holidays while keeping staffing levels relatively steady. If their projections hold, FedEx and UPS will have kept the number of seasonal workers steady for two years running, at over 50,000 and 95,000 workers respectively, after sharply ramping up holiday hiring earlier in the decade.

"We've been able to hold the line and sustain the number of seasonal workers" despite having more volume, said Susan Rosenberg, a UPS spokeswoman.

Many of FedEx's new facilities will have automation technology that moves and scans packages at a faster pace, which helps offset its reliance on hard-to-find seasonal workers, said Raj Subramaniam, an executive vice president at FedEx. The company saw volumes reach 25

million shipments in a day three times during the peak holiday period last year, he said. The Memphis, Tenn., company ultimately kept on seasonal workers into 2016 because of growing e-commerce demand throughout the year.

FedEx spokesman Glen Brandow said the projected holiday hiring number could grow, and said there is no link between the company's technology and its flat projection.

The automated satellite facilities also bring more FedEx services closer to its retail customers, said Satish Jindel, president of tracking software developer ShipMatrix Inc. FedEx is "realigning the network for the new e-commerce world…They are recognizing that the world of parcel has changed as a result of rapid growth of online retail," he said.

UPS's additional "mobile delivery centers," first

FULL TEXT
September 30, 2016

3

@chapter3

#HOME

ARTIFICIAL INTELLIGENCE [A.I.] AND THE ECONOMY

A.I. Will Cause a Revolution of Awareness, Not the Rise of Distrust

THE DRUM MAGAZINE

The latest innovations in automation and AI are surrounded by controversy. Thanks to films such as the Terminator, we have been painted a picture of what happens when AI goes stupendously wrong. This fear does little to assuage the distrust of automated processes and machine learning, but what are the benefits?

Enter the digital assistant. Though this technology is a long way off doing mouth to mouth or hoovering my living room, it does provide many benefits. It's now possible to automate process using digital assistants such as Google Home or Amazon Echo. For example, you can use voice commands to control smart devices like lights, thermostats and switches from home automation systems, manage everyday tasks like shopping lists and even play music. Furthermore, these digital assistants aren't just automating processes but also make use of machine learning, meaning that they process vast amounts of data to enable them to recognize patterns and get better at what they do.

However, digital assistants such as Google Home and Amazon Echo do something that no other machine learning device does; they're a permanent addition in your home. This means it's totally unique and has the potential to do a whole lot more than organize my playlist.

Here are three benefits these devices could add to our lives without the fear of mass destruction.

EARLY WARNING SYSTEM

Digital assistants could be the best, most effective early warning systems for natural disasters such as earthquakes, tornados and flooding. Being prepared is the most important thing when it comes to natural disasters, as it can help to prevent loss of life and reduces the economic and material impact. Since 2008 the USGC Earthquake Hazards Program has been supporting the research and development of earthquake early warning systems in partnership with Caltech and the University of California, Berkeley, among others. Part of this research has led to ShakeAlert, which is an early warning system for the west coast of the United States, where earthquakes are frequent. The system is still in the beta stage but when it is rolled out to the general public, it will be able to send alerts to users' phones up to 10 seconds before an earthquake hits. This is enough time for people to find shelter, meaning this technology will save

FULL TEXT
April 11, 2017

The House that Learns: Bringing Artificial Intelligence into the Home

FORBES

A new London startup wants to make controlling a smart-home more natural and intuitive. The startup, AI Build, is making a home-hub prototype that it says will make turning on a light as easy as asking your mate to get up and do it.

It plans to do this through the introduction of he addition of 'teachable' programming and visual input methods to instruct a home-hub. Current models rely on voice or the use of apps for input of instructions. But AI Build's prototype will be the first to include a range of cameras as well, according to Daghan Cam, cofounder and chief executive officer of the startup.

The device will attach to the ceiling of a room in a connected home. It will have an array of six cameras each covering 60 degrees to give it a 360 degree perspective of the room. The in-built computer can then be taught where objects are in the room, to recognize certain people and to respond to a range of motions and gestures.

"The idea is to make home automation as easy as asking a friend to turn on a light," he explains. "You'd ask your friend and point at the light you'd want to activate. Compare that to what's currently on the market. Currently a mobile app takes multiple steps to activate. You unlock your phone, you open the app, you tell it to turn on a specific light. This is more natural. Instead of using a mobile or a remote control, you use existing skills and natural language."

To facilitate this the AI Build hub will use

algorithms to give itself reinforcement learning. This means over time it should be able to pick up the natural gestures and voice idiosyncrasies of frequent users. Users can customize it to respond in certain ways to specific gestures – although it will come pre-programmed with a standard set of commands for most functions, Cam says.

