GA GENERAL ASSEMBLY

THE STATE OF TECH TALENT 2024

FRONTLINE DATA FROM 1,000 HR PROFESSIONALS WORLDWIDE

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THE STATE OF TECH TALENT 2024

FOREWORD

That future has a way of arriving sooner and differently than most experts anticipate.

It's increasingly difficult for me to recall ever preparing a manuscript without Wikipedia and a spell-checker, getting to the airport without a rideshare service, or consulting a paper map. How did anyone get anything done in the 20th century?

That said, the arrival of on-demand, generative AI may be a whole new inflection point. While AI is saturating news headlines and animating policy conversations, there's still a lot we don't know about how to use it most effectively in the world of work. And there's still a lot to be done if we want to fulfill its potential while minimizing the troubles of bias, invisibility, reactivity, and inequity that so often surface with technologies — especially when they're trained with inherited data and hastily embedded in complex systems.

While it's difficult to predict the downstream implications of today's technologies, it's also the case that how employers use AI in the present will have a downstream impact on how both traditional schools and new learning providers identify and develop tech talent. And if there's anything we've learned from the past few decades of technological advancement, sticking to 20th-century systems of talent development isn't going to produce either the human capacity — or the occupational mobility — necessary for a sustainable society.

As a sociologist of education and work who convenes an international network of researchers who study these things, I've had the opportunity to learn about how people navigate their career journeys and how companies make hiring and recruiting decisions. As social scientists, we know that work and learning trajectories are only occasionally direct and linear. This is especially true in the United States, which doesn't tend to promote long-term talent planning and instead lets workers, education providers, employers, and markets produce a messy process of matching learning opportunities, people, and jobs. We also know, frankly, that traditional classrooms can be lousy places to learn some of life's most important lessons: how to work on teams, recognize complexity, and embrace ambiguity.

These old saws remain important insights for a time when generative AI and other emerging technologies are changing job descriptions and skill demands at an unprecedented rate. If we want to keep pace, educators and business leaders will need to work together much more closely than we have in recent decades. Quite simply, every modern economy needs to foster tighter connections between learning and work — not just to ensure that what people learn will have meaningful application on the job, but also to build the creativity, flexibility, and resilience that will enable us all to keep learning as the needs of the workplace change.

That's why this report has such great utility. It explores the perspectives of HR and other talent leaders as they consider how their own organizations are navigating the complexity and ambiguity that accompany the rise of AI. It compellingly articulates the fact that while these rapidly evolving technologies are arguably making talent search more challenging and costly than ever, the companies that are succeeding are those embracing new and novel approaches to talent development.

Social scientists and futurists can prophesize all we want about what tomorrow's workplaces will look like — but the future is here for HR heads, CLOs, and hiring managers who have urgent talent needs today. It's ultimately they who will figure out how to identify people with the skills and sensibilities necessary to keep firms running and competitive, they who have the wisdom that legacy schools and new providers alike need to design truly effective learning environments for our times. And it's important for the rest of us to hear and heed what they have to say.

Mitchell Stevens is a professor at the Stanford Graduate School of Education and co-leads the Pathways Network (pathways.stanford.edu).

IN A GALAXY NOT SO FAR AWAY

A little more than a year ago, generative artificial intelligence blasted off like a rocket ship.

ChatGPT became the **fastest-growing consumer app** in history. Within just two months after its launch in late 2022, the chatbot had attracted 100 million monthly users. All of a sudden, AI-generated text, images, and videos appeared to be everywhere all at once. Traditional media and social media were buzzing about how AI could and should be used and what it meant for education, the workplace, and life as we know it. It seemed like GenAI was all anyone could talk about.

Today, GenAI has settled into orbit around our world as it considers new universes to explore. ChatGPT now has **100 million** active weekly users, and two million developers and more than 90% of Fortune 500 companies now use it. GenAI platforms are becoming **bigger and more powerful** — and more AI tools **are on the way**.

But the launch of these popular AI tools hasn't always gone smoothly. **Concerns** have arisen about **accuracy**, **potential bias**, **copyright infringement**, **use of personal data**, and **massive job disruption** due to AI automation across multiple industry sectors around the globe.

Despite these concerns, AI seems likely to evolve and be refined — and unlikely to come crashing back to earth. As AI becomes **better**, faster, and cheaper, like so many tech products before it, the barriers to access will fall. This democratization of AI will produce more AI-savvy talent — and more demand for that talent. Because of AI, employers around the world have already begun to search for **entirely new skill sets and entirely new roles**. Hiring managers are under immense pressure to find or produce the best available talent, as the costs to hire, employ, retain, reskill, and upskill tech talent with AI skills continue to soar.

