

COVER STORY

WILL 2018 BE THE YEAR A ROBOT TAKES YOUR JOB?



Victor Wong of Thunder sees automation as the future of advertising design: “Ultimately ... a machine could design all the permutations of all the ads you want.”

TODD JOHNSON

As AI and automation move up the skills ladder, it's not yet clear whether the new machines are our allies — or our replacements

BY KEVIN TRUONG
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David Gutelius is relatively chipper about an oncoming robot apocalypse.

Before he became a technology entrepreneur, Gutelius got a Ph.D. in economic history. So when he looks at the rise of artificial intelligence and automation, he views it as simply the latest in a line of broad transitions, like the movement from subsistence farming to industrialization to globalization and the information age. And like those other changes, he said, humanity will end up the better for it. So will most workers.

“Among knowledge workers today, there’s a sense of information overload. We’re dealing with way too much stuff to prioritize in our day-to-day work, whether that’s the news, emails or chat boxes,” said Gutelius, co-founder of The Data Guild, a machine learning and data science advisory based in Palo Alto. AI and automation could help sort through the clutter.

Not everyone is so optimistic. Dubbed the Fourth Industrial Revolution by the World Economic Forum, the transition to advanced automation technology has sparked fears of massive job losses as machines take over work. While much of the larger public conversation has been focused on the automation of blue-collar work like truck driving

or manufacturing, there’s little reason to think that white-collar work is immune from the looming changes that AI and robotics technology could bring. Experts agree that nearly every industry will be touched in some way by automation, with prime candidates including finance, real estate and health care.

> 50%

More than half of current jobs in the San Francisco metro area will be automated by 2035

Source: University of Redlands

Whether that’s primarily a danger or an opportunity remains open to much debate. A 2016 study by the Pew Research Center found 65 percent of Americans expect that within 50 years, robots will be doing much of the work now done by humans — but strikingly, 80 percent believe it will happen to other people’s jobs, not their own. They may be mistaken: More than half of current jobs in the San Francisco metro area will be automated by 2035, according to research from the University of Redlands.

Turning data into information

“It’s not really a question of if, but when,” said DCM Ventures investor David Cheng, who specializes in early-stage AI start-ups. “In terms of white-collar labor in specific verticals, we’re certainly seeing applications, but for now they’re not so much replacing that kind of workforce but augmenting them.”

Take the legal industry as one example. The bulk of the work isn’t in-court litigation, but time-consuming foundational tasks like research, contract formation and reviewing copious pages of documents to excerpt relevant rulings and passages.

Startups like San Francisco’s Seal Software and Berkeley-based Everlaw have sprung up across the Bay Area to perform this legal legwork in the digital age, introducing tools that could change the entire industry.

Everlaw’s technology made it possible for attorneys to better prepare for the trial over General Motors’ recall of 30 million cars due to faulty ignition switches. That would have taken an army of entry-level associates or contract legal workers with highlighters in hand.

The increased use of technology is changing how the legal industry operates. Everlaw uses AI instead of employees to find information useful to a case.

“Traditionally law firms have a pyramid model where you work your way up the firms by doing this low-level grunt

COVER STORY

work,” said Everlaw’s vice president of business development Jonathan Kerry-Tyerman. “Now there’s a lot less of that work to go around.”

While robots and algorithms excel at repetitive, data-driven tasks, academics say humans are still ahead in their ability to think critically and make judgement calls.

“A lot of these white-collar professions are not about filling out a particular form, or doing a particular task repetitively. It’s about about niche data turned into information that is useful at the right time for the right person,” said University of San Francisco computer science professor David Brizan. “Eventually, given enough data, that’s subject to automation as well. But it’s a lot harder to do than people have been alluding to.”

That doesn’t mean people like Victor Wong aren’t trying.

Wong is the CEO of Thunder, a San Francisco company looking to introduce more automation in the advertising industry through its AI-based software. Thunder’s technology analyzes successful design across a range of different platforms, and can adjust photo cropping and formatting based on that data.

Wong said that using the tool, a marketing manager with limited design training can essentially create the same number of digital ads it would take a professional designer hours to do.

“We will get to the point where ultimately with a few human-specific guidelines that a machine could design all the permutations of all the ads you want,” Wong said. “You’ll enter in the copy and images and say ‘please show me all the ways that you could do it.’”

Automating VCs

It’s a bit ironic that the computer programming jobs necessary for the development of automation and AI are now targeted for automation.

Roger Dickey, CEO of software development startup Gigster, has positioned automation as part of the foundation of his business.

He’s incorporated AI tools that help build the company’s freelance engineering teams, make the development cycle more predictable and even run early experiments to save developers’ time by doing nuts-and-bolts coding.

Dickey envisions the future of computer programming looking “more like Lego blocks,” with engineers piecing together different high-level components and writing a little bit of code as glue in between.

He’s also frank about his assessment of the effect of AI and machine learning technologies on the larger professional job market, saying it’s easier to automate some white-collar markets than it is to automate blue-collar positions.

“Take the job of a housekeeper; it would take thousands of robots to

Supervisor Jane Kim:
“There’s a human aspect to it that people are ignoring. People are in those jobs now and they’re not going to become engineers or programmers tomorrow.”

accomplish that job,” he said “Whereas a lawyer is trying to navigate a multivariate optimization problem to make sure that both sides get what they want based on certain criteria for a contract. That sounds like programming to me.”

Case in point, Dickey and his team at Gigster built a bot called Pitchbot.vc that simulates a venture capital investment pitch meeting and screens possible seed and early-stage investments in startups.