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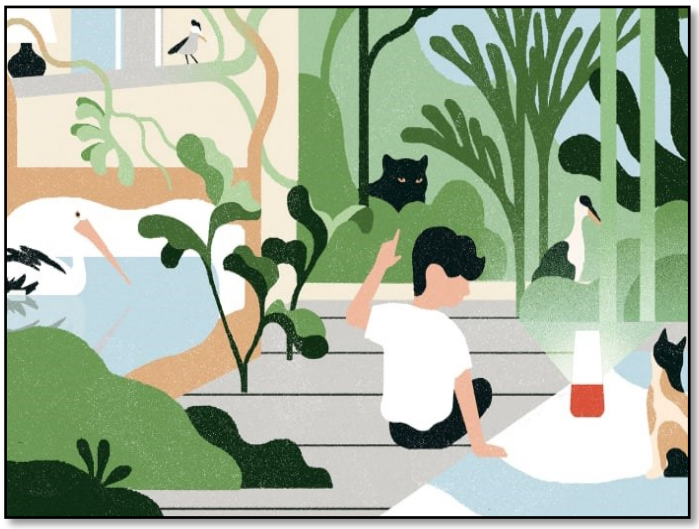
FULL TEXT

SEPTEMBER 15, 2016

Mattel's New AI Will Help Raise Your Kids

FAST COMPANY



The toy company's Aristotle device is a voice-activated speaker that will understand, educate, and entertain children.

"Okay, Google, how fast do lions run?" yelled my toddler to our new Google Home smart speaker. "Okay, Google, how far is our moon?" The voice assistant had understood me perfectly moments earlier, but it couldn't process a single question asked by my son's higher-pitched, less articulated voice. "She doesn't help!" he lamented with a frown.

My son's disappointment is the exact problem that Mattel believes it can fix with Aristotle, a $349 voice-activated speaker launching in May that functions like Google Home or Amazon Echo devices. But rather than rule the entire house, Aristotle is built to live in a child's room—and answer a child's questions. In this most intimate of spaces, Aristotle is designed to be far more specific than the generic voice assistants of today: a nanny, friend, and tutor, equally able to soothe a newborn and aid a tween with foreign-language homework. It's an AI to help raise your child.

"We tried to solve the fundamental problem of most baby products, which is they don't grow with you," says Robb Fujioka, senior vice president and chief products officer at Mattel. "We spent a lot of time investing in how it would age."

For new parents, Aristotle can be a smart baby monitor: It's equipped with a camera that streams video to your phone. Via an app, parents can program the device to auto-soothe their baby when she wakes up crying, setting it to glow like a night-light or play a favorite song. The assistant will also help log things like wet diapers and feedings, thus introducing the possibility of automatically replenishing products. Though the device will have various retail partners, it's notably compatible with Amazon's Alexa service. In what Mattel calls "parent mode," anything a parent would ask Alexa can be asked through Aristotle; they simply begin a question with "Alexa" rather than "Aristotle," as if they're addressing two different people. [Update: Since publishing this story, Mattel has canceled Alexa integration for Aristotle and opted to pursue another, unannounced partnership instead.]

But it's the child-to-Aristotle connection that makes the device such an interesting entrant in the rapidly commoditized voice-assistant market. Companies like Amazon, Apple, and Google are trying to rule voice with everything-for-everyone personalities that ultimately fail to serve more

FULL TEXT
April 17, 2017

IBM's Watson is Alex Da Kid's Collaborator on New Song, "Not Easy"

ROLLING STONE

When it comes to making music, award-winning producer and composer Alex Da Kid is a pro. It comes as no surprise that "Not Easy," his latest song – and the first on which he is a credited artist – is masterfully complex on an emotional scale, yet relatable in the most human way. What is surprising is that Alex collaborated with IBM's Watson on the song: Watson served as an inspirational muse in a way no human could.

When you listen to "Not Easy," the first thing that hits you is emotion. Pinpointing that exact emotion proves to be a bit of a challenge – X Ambassadors' Sam Harris opens the song with the forthright refrain, repeating, "It's not easy breaking your heart." Harris croons to his acoustic guitar in a nostalgic, singer-songwriter way, and the lyrics are straightforward heartbreak. Elle King's distinct, emotive voice catches you off guard on the second verse – and Wiz Khalifa's verse adds the final layer by the third. Yet the catchiness of the tune, resolutions in melody, soulful harmonies and consistent heartbeat of the drums leave the listener hopeful – complete with a giggly comment from King after the last chord. The result is a subtle emotional roller coaster – the ups and downs and nuances of heartbreak that everyone has gone through.

With his fair share of hits and awards under his belt, Alex clearly knows how to write a song that people will relate to. But this time, he wanted to see if IBM's Watson could help inspire his creative process.

WHAT IS WATSON?

Watson is technology that understands data including text, images, video and audio. Watson is available as a suite of open APIs that provide insights from massive amounts of data – and illuminate those discoveries in various ways for individual people. As Watson learns incremental information, he becomes smarter: Value and knowledge increase over time. Experts refer to Watson as Artificial Specific Intelligence (versus Artificial General Intelligence) – the distinction is that IBM is focused on enhancing the way we live and work in a meaningful way.

Watson started out as a single natural language, QA API; today, he consists of more than 50 technologies. For this particular collaboration, multiple APIs – or sets of data-analyzing tools – were consulted to provide Alex with a