"The path to being a successful industry AI/ML scientist can be highly varied. We've found that in this field, the best talent emerges from a broad set of academic and industry backgrounds," said Hannah Calhoon, Vice President, Incubator and Head of AI Innovation at Indeed. "This means that we must cast a wider net to find the best folks. That leads to a more rigorous interview process, which is a large time investment for a hiring manager, our recruiting team, and the candidates."

As General Assembly reported in **The State of Tech Talent Acquisition** whitepaper we published in 2023, the traditional tech talent pipeline is broken. Not only are companies struggling to find tech talent, they're also having difficulty locating diverse talent

from underrepresented and historically marginalized backgrounds. A year later, these trends remain true. In the age of AI, they're truer than ever.

More recently, our publication **"A New Frontier"** offered insights to tech leaders attempting to navigate this emerging AI-driven economy. The scramble for AI talent is a modern-day gold rush as companies dig in the same talent pools amid insatiable demand for candidates with AI skills and proficiencies.

"Employers on the Hired talent marketplace are **increasingly looking** for software engineers with specialized skills," said Josh Brenner, CEO of Hired. "In 2023, our tech recruiting platform **saw** overall year-over-year employer demand for machine learning and AI roles grow by 46% and by 32% for security and cybersecurity positions. But it's not just about engineers and other tech workers having AI skills. It's about marshaling them to handle the needs presented by increased AI use by consumers and employers."

It's no wonder why there's such urgency: Recent surveys have found that **70% of business leaders** say their workforce doesn't have the skills to use generative AI safely and effectively. **Nearly 60%** say their organization lacks the tech talent to meet their digital transformation goals.

But forward-looking companies see the solution right in front of them. Most companies have already set up formal programs to upskill junior employees for AI roles. The companies that lack these programs say they're busy creating them. Employees are a receptive audience for skills training around AI. **More than 60%** of workers expect AI will affect their careers for the good, and **two-thirds** of workers are banking on their employers to teach them how to use this technology.

In our current business universe, **having an AI-enabled workforce** — one skilled in data science, data analytics, machine learning, and other related areas — can give companies a huge boost. When a company's workforce can adapt and contribute to today's tech-driven environment, that will increase employee morale, growth, efficiency, and performance; foster innovation; and improve product development and customer experience.

To help tech talent leaders better understand this new AI-enabled world of work, General Assembly teamed up with Wakefield Research to survey more than 1,000 human resources professionals around the world who are acquiring in-demand talent for software engineering, data analytics, data science, and UX roles. Survey respondents are based in Australia, Canada, France, Ireland, Netherlands, Singapore, Sweden, Switzerland, the United Kingdom, and the United States.

This overview of the state of tech talent acquisition in 2024 reveals four key findings:

1 AI skills are in extremely high demand.

2 Companies are having to pay more and more to acquire the tech talent they seek.

3 It's critical — and difficult — to get tech hiring right.

4 There's good news: Companies have great alternatives outside of traditional approaches to finding and hiring talent.

This whitepaper is intended to provide a detailed, data-driven view of hiring trends around AI and reveal how HR professionals are grappling with skills shortages. This report also provides recommendations for how businesses can discover and develop new talent pipelines. The data are clear: An AI-enabled workforce gives companies a competitive edge that can mean the difference between remaining grounded on Earth or shooting for the stars.

KEY FINDINGS

During the COVID-19 pandemic, when billions around the world stayed home and relied on technology to remain connected to work, school, and each other, tech companies ramped up hiring to accommodate a surge of consumer demand.

As the pandemic's effects waned, tech companies started **trimming their ranks**. Tech companies large and small laid off 165,000 workers in 2022 and another 263,000 last year.

While the tech sector continues to bleed talent and workers in all sectors worry that AI will take their jobs, those who possess AI skills find themselves in great demand and commanding higher salaries. The overwhelming majority of HR leaders, meanwhile, say they're filling more AI roles through hiring and internal reskilling because they're focusing on this rapidly emerging technology.

In the pages that follow, learn how HR leaders are dealing with talent shortages and demands for higher salaries, determining the best approaches to upskilling, and overcoming barriers that make it challenging to find workers with the right skills.

DEMAND FOR AI SKILLS IS SOARING.

AI is everywhere — including in the workplace. Nearly every company is using it, which means nearly every company is hiring for it. But the hiring challenges are immense. New data from Hired reveals that more than two-thirds (68%) of tech employers are having to interview more candidates per role than they did a year ago and that 56% of tech hiring managers ranked quality of hire — someone with at least six years of industry experience — as their top key performance indicator for hiring for 2024.