“Part of it was to show that even the role of a VC, even this career that seems so high-level and complex, can be easily automated,” Dickey said.

Robots against equality

Seemingly, the only thing certain about automation’s larger effects on the economy and the job market is that they are uncertain.

Experts can’t agree on whether it’s a job creator or job killer. McKinsey Global Institute estimates that up to 800 million jobs will be lost globally by 2030. By contrast, Gartner expects the rise of AI will create 2 million net new jobs by 2025.

Online job boards now list openings like “human computer interaction designer” or “AI trainer.” But uneasiness about the future has led luminaries like Bill Gates, Elon Musk and even former President Barack Obama to sound the alarm about the necessity of being prepared for the forward march of automation.

Among the Bay Area figures making the most noise about the possible threats is San Francisco Supervisor Jane Kim, who earlier this year became one of the first public officials in the country to propose a plan meant to cushion people from the economic shock of automation.



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ROGER DICKEY, CEO of Gigster

In August, she launched her Jobs of the Future Fund with the goal of instituting a policy to tax employers who replace a human worker with a robot. Revenue from the tax would go toward programs, education and investment in new industries for those displaced human employees.

Kim said she sees the proposal as fitting into her larger goals of lowering the increasing gap in economic inequality.

“I totally understand the argument that automation will create jobs, maybe even jobs that are better than the ones before and get rid of jobs that are more rote, routine and dangerous,” Kim said.

“But there’s a human aspect to it that people are ignoring. People are in those jobs now and they’re not going to become engineers or programmers tomorrow.”

Kim said she is working with state lawmakers to draft legislation or –

barring that – gathering momentum for a statewide ballot initiative.

There are some clear challenges to her idea, namely how to define a “robot” when workers are just as likely to lose their job to a few lines of code as a self-driving car. But the idea of retraining and re-education is core to many arguments about how to manage some of the effects of automation.

One model of education being promoted by San Francisco-based Holberton School is a project and team-based learning model for computing. Instead of teaching specific programming languages, the school focuses on skills, such as teamwork and how to use existing resources to solve problems.

“We have all the knowledge you could want online. The issue isn’t access, but how to navigate it and

CONTINUED ON PAGE 6

TODD JOHNSON

COVER STORY



Stacie Blair's recruitment company, The Pacific Firm, used to bustle with activity — and 40 employees. Now automation lets clients do a lot of the work themselves, and she's looking to sell her former Berkeley office.

PHOTOS BY TODD JOHNSON

CONTINUED FROM PAGE 5

authenticate it and learn what you need to to succeed," said Holberton School co-founder Sylvain Kalache.

"I can't tell you that in five years or 10 years you would need these specific skills, no one knows what those are. What I can tell you is that if you're trained to learn this skill of critical thinking, whatever comes at you will be no problem."

Do recruiters have a future?

While automation continues to transform how people work, it has already been a major factor in shifting how people find jobs.

Online tools from LinkedIn, ZipRecruiter and Indeed have automated many of the tasks involved in listing open positions. Companies such as Mya Systems and Entelo have developed automation technology focused on finding the right candidates for a job, scheduling interviews or starting the on-boarding process.

Entelo CEO Jon Bischke touts how his company's software allows his clients to easily sort through candidates and even identify those likely to leave their positions.

"Our platform frees up more time for the recruiters to focus on things that tech isn't going to automate," Bischke said. "Many (third-party recruiters) are calling us, because they want to shift to their higher-value activities."

Bischke's attitude isn't unique, and mirrors the endemic Silicon Valley mind-



set of technology as a form of liberation. In this utopian vision that many AI start-up entrepreneurs share, the introduction of these technologies into the workplace means a world where workers are able to pursue their highest value to society.

Stacie Blair, owner of the Pacific Firm, a recruiting company, has a more skeptical view on the transition. Blair started her company more than 20 years ago, braving the dot-com crash and the Great Recession along the way.

What ultimately killed her business, however, was the slow encroachment of automated technology that allowed her clients to circumvent the traditional recruiting process, leaving only limited work for human recruiters. After hitting a peak of more than 40 workers across

multiple offices, she has downsized to only two employees and plans to retire early because of the lack of business.

"No one's talking about it except in terms of the automotive or manufacturing industry, but automation is happening at the white-collar level," Blair said. "It's picked up pace exponentially, and I worry about anyone entering the workforce who isn't trained in machine learning or automation."

People and machines together

Even in sectors traditionally thought of as archaic and slow-moving, plans are being made to prepare for the oncoming business shocks from an automated future.

That includes construction. Julie Hyson, Skanska's Northern California vice

president of business development, said while automation has not yet dramatically changed the industry, the company is using emerging technology to make construction safer and more efficient. Skanska is also studying how to respond if parts of its business are transformed.

"We look at something like our pre-construction division, which has 140 jobs nationwide, and we're asking 'what if those tasks aren't needed anymore?'" Hyson said. She added that the company is already prioritizing different skill sets when hiring, focusing on the ability to learn new software and tools. "Those jobs don't go away, but what needs to change?"

Some of automation's biggest cheerleaders, like The Data Guild's Gutelius, still struggle with some of the ethical implications of the technologies and how they are being deployed.

But in a world where the best human chess players can easily be beaten by a computer program, AI proponents point out that teams of humans and machines in collaboration are stronger than either one on its own.

"These outstanding questions aside — and these are big questions — I do feel like we're just beginning to see the promise of what machine learning and humans can do together as a kind of working team and that will become the norm," Gutelius said.

"It's hugely exciting to see how not just careers but whole industries will change. Society will be a lot better off for it."