FULL TEXT

February 20, 2017

Typing with Just Brain Waves

THE WALL STREET JOURNAL

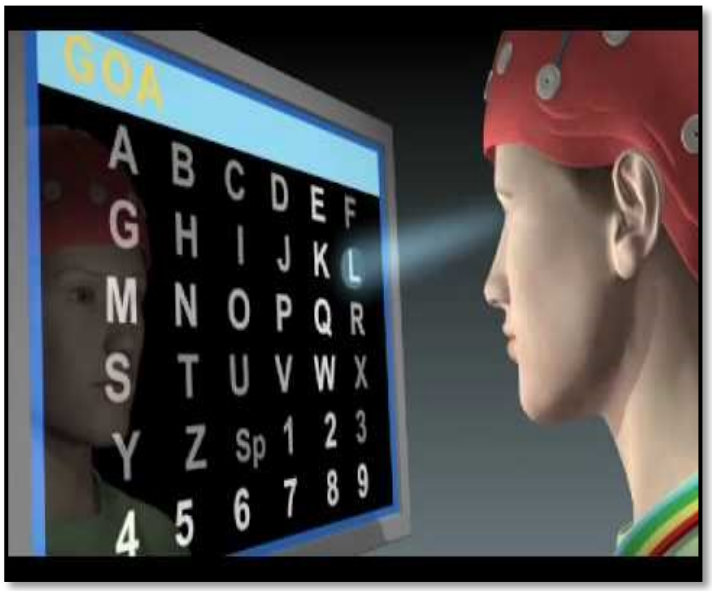
For years, scientists have been striving to find ways for people to control objects with nothing more than their brain waves. Success would open the door to all kinds of possibilities, such as enabling communication for a person who is entirely paralyzed.

Advances in computer technology are helping, but one big hurdle is that reading people's minds isn't just difficult, it's also slow. Now researchers at Stanford University have managed to get two rhesus macaques to control a computer with nothing more than brain signals at a surprisingly fast rate—fast enough to suggest that a similar system, adapted for humans, could make reasonably prompt communications possible for people who are otherwise unable to move.

The Stanford scientists implanted tiny sensors—each the size of a baby aspirin—in the motor cortex area of the monkeys' brains, then trained the animals to control a wireless computer cursor by means of an infrared bead at the end of one of their fingers. During training, the monkeys had to point to a particular color every time that it appeared in a grid on screen in order to get a reward.

Thanks to the implanted sensors, the researchers could detect the voltage patterns of the brain signals associated with the monkeys' arm movements. In effect, the scientists could read the monkeys' minds, at least with respect to how they moved the cursor.

When the computer was shifted to reading brain



signals instead of infrared inputs, the monkeys still moved their arms—and still controlled the cursor, this time because the computer could read their brain patterns and put the cursor where the monkeys intended. (In earlier experiments, the process even worked when the monkeys' arms were restrained.) When the scientists assigned invisible letters to the spaces in the grid and flashed the colors through them to spell words (much as you might spell words on the keypad of a phone), they were able to measure how quickly the monkeys were "typing."

Of course, the monkeys were just clicking on the color as it moved through the grid, but each click was associated with a letter. (The sequences were drawn from "Hamlet" or, in another trial, from a newspaper article.) Measured this way, one of the monkeys was typing the equivalent of 12 words a minute—entirely by means of brain signals. The other monkey approached a rate of 8 words a minute.

FULL TEXT
September 30, 2016

Congress Considers Plan to Curb Ticket 'Bots'

THE NEW YORK TIMES

Senator Bill Nelson sounded exasperated. "I did not get to go see 'Hamilton,'" this Florida Democrat told the musical's lead producer on Tuesday. "The reason I didn't go: I did not want to pay $800 a ticket."

"At the time that I tried, all the tickets had been bought up," he added. "This is a rigged market benefiting some greedy speculators."

Congress, anxious about the role that automated ticket-buying software — so-called bots — is playing in driving up prices for prime entertainment and sporting events, is now considering legislation to criminalize the use of such software, as well as knowingly buying tickets through such means. The House approved a version of the bill, the Better Online Ticket Sales Act, on Monday, and on Tuesday the Senate Commerce Committee held a hearing on the legislation, which was introduced in July by Senator Jerry Moran, Republican of Kansas.

Lawyers for Ticketfly and StubHub — two large ticketing companies — were witnesses at the hearing, as was the commissioner of the Big 12 Conference, Bob Bowlsby, who has overseen a sweeping expansion of the ways his league's sports teams are marketed and sold.

But the star of the show was Jeffrey Seller, the lead producer of "Hamilton," which has been sold out on Broadway for more than a year, and is virtually sold out in Chicago, where it is about to begin its first production outside New York later

this month.

"It's an arms race," Mr. Seller said. "When the bot actor is making millions and millions a year by turning over tickets, it is worth his time to continue to employ engineers to create better software." Ticket sellers "keep employing new systems," he added, "and then the bots up their game as well. That's why we need the legislation, because the arms race is unending."

The consequences would be significant.
A study by The New York Times found that in the 100 renditions of "Hamilton" before the final performance of Lin-Manuel Miranda, the creator of the show, in July, scalpers made more than $15.5 million reselling tickets. Mr. Seller, looking to reclaim some of that money, announced in June that he would raise the top price of "Hamilton" tickets to $849, an industry record, while leaving the other seats between $139 and $177.

FULL TEXT
SEPTEMBER 15, 2016

From Books to Apps to Virtual Reality

THE WALL STREET JOURNAL

A cavernous, six-story space on Fifth Avenue and 109th Street will soon be temporarily transformed into a phantasmagoria of virtual reality, augmented reality, olfactory experiments, immersive theater and numerous mind-bending tricks.

At the Future of StoryTelling Festival, or FoST Fest, participants who pay $75 for various interactive experiences will have three hours to join a flock of birds following a mother bird; tap into their five senses to experience gender fluidity; or watch "Riot," a film that uses facial recognition to take users on a journey through a violent protest.