97% OF COMPANIES ARE USING AI IN THEIR PROCESSES OR PRODUCTS.

89% say AI is significantly or somewhat featured within their businesses.

89% OF HR LEADERS say the number of tech openings at their company have increased because of a growing focus on using AI.

THE DEMAND FOR WORKERS WITH AI SKILLS IS GROWING DRAMATICALLY.

Within the past year, **95%** OF COMPANY MANAGERS asked more often to add AI skills to job requirements for roles not focused on AI. (significantly/somewhat = 74%)

BUT IT'S QUICKLY BECOME HARDER TO FIND WORKERS WITH AI SKILLS.

69% OF HR LEADERS say it's more challenging to hire people with adequate AI skills compared to those in traditionally hard-to-hire roles in data analytics, data science, software engineering, and UX design.

The hiring challenge is proving particularly difficult in North America, where **73% of HR leaders** in the U.S. and Canada say it's tough to find this talent versus 63% in Europe.

THE WAR FOR AI STARS IS JUST BEGINNING.

It's Econ 101: Demand is high and supply is low, so companies report they are having to spend a significant amount of money to find and pay candidates with AI skills.

JOB CANDIDATES WITH THE CORRECT SKILL SETS ARE CASHING IN.

91% OF HR LEADERS at companies using AI say job candidates are **requesting higher salaries**.

In most instances — **66% of the time**, according to the survey — companies are **agreeing to pay** what job candidates are asking for.

Companies in Europe (71%) and the Asia-Pacific region (67%) are **more likely than North American firms** (63%) to accede to salary demands.

But not all companies offer the same opportunities. At businesses where AI is used slightly or not at all, only **41% of HR leaders** say they are likely to agree to higher compensation demands made by candidates with AI talent.

WITH DEMAND HIGH, COMPANIES ARE WILLING TO PAY A PREMIUM TO RECRUIT AND HIRE FOR AI POSITIONS.

MORE THAN HALF (52%) SPEND AT LEAST

$10,000

TO FILL THESE ROLES.

11% OF COMPANIES SPEND

$50,000

OR MORE ON RECRUITING FOR AI POSITIONS.

THE AVERAGE COST TO FILL THESE ROLES:

$23,247

with average spending greater in North America ($25,561) and lower in Asia Pacific ($21,398) and Europe ($19,723).

ADDING ROCKET FUEL TO THE FIRE.

AI. LLMs. LMMs. Deep learning. Machine learning. AI is introducing many — and complex — new terms into the lexicon, seemingly every day. It's difficult enough for tech experts to stay abreast of the dizzying pace of change. But what about HR leaders? According to this survey, this technology is evolving so fast that hiring and recruiting managers are having difficulty keeping pace.

AI SKILL SETS SEEM TO BE EVOLVING AS QUICKLY AS AI ITSELF.

93% OF HR LEADERS
say the skills that managers want included in job descriptions are changing more rapidly than they have in the past.

HR leaders say they do not fully understand the day-to-day responsibilities for
29% OF THE POSITIONS THEY'RE HIRING FOR

In too many cases, hiring professionals say they've learned that a new hire needed different skills after they had onboarded that person.

Nearly all (97%) of HR leaders say this has happened to them at least once. 90% say that this scenario has played out more than once.

The right employees are essential for success, and there can be severe business consequences for getting these hires wrong.

In addition to the recruiting expense, **companies that lack the appropriate AI talent have delayed implementation of new technologies (51% of organizations)**, watched employees experience burnout or resign (51%), turned to external workers (47%), refused additional assignments (46%) and missed deadlines (41%).

NEARLY A THIRD (32%) say their companies lost revenue due to inadequate or mismatched staffing.

SELECTING *AND* KEEPING THE PERFECT CREW.

It's not all gloom and doom in a white-hot job market. When seeking workers with software engineering, data analytics, data science, and UX design expertise, businesses can take different paths.

39%
A plurality of respondents say they're most likely to **hire new employees** for these roles.

