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Next, automation is coming for your job

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A generation ago, when hulking robots were wheeled en masse onto factory floors and positioned along the assembly line, it was the opening salvo in a long, slow invasion: Automation was coming for our jobs.

The latest front in the workplace revolution isn't the shop floor, however. It's the office—thanks to productivity-boosting software poised to leap forward in coming years with the advance of artificial intelligence and machine learning.

This time it won't be blue-collar workers forced to adapt. College graduates have exponentially greater exposure to the AI revolution than their less-educated counterparts, according to a growing body of research that includes studies by the Brookings Institution, McKinsey and the Pew Research Center.

The list of the most AI-exposed occupations includes the highly paid, from marketers and research analysts to bankers, sales

managers and software engineers—even doctors and lawyers.

Yet, unlike the factory-floor takeover in the 1980s, knowledge workers are less likely to see the digital coup coming.

"At first, the (technology) is complementary, because it makes the people in these white-collar jobs more and more productive," says Hyejin Youn, an assistant professor at Northwestern University's Kellogg School of Management. "But there is a peak to that productivity, and after that you reach the danger of substitution by automation, where it costs you your job."

The threat is inspiring global debate about the value created from automation—and what to do about a workforce that could be massively displaced. It has emerged in the Democratic presidential campaign, as a central element in technologist Andrew Yang's long-shot bid. He and others believe a universal basic income will be necessary to offset job losses.

Others think the economy will adapt and new jobs will be created around the capabilities introduced by artificial intelligence. Regardless, a painful period of adjustment seems likely.

That prospect can seem far off given the current state of AI, which thrives on crunching large datasets with defined boundaries, and on executing repeatable processes. Right now, that makes it perfect for handling rote busywork.

"It's the stuff where you hear people say, 'I didn't go to college for four years so I could do this,' and that represents a really embarrassingly large percentage of office work today," says Sean Chou, CEO of West Loop AI startup Catalytic.

But that's just the first fruits.

AI also can use that analytical acumen for advanced pattern matching, poring through reams of data to draw obscure correlations and make canny predictions. If that reminds you of a financial analyst predicting a company's market performance, or of a legal team searching for a precedent, or of a doctor matching a list of symptoms against a catalog of known ailments—well, you get the idea.

"When parents were encouraging their children to go into the field of medicine or law, they weren't thinking that robots were going to replace some portion of that work one day," says Chou. "But I think that's really going to happen, because when you look at these fact-based professions that draw on patterns, you get into this category where AI is just going to have a tremendous advantage."

THE PATENTS ARE COMING

To isolate AI from traditional automation, a new Brookings Institution report relied—not without irony—on an algorithm that searched for AI-related patents that could be tied to specific industries.

According to Brookings, one of the sectors with the strongest correlation is professional services. That doesn't necessarily mean that accounting and consulting jobs are doomed, but experts generally agree that even the most optimistic take on AI—the version in which machine learning generates productivity gains that lead to more relaxed work schedules and also creates new, unforeseen job categories that make up for those it devours—will cause substantial temporary upheaval.

The shakeup, according to Brookings' data, will disproportionately affect some demographics that have previously been fairly immune to such trends: men, workers in the prime of their careers, whites and Asians.

Why? Each is overrepresented in the sort of analytical, technical roles that AI seems particularly apt to influence.

"These are things that have been hitherto ground out by well-paid, midlevel executives and their teams but that may now be more easily and accurately produced by AI tools," says Mark Muro, the Brookings study's lead author.

In contrast, women are statistically overrepresented in fields such as education and health care, where they are more likely to perform the sort of interpersonal tasks that computers struggle to pull off.

Some sectors of the economy that were heavily affected by the first wave of automation, such as retail and food service, may get a pass during the AI revolution.

Manufacturing, however, is again likely to be heavily affected, which is the chief reason a group of heartland states touching Illinois—Indiana, Michigan, Wisconsin and Kentucky—are among six that Brookings says have the most overall exposure.

Indiana has the highest exposure in the country, according to the report, while Illinois ranks 11th. Chicago ranks 29th among metro areas, while two Michigan cities, Grand Rapids and Detroit, rank third and sixth nationally.

The AI revolution may play out in slow motion. Chou, for example, says, "Every day, there's something new in AI that's amazing and also something that's so comically bad that you realize we're still really far off."

For every startling advance, there's a Reddit meme showing self-propelled, robotic vacuums getting hopelessly entangled in toilet paper. There also are examples in history where things didn't work out according to the worst-case scenario: Past economic upheavals, such as the industrial revolution, typically have resulted in new jobs offsetting those lost.

But that doesn't mean it's too early for a reckoning based on AI's potential.

In Britain, politicians have floated the notion of a four-day workweek in response to the efficiency gains brought on by AI and similar technologies, and Yang isn't the only one in the U.S. beating the drum for universal basic income. But thus far, the question of what to do if AI blows up the economy has been largely unexplored.

"There will be individuals who find even more meaningful work than what they had previously and others who don't find work at all," says Mike Evans, co-founder of Grubhub and now CEO of Fixer, a tech-enabled home repair service that Evans says he created in part to address the coming labor market upheaval. "The more meaningful options we're able to create, the less disruptive this will be. This is one of the major challenges our society is going to face in the next one or two generations—it's a massive problem coming at us very quickly."

Those wishing for a coordinated response can hope that AI's impact on high-status workers gets the attention of boards and investors in a way that past working-world upheavals have not.

"Perhaps there's a greater common cause or common involvement (between executives and affected workers) that may help us think about this more clearly as a society," says Brookings' Muro.

Much more certain is that an automated future is coming, whether we're ready or not.

"We can have this philosophical, sociological discussion about whether this is good or bad, or whether we even need to have jobs to be human beings, or whether we can just leave it to the machines and feel good about it," says Youn, the Kellogg professor. "But it's also important to take a step back and see that this really is happening—the things we thought could not be accomplished by machines will be. It's just a matter of time."

Workers are beginning to take that idea to heart.

"What's most frightening to me is that we're ignoring it," says Joy McKinney, a personal financial adviser from Pleasant Prairie, Wis., who attended a December Yang rally in Chicago. "It hasn't disrupted my business yet, but I'm not naive enough to think it doesn't have that potential. It's like a tsunami that's on course to hit us, and if we're not prepared, there will be casualties."

Inline Play

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