"We are creating a unique story world," said Charles Melcher, the festival's founder. "Our tag line is 'All the world's a stage, come be a player,' and this is the ultimate expression of that sentiment."

FoST Fest, which will take place for the first time from Oct. 7 to 9 at the Africa Center, 1280 Fifth Avenue, grew out of the Future of StoryTelling Summit, an invitation-only gathering that is now in its fifth year and is being held on the two days preceding the festival.

FoST Summit, a TED-type conference for a hipper, new-media crowd, whisks about 500 "thought leaders" from industries including technology, advertising, music and media on a private ferry to Staten Island. There, at the Snug Harbor Cultural Center & Botanical Garden, a former retreat for sailors, participants spend the two days wandering the grounds, networking and attending seminars and workshops. Most of those who go to the event are invited, paying $2,500 apiece. There is also an application process, although organizers say that only 10 percent of the 2,000 who applied last year were accepted. A small number of fellows, artists and cause leaders attend the conference at no cost.

"I love hearing the perspective of these many types of storytellers," said Jeffrey Seller, the Broadway producer of hits like "Rent" and "Hamilton," who has been a FoST Summit participant and will lead a seminar this year. "I remember hearing OK Go talk about making their video on the treadmills and discussing how to be a pop band in the digital era. It really opened up my mind."

Every year, before the FoST Summit begins, organizers create short films about each speaker and then post them online. Participants are invited to watch them and then fill out a survey to choose three round-table sessions they wish to attend, "so when you get there, you sit in a comfortable room around a table with your favorite

FULL TEXT
September 30, 2016

The Digital Rascals

THE WALL STREET JOURNAL

A FRIEND TOLD me about a recent playdate that took an unexpected turn. The 7-year-old boys thought it would be funny if they asked a burning question of Amazon's Alexa, the voice-activated assistant built into the Echo speaker that the family had recently purchased. "Alexa, what is poop?" said one child.

After a pause, the speaker gamely replied: "Defecation is the final act of digestion, by which organisms eliminate solid, semisolid, and/or liquid waste material from the digestive tract via the anus." (The definition comes from Wikipedia.)

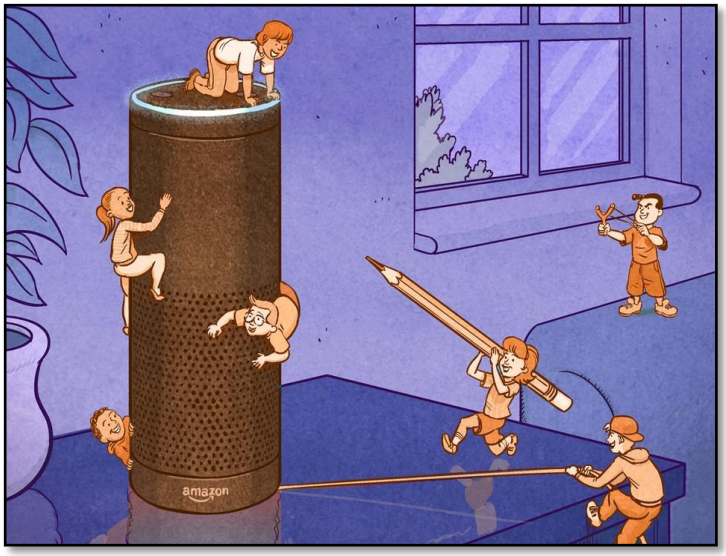
The boys snickered. My friend, caught off guard as other moms looked on, explained to the children that Alexa was not to be used for scatological humor.

I've been hearing a lot of stories like this lately, as more of my parent-friends jump on the voice-controlled-assistant bandwagon. (Google Home is another product with similar capabilities.) Sure, it's convenient to be able to use your voice to order diapers while you wash dishes or to cue up a rousing rendition of "She'll Be Coming Around the Mountain" when your kids need to get their wiggles out. But welcoming a blindly obedient digital being into your family can be tricky.

Here are some tips on how to best use your new AI assistant in a child-appropriate way.

Keep Alexa Family-Friendly

When I introduced the Amazon Echo into our home, I told my 7-year-old son he could ask



Alexa anything he liked. I didn't expect his first request to be, "Alexa, play 'Baby Got Back.'"

"Playing 'Baby Got Back,' explicit version, by Sir Mix-a-lot," replied Alexa.

Part of me was proud he went straight to classic '90s hip-hop, but I quickly put the kibosh on this. "Alexa, stop!" I said, explaining to my son that he wasn't to access this type of music. You can turn on parental controls in Amazon Music to restrict children's access to songs with explicit lyrics.

Keeping Alexa age-appropriate requires self-discipline on the part of parents, too. For instance, even though it's undeniably hilarious, do not under any circumstances install the Alexa Skill called "4AFart," which will, on command, play a sound of flatulence with "varying levels of repugnance." To children, it will never not be funny.

FULL TEXT
February 10, 2017

Snapchat's Sunglass Camera Poses Challenges

THE WALL STREET JOURNAL

Snapchat's unveiling of camera-equipped sunglasses thrusts the messaging app maker into the cutthroat hardware business, a risky move that reflects its strength in video, but follows a shaky record by internet giants.

On Friday, the Venice, Calif., startup revealed Spectacles, a $130 pair of stylish sunglasses outfitted with a camera that with a tap of a button near the hinge can record up to 10 seconds of video at a time.