35%
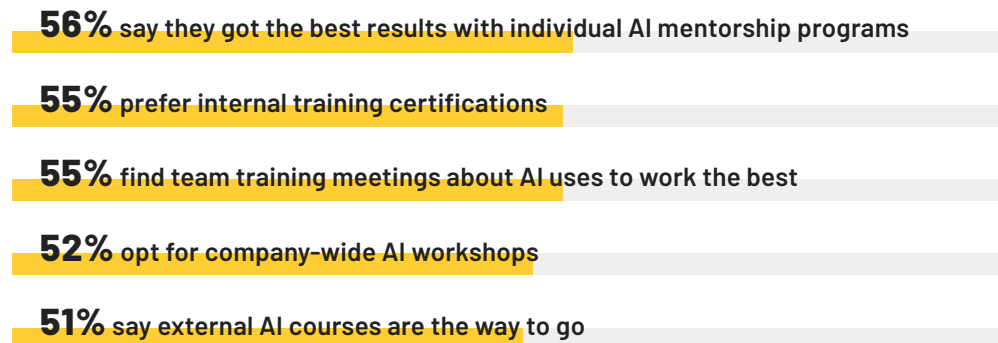About a third fill their tech hiring needs with **contingent or freelance workers**.

26%
More than a quarter **train existing staff** to acquire the skills their organizations need.

"The fact that companies are hiring new employees, using freelancers and upskilling their own employees in roughly equal numbers suggests that **companies are moving to a more holistic approach in hiring for high-tech skilled positions**. Companies that are able to develop a sustainable talent strategy as they build strong tech-savvy teams will remain ahead of the curve and position an organization for long-term success."

— **CHRISTIAN LORTZ, VICE PRESIDENT OF DIGITAL, PONTOON SOLUTIONS**

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When it comes to upskilling existing workers, several approaches to AI training have similar results. When asked which type of AI training is most effective at upskilling:

56% say they got the best results with individual AI mentorship programs

55% prefer internal training certifications

55% find team training meetings about AI uses to work the best

52% opt for company-wide AI workshops
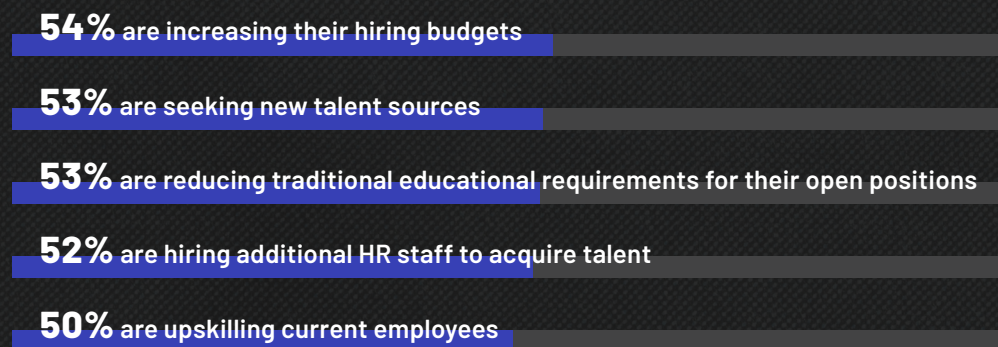
51% say external AI courses are the way to go

THE SURVEY FOUND REGIONAL DIFFERENCES:

Internal training certifications were most popular in the U.S. and Canada (57%). European companies favored individual mentoring (59%). Asia Pacific organizations preferred team training meetings (56%).

BUT THERE'S DEBATE OVER WHO'S RESPONSIBLE FOR ENSURING THAT EMPLOYEES' AI SKILLS ARE UP TO DATE:

Nearly half of those surveyed (49%) say it's "entirely" or "primarily" the job of an organization to provide AI reskilling and upskilling. But 37% of HR leaders say it's up to employees to keep current, with 13% saying the responsibility should be equally shared between the individual and the organization.

COMPANIES ARE TAKING MULTIPLE DIFFERENT APPROACHES TO ADDRESS HIRING TRENDS IN 2024:

54% are increasing their hiring budgets

53% are seeking new talent sources

53% are reducing traditional educational requirements for their open positions

52% are hiring additional HR staff to acquire talent

50% are upskilling current employees

RECOMMENDATIONS

Since 2011, General Assembly has helped more than 100,000 alumni around the world launch tech careers and partnered with hundreds of top companies to build scalable and diverse talent pipelines that address both the supply and demand issues in the tech industry. It's our hope that the recommendations below will help HR and talent leaders prepare their companies and their workforces for this new, more competitive AI-powered world.

THE TIME TO START IS NOW.

The demand for AI and other emerging skills will only accelerate.
To prepare for this new reality, HR and company leaders must assess the current and future state of the organization to pinpoint the headcount, roles, and skills profiles required for success. Laying the groundwork now will optimize recruiting and hiring efforts and help companies navigate a rapidly changing marketplace.