The one-size-fits-all glasses, which come in black, teal or coral and will be available this fall in limited quantities, are designed to connect to a smartphone so Snapchat users easily can share videos through the app.

The company also changed its corporate name to Snap Inc. to characterize its ambitions beyond the messaging app that has made it so popular, particularly among teens and millennials.

About 150 million people use Snapchat daily during which more than 10 billion videos are viewed, according to the company.

Snapchat's domination with younger audiences has helped the company earn an $18 billion valuation from investors, garner buzz among big-brand advertisers such as PepsiCo Inc., and strike partnerships with media companies such as BuzzFeed Inc. and The Wall Street Journal.

Snapchat has transformed what many assumed would be a fad—messages, photos and videos

that disappear—into a different form of social behavior. Whereas Facebook and Instagram tend to serve as living monuments of people's lives, Snapchat's ephemeral nature encourages users to share imperfect photos and videos of the moment.

Spectacles represents the next phase of that idea by removing the phone in front of the users' faces and freeing their hands. Its 115-degree-angle lens is wider than a typical smartphone's and produces circular video so the viewer feels like they are experiencing the recorder's perspective.

But a foray into hardware is decisively more complicated than app development. Inventory must be managed precisely. The products, especially sunglasses, need to appeal to fickle consumers.

Unlike in the internet world where companies can quickly patch up glitchy software with an updated

Data Smart Toys, Talking Dolls May Spread Children's Secrets, Privacy Groups Allege

THE WALL STREET JOURNAL

Internet-connected toys pose privacy risks to children, and their parents often aren't aware, according to advocacy groups for children and consumers.

A complaint filed Tuesday with the Federal Trade Commission alleges that two talking dolls -- My Friend Cayla and I-Que Intelligent Robot, both made by Genesis Toys Inc. -- collect and use personal information from children in violation of rules prohibiting unfair and deceptive practices.

The complaint was drafted by several groups, including the Campaign for a Commercial Free Childhood, a coalition of groups dedicated to ending child-targeted marketing, and Consumers Union. The groups also filed complaints with data protection, consumer protection and product safety regulators for the European Union, France, the Netherlands, Belgium, Ireland and Norway.

"When a toy collects personal information about a child, families have a right to know, and they need to have meaningful choices to decide how their kids' data is used," said Katie McInnis, technology policy counsel for Consumers Union, the advocacy arm of Consumer Reports magazine.

According to the complaint, Genesis Toys doesn't get the consent of children's parents before collecting children's voice recordings and other personal data while they are using the toys. Genesis then sends the voice recordings to a separate company, speech-recognition software maker Nuance Communications Inc., that may

use the data for other products.

In previous cases, when the FTC has found companies violated the Children's Online Privacy Protection Act, it has typically filed a civil administrative complaint against the company in an effort to get the allegedly offending company to change its practices.

Genesis Toys, which says it is based in Hong Kong with an office in Los Angeles, didn't respond to a request for comment.

The complaint sheds light on one segment of internet-connected devices that have dodged the kind of scrutiny -- and the publicized hacking -- of products such as cars, smart-home gadgets and baby monitors.

"It is not apparent to parents when they purchase a toy that the data is being collected," says Erin Matzkin, a Los Angeles-based tech litigator and

4

@chapter4

#HEALTH

ARTIFICIAL INTELLIGENCE {A.I.} AND THE ECONOMY

Tiny Robots Run on Stomach Acid

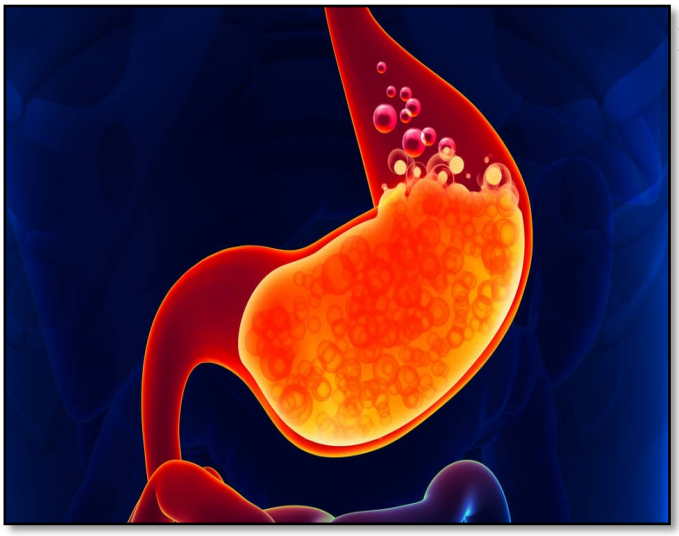
THE WALL STREET JOURNAL

The acidic environment of the stomach is useful for digesting food and attacking pathogens, but it can also harm medications, including some antibiotics.

Enter the tiny robots. Researchers at the University of California, San Diego, have developed a drug-delivery system based on "micromotors" fueled by stomach acid. These invisibly small robots, made of materials harmless to humans, can de-acidify the stomach long enough to create a safe environment for medication, at which point they deliver their therapeutic payload. In tests on mice, a roughly neutral pH (a standard measure of acidity) was achieved in less than 20 minutes, with a return to normal within 24 hours.

The technology could someday spare patients from taking drugs known as proton pump inhibitors, or PPIs, to de-acidify their stomachs before ingesting some medications. PPIs are effective but can cause side effects. (Protective coatings can allow drugs to pass through the stomach's acidic environment safely but are counterproductive with drugs intended for the stomach itself.)

The approach of the UCSD scientists relies on spheres of magnesium 20 micrometers in diameter—smaller than the thickness of a human hair. These magnesium spheres are coated first with a thin layer of gold, then with a pH-sensitive polymer containing the payload. (In real use, this would be a drug; in the trial, it was a fluorescent substance that could be seen easily.)



In the production process, a small spot of the magnesium on each sphere is left uncoated, so when the nanorobots are immersed in stomach acid, the magnesium reacts, and hydrogen bubbles are released. These bubbles propel the tiny motors at 60 micrometers per second.

At that pace, the robots would take nearly five hours to cover a yard, but that's fast enough. The scientists administered 5 milligrams of their magnesium micromotors—a large swarm of such tiny things—to deliver a fluorescent payload to the stomach lining of mice. The result was an even coating inside the stomach, compared with a scant and uneven coating deposited by control microspheres that didn't fire up the same chemical reaction. The propulsive force of the tiny devices, the scientists write, also allows them "to penetrate the mucus layer and enhance the payload

FULL TEXT
January 27, 2017

How Telehealth Platforms Will Reshape U.S. Healthcare Delivery

THE HUFFINGTON POST

Telehealth in the United States is entering a new phase of accelerating growth. Indicators of this next phase include: FDA approval of remote diagnostic tools; the rapid evolution of telehealth platforms focused on managing chronic conditions as well as achieving specific patient outcomes; the expansion of telehealth services offered by private and government operated healthcare systems (such as the Veterans Administration); and a new direct-to-consumer initiative by Samsung and American Well.

However, the telehealth industry is still young. In many ways, today's telehealth industry is comparable to the Internet services industry, when the reigning speed of Internet access was 56.6 kbps. As far higher broadband speeds became the norm, entire industries were upended. Similarly, as the telehealth industry matures, healthcare delivery across our nation will experience disruptive shifts.

This article explores how telehealth will change the delivery of healthcare in the United States, and its impact on the organization of many activities now provided by local hospitals and health systems throughout the nation.

The Platform Revolution

For consumers, telehealth is the most visible piece of what might be called the approaching health services platforms revolution.

In part, this coming revolution reflects the combination of advances in technology associated with remote monitoring and diagnostic devices; the development of coordinated care platforms that embody an expert system of treatment protocols that can be customized to meet patient needs, and continuous enhancements based on the collection of data (healthcare analytics) that measures health outcomes and provides feedback.

Connected devices and diagnostic platforms capture and transmit information for review by remote primary care doctors and specialists. For example, TytoCare's diagnostic services capture and transmit high quality ear, nose and throat images as well as heartbeat sounds. TytoCare's devices and diagnostic platform, like many next generation digital heath advances, provide's benefits both within healthcare settings and for patients at home. To date, the records of a doctor's ear, nose, throat and chest exams have largely been confined to

FULL TEXT
April 9, 2017

Flying Robotic Ambulance Completes First Solo Test Flight

LIVE SCIENCE

A new automated, flying ambulance completed its first solo flight, offering a potential solution for challenging search and rescue missions.

Completing such missions in rough terrain or combat zones can be tricky, with helicopters currently offering the best transportation option in most cases. But these vehicles need clear areas to land, and in the case of war zones, helicopters tend to attract enemy fire. Earlier this month, Israeli company Urban Aeronautics completed a test flight for a robotic flying vehicle that could one day go where helicopters can't.

On Nov. 14, the company flew its robotic flyer, dubbed the Cormorant, on the craft's first solo flight over real terrain. The autonomous vehicle is designed to eventually carry people or equipment (as reflected in its former name, the AirMule) without a human pilot on board. [9 Totally Cool Uses for Drones]

Urban Aeronautics said the test was "a significant achievement for a student pilot, human or nonhuman," and said the company is "proud" of the vehicle's performance.

The Cormorant uses ducted fans rather than propellers or rotors to fly. These fans are effectively shielded rotors, which means the aircraft doesn't need to worry about bumping into a wall and damaging the rotors. Another set of fans propels the vehicle forward, according to Urban Aeronautics.

The robotic flyer pilots itself entirely through laser altimeters, radar and sensors. The system is "smart" enough to self-correct when it makes mistakes, company officials said. In a video released by Urban Aeronautics, the Cormorant tries to land, stops itself and then corrects its landing position.