"Advances in technology are not something that you get to choose anymore. If you're not going to embrace AI, then it's only time before you're out of the market," said Kenneth Koo, Talent Acquisition Leader & South Asia Executive Hiring Lead for Micron Technology, which was recently designated as an Advanced Fourth Industrial Revolution Lighthouse and Sustainability Lighthouse by the World Economic Forum's Global Lighthouse Network in recognition of how its operations have been automated and transformed to provide a supportive and inclusive environment. "We are all worried about how AI could potentially take over, and the only way where you can not worry about AI taking over is by embracing it. There's a saying — the best defense is a good offense. So instead of saying that AI is going to take away jobs, understanding AI and embracing AI gives you an edge and advantage over it. Then you're in control of AI versus AI controlling you."

FOCUS ON REAL BUSINESS PROBLEMS.

To prepare for an AI-first future, companies shouldn't set up an innovation lab on the side and hope that something terrific emerges. Just as AI has been embedded in many facets of modern life, AI should be integrated into the core components and daily operations of your business.

"Find an area of your business where you can combine an approach of upskilling your existing people and bringing in some external expertise to give you a kickstart," said Christian Lortz, vice president of digital at Pontoon. "Find a meaningful business problem and set up your creative framework of how you're going to measure success. It's really critical to make sure you're not creating silos and not creating people who are AI-savvy but have no clue what your business is about and what you're trying to do."

DON'T SLEEP ON EXISTING TALENT.

When labor markets get tight and talent pools grow shallow, the best potential tech talent might already be working for your organization. Many companies have an urgent need to upskill and reskill their existing employees — which is something that people want their employers to do.

"Previous research by Hired **shows** a major motivation for software engineers is the opportunity to learn new things," said Hired CEO Josh Brenner. "If you create a culture of continuous education and exploration, you're on the path to building great teams."

Not only must talent leaders learn how to source potential candidates, they also have to be able to identify the positions where tech talent is most needed, arrange the necessary training, and ensure that employees gain new or additional skills so they can move into these roles and advance their careers.

"We want every employee at Indeed to understand the fundamentals of AI and other emerging technologies," said Hannah Calhoon of Indeed. "All our employees are already interacting with AI tools on a daily basis, and we expect that the number and capabilities of these tools will only grow. We see a tremendous opportunity for AI tools to help employees across all functions minimize tedious or rote work and spend more of their time and energy on the most enjoyable parts of their job."

By identifying employees with the durable skills to succeed in the workplace and helping them master technical and AI skills, organizations can rethink the "build versus buy" paradigm for developing new AI talent.

FILL SKILL GAPS BY RECRUITING NON-TRADITIONAL TALENT.

The gap between the supply and demand of AI talent will only widen before it closes. Rather than throwing recruiting dollars and higher salaries at a limited supply of job candidates with in-demand skills, companies should consider seeking non-traditional talent from non-traditional sources.

"Job posting data suggests the surge of AI applications is threatening junior talent the most," said Hired CEO Josh Brenner. "But increased use of AI also presents an opportunity for new roles, as junior talent embraces opportunities to skill up and quickly adopt AI technologies and tools."

A growing number of business and state governments are adopting skills-first approaches to hiring that recognize the competencies and skills — not the degrees or other credentials — of a talent pool of <mark>more than 70 million American adults</mark>. Higher education institutions and community-based workforce development organizations will continue to play key roles in producing needed tech and AI talent. But a growing number of new approaches, such as tech industry apprenticeships, are showing tremendous promise at complementing traditional education and training programs and paving smoother pathways into high-demand roles.

CONCLUSION

AI has arrived in a big, bold way on the international stage, and organizations around the world are trying to make the best of this rapidly emerging tech.

In the short term, they're throwing money at their AI hiring challenges by pouring funds into recruiting budgets and higher salaries in hopes of winning the competition for available talent. But future-forward companies who want short- and long-term wins are beginning to realize they have to help themselves because the consequences of failing to launch an AI-enabled workforce are dire. Whether they're upskilling or reskilling their current employees, recruiting from new talent pools, or partnering with outside organizations who can meet their AI talent needs, organizations have the ways and means to reach the orbit required for success in their industry.

We hope that this data, our recommendations, and perspectives from other HR and tech leaders can give organizations the boost they need to rethink and reconfigure how they acquire tech talent. When the demand for workers with AI skills is so intense and the supply is so limited, HR leaders and company executives must consider nontraditional approaches to secure and create the talent they need.

BECOME A TRULY AGILE FUTURE-READY WORKFORCE.

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