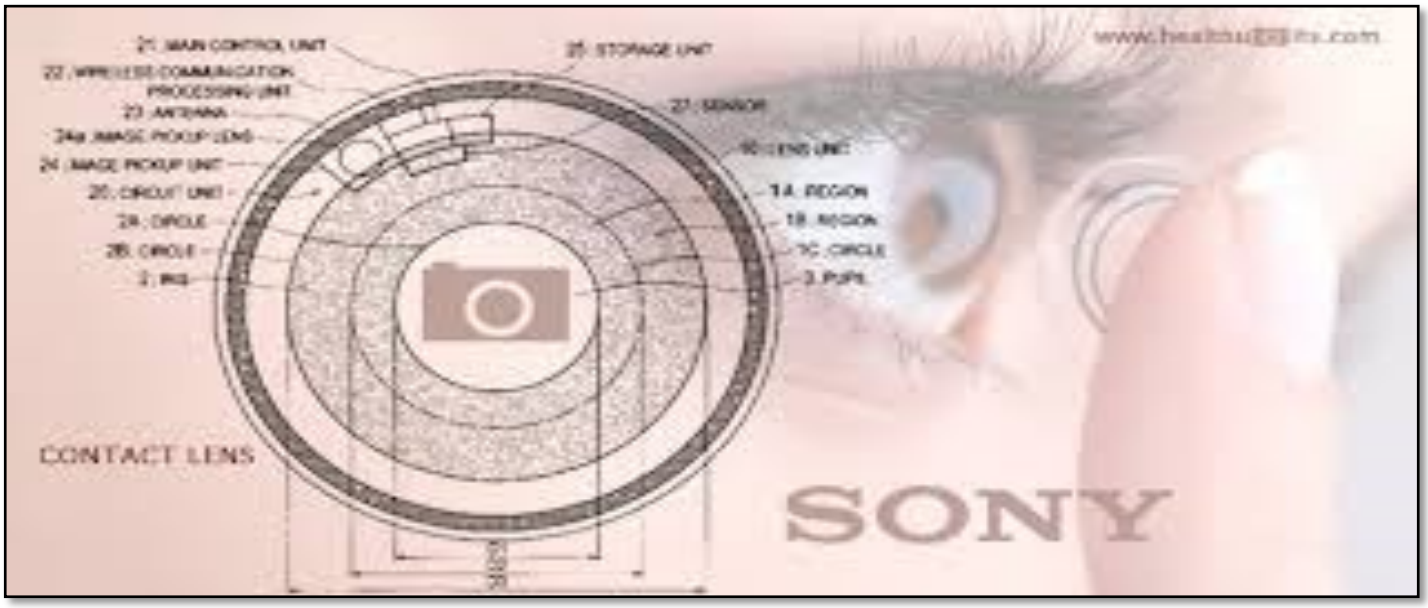
The vehicle is effectively a decision-making system that can figure out what to do if the inputs from the sensors are off in some way, the company said. If the Cormorant detects a potential issue, the drone's robotic brain can decide what to do: go home, land and wait for more instructions, or try a different flight path, Urban Aeronautics said.

Despite the completion of this month's flight test, Urban Aeronautics still needs to refine some parts of the technology, the company said. For one, the test flight wasn't very long, lasting only a minute or two. And though the terrain was

FULL TEXT
December 2, 2016

Sony Filed a Patent for Video-Recording Contact Lens

THE HUFFINGTON POST



You could one day shoot video with the blink of an eye. Tech giant Sony has joined the race to develop digital contact lens technology.

Sony has plans for a wearable lens that can take photos and video, according to an application filed with the U.S. patent office, Tech Story reported.

Sony filed a patent in the U.S. in May of 2013 for a smart contact lens — a fact only picked up by the media this week.

The device would not only take photos and video, but store data, with no need for a tether to a smartphone.

The lens would feature an organic electroluminescence display screen, according to the patent.

By blinking an eye, the user would be able to operate the lens via the display. The camera would feature autofocus, automatic exposure adjustment and an adjustable zoom. The device would also be able to record video, store it and play it back.

The news that Sony has been working on this technology for several years follows a trend set by Google and Samsung.

FULL TEXT

January 27, 2017

Computers Turn Medical Sleuths and Identify Skin Cancer

THE WALL STREET JOURNAL

When it comes to melanoma, early detection is a matter of life and death. But it takes a trained eye to distinguish a harmless blemish from cancer, and many people around the world lack ready access to a dermatologist.

Scientists have been seeking a solution for some time. In the latest sign that they're succeeding, researchers at Stanford University have found a way to get a computer to identify skin cancer as reliably as board-certified dermatologists can. The hope is that, eventually, scientists can get this to happen on a smartphone anywhere in the world.

The challenge is to get a phone app to recognize skin cancer when it sees it. The Stanford researchers started out with a Google-supplied algorithm—a set of instructions that a computer must follow in a particular order—that is especially designed to learn from experience. This algorithm, an example of artificial intelligence, had already been fed 1.28 million images, learning along the way to distinguish, say, dogs from cats.

Equipped with this technological autodidact, the scientists collected 127,463 images of skin lesions, from 2,032 different diseases. These photos had been taken from a variety of angles and distances, and in many lighting conditions. The scientists fed the photos, with labels, to the algorithm, which learned which patterns were associated with which disorders as it digested the images.

The scientists then fed the algorithm 1,942 biopsy-proven images showing lesions. The task: to distinguish harmless moles and the like from keratinocyte carcinomas—the most common cancer in the U.S., with a very high cure rate—and malignant melanomas, the deadliest skin cancer. The researchers also took about two dozen board-certified dermatologists, divided them into groups and asked them to analyze various sets of hundreds of the same images. The algorithm did at least as well as the humans, outperforming most of them.

The Stanford scientists aren't the only ones using AI to identify potential skin cancer through pattern recognition. The International Skin Imaging Collaboration: Melanoma Project has brought together academia and industry to harness digital imaging for reducing melanoma deaths. Researchers at IBM have produced results

FULL TEXT

December 6, 2016

Robots Could Help Solve Social Care Crisis

BBC NEWS

Humanoid robots, with cultural awareness and a good bedside manner, could help solve the crisis over care for the elderly, academics say.

An international team is working on a £2m project to develop versatile robots to help look after older people in care homes or sheltered accommodation.

The robots will offer support with everyday tasks, like taking tablets, as well as offering companionship.

Academics say they could alleviate pressures on care homes and hospitals.

Researchers from Middlesex University and the University of Bedfordshire will assist in building personal social robots, known as Pepper Robots, which can be pre-programmed to suit the person they are helping.

PLAYING GAMES

It is hoped culturally sensitive robots will be developed within three years. The programme is being funded by the EU and the Japanese government.

Prof Irena Papadopoulos, expert in trans-cultural nursing, said: "As people live longer, health systems are put under increasing pressure.

"In the UK alone, 15,000 people are over 100 years of age and this figure will only increase.

"Assistive, intelligent robots for older people

could relieve pressures in hospitals and care homes as well as improving care delivery at home and promoting independent living for the elderly.

"It is not a question of replacing human support but enhancing and complementing existing care."

She added: "We are starting with care homes and with people who are semi-independent living in sheltered housing, but we do believe that in the future the robots would become acceptable for people to have in their own homes."

WELL-BEING

Pepper Robots are manufactured by Softbank Robotics and already used in thousands of homes in Japan.

Amit Humar Pandey, the company's chief scientist, said the firm wanted to create a world where robots co-exist with humans in harmony,

Supercomputers Could Help Extend Human Life Expectancy by a Decade

FUTURISM

THE SUPERPOWERS OF SUPERCOMPUTERS

With great computing power comes great possibilities. That's what supercomputers offer society, according to Jean-Christophe Desplat, director of the Irish Centre for High-End Computing (ICHEC), Ireland's supercomputing headquarters. In fact, supercomputers could improve medical research and practice by such an impressive degree that it could boost human life expectancy by five to 10 years.

Think of the best general-purpose computer you know — maybe something you use for gaming or video editing. Now, imagine that computer multiplied several times and put together as one collective computer. That's essentially what a supercomputer is. Instead of operating on million instructions per second (MIPS) like ordinary computers do, a supercomputer's performance is measured in floating-point operations per second (FLOPS). It's capable of fast and high-level computing performance, which enables it to do complex computing tasks, like nuclear research or weather pattern forecasting — which is what one supercomputer in India is doing.

Supercomputers have been around for a while; the world's first supercomputer was developed in the 1960s, and the technology has only evolved since. Presently, the world's fastest supercomputer is the Sunway TaihuLight in China. It's packed with 10.65 million linked processors — or cores — which makes it able to do about 100 peta FLOPS (one thousand million million FLOPS). In Iceland, the fastest supercomputer is called Fionn. It has about 8,200

processor cores, giving it a performance capacity of 147 million FLOPS.

IMPROVING RESEARCH

With these capabilities, supercomputers can do a lot for research. For Desplat, they are and will continue to be, particularly useful in medicine. Supercomputers can run "deep artificial intelligence learning," capable of improving personalized medical care that uses advances in genetics. Examples of these AI systems contributing to medical research include IBM's Watson and Google's DeepMind. Though, many of these systems are using conventional computing, and could be significantly improved by supercomputers in a not too distant future, according to Desplat. These improvements would allow them to deliver faster and more accurate diagnoses.

Indeed, supercomputers can be used in other fields of academic research, too: "We see the

We Just Created an Artificial Synapse that Can Learn Autonomously

FUTURISM

A team of researchers has developed artificial synapses that are capable of learning autonomously and can improve how fast artificial neural networks learn.

MIMICKING THE BRAIN

Developments and advances in artificial intelligence (AI) have been due in large part to technologies that mimic how the human brain works. In the world of information technology, such AI systems are called neural networks. These contain algorithms that can be trained, among other things, to imitate how the brain recognizes speech and images. However, running an Artificial Neural Network consumes a lot of time and energy.

Now, researchers from the National Center for Scientific Research (CNRS) in Thales, the University of Bordeaux in Paris-Sud, and Evry have developed an artificial synapse called a memristor directly on a chip. It paves the way for intelligent systems that required less time and energy to learn, and it can learn autonomously.

In the human brain, synapses work as connections between neurons. The connections are reinforced and learning is improved the more these synapses are stimulated. The memristor works in a similar fashion. It's made up of a thin ferroelectric layer (which can be spontaneously polarized) that is enclosed between two electrodes. Using voltage pulses, their resistance can be adjusted, like

biological neurons. The synaptic connection will be strong when resistance is low, and vice-versa. The memristor's capacity for learning is based on this adjustable resistance.

BETTER AI

AI systems have developed considerably in the past couple of years. Neural networks built with learning algorithms are now capable of performing tasks which synthetic systems previously could not do. For instance, intelligent systems can now compose music, play games and beat human players, or do your taxes. Some can even identify suicidal behavior, or differentiate between what is lawful and what isn't.

This is all thanks to AI's capacity to learn, the only limitation of which is the amount of time and effort it takes to consume the data that serve as its springboard. With the memristor, this learning process can be greatly improved. Work continues

FULL TEXT
April 5, 2017

TSU | Texas Southern University
Barbara Jordan-Mickey Leland
School of Public Affairs

Robinson and Adams are professors at the Barbara Jordan - Mickey Leland School of Public Affairs at Texas Southern University (TSU) in Houston, Texas. Ms. Smart is a Graduate Research Assistant in the eMPA Program at TSU and a member of the Class of 2017.

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