

August 2023

# Future of Work Report

AI at Work

LinkedIn



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# Executive summary

We believe the evolution of work in the age of AI is important to understand, which is why we've released this ***Future of Work Report: AI at Work***. This quarterly report is designed to help both professionals and business leaders understand what's happening. We believe every professional and business leader can find something meaningful to help you navigate these changes. In big or small ways, our unique labor market insights, taken in aggregate from more than 950 million professionals on LinkedIn, cover three main areas:

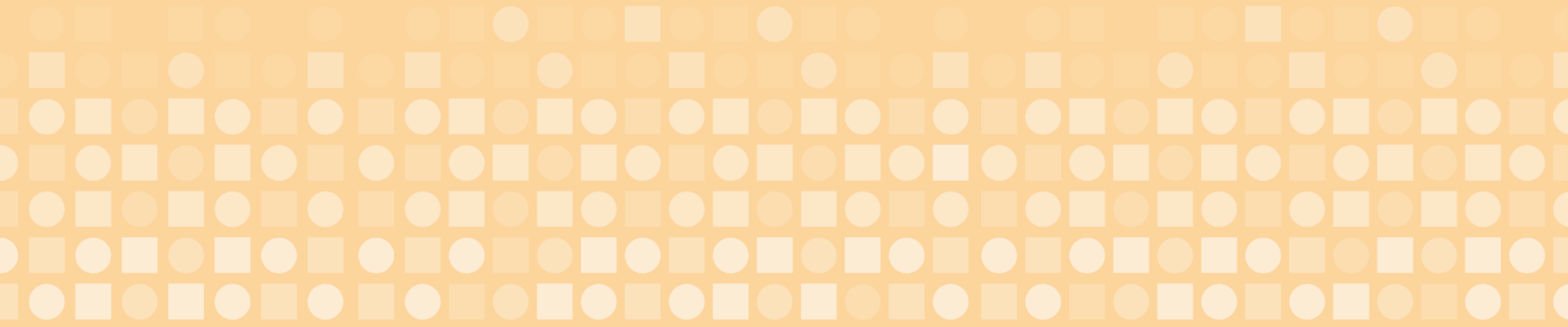
**The intersection of AI and the world of work:** Not only are job postings increasing, but we're seeing more LinkedIn members around the globe adding AI skills to their profiles than ever before. We've seen a 21x increase in the share of global English-language job postings that mention new AI technologies such as GPT or ChatGPT since November 2022. In June 2023, the number of AI-skilled members was 9x larger than in January 2016, globally.

**The state of play of Generative AI (GAI) in the workforce:** GAI technologies, including ChatGPT, are poised to start to change the way we work. In fact, 47% of US executives believe that using generative AI will increase productivity, and 92% agree that people skills are more important than ever. This means jobs won't necessarily go away but they will change as will the skills necessary to do them.

**LinkedIn's role in helping navigate an AI-driven world:** We're here to help professionals upskill, and use AI-assisted products to help jobseekers, hirers, marketers, sellers, and thought leaders embrace AI at work. Professionals can engage with AI top voices on LinkedIn, share and explore knowledge from thought leaders, find AI-related jobs and upskill where you need to through LinkedIn Learning.

Over time, and in future reports, we'll provide regular updates to our insights and expand on other topics transforming the future of work. LinkedIn is in a singular position to help the world's professionals take advantage of the opportunity to not only shape this new era, but benefit from it.

# The intersection of AI and the world of work



We're seeing an increased focus on AI at work on our platform in a variety of ways, including in the job listings hirers are posting, the skills our members are adding to their profiles, and in the everyday conversations people are having with each other. While AI is not new, the launch of ChatGPT in November 2022 led to a meteoric rise of interest in and conversation around AI, and more specifically in GAI<sup>1</sup> on LinkedIn.

Job postings referencing new AI technologies also are climbing rapidly: **The share of global English-language job postings mentioning GPT or ChatGPT increased 21x since November 2022.** Professionals and businesses are starting to embrace AI-assisted technologies, such as ChatGPT, in their daily work and adapt their processes. Investments in learning how GAI can drive efficiencies and reduce time spent on routine tasks can prove to be a productivity win-win for employers and employees alike.

**47%** of US executives believe that “using generative AI will increase productivity”, **44%** plan to increase their use of AI at their organization in the next year, and **40%** think that using generative AI will help unlock more growth/revenue opportunities in the next year.

Source: LinkedIn US Executive Confidence Index Survey, June 2023

1. Generative AI Keywords: GPT, ChatGPT, Generative AI, Generative Pre-Trained Transformer

### GAI keywords

**25%** Since early April, the number of LinkedIn member posts mentioning GAI keywords in the US has increased 25% month over month.

### Member profiles and job postings

**75%** Since the start of the year, we've seen on average a 75% increase each month in members worldwide adding terms like “GAI,” “ChatGPT,” “Prompt Engineering,” and “Prompt Crafting,” to their profile.

**15x** In June, members added these keywords to their profiles 15x more frequently than in January.



To prepare for the changes AI and GAI are bringing to the world of work and to speed adoption of AI tools, employers will need to focus on upskilling and reskilling professionals to boost AI literacy. When it comes to AI talent, some of the fastest growing AI-specific skills added to LinkedIn profiles globally in 2022 were tied to GAI, such as question answering and classification.

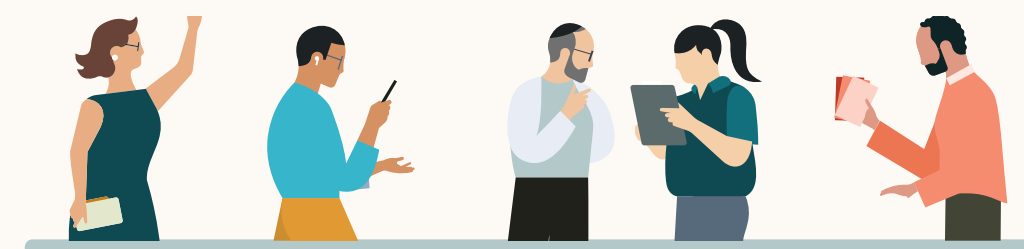
The uptick in members' skills, employers' job postings, and platform conversations indicates that competition is intensifying to hire talent to fill specialized AI roles. Since many of these roles are brand new and no existing degree completely satisfies the role, filling them will require an **increased emphasis on hiring for skills**. Businesses will need to thoroughly understand the skills they have and the skills they need, so they can hire candidates with the right skills and direct upskilling efforts for current employees appropriately.

“ Companies that focus on skills and shift away from more antiquated signals like degree, pedigree, or where someone worked previously, will be able to ensure they have the right people with the right skills, in the right roles, doing their best work. And it doesn't stop there. Once you have those employees in the right roles with the right skills, it's equally important to continue investing in their career progression and skills. ”

**Ryan Roslansky**, Chief Executive Officer, LinkedIn, **Fortune**, March 20, 2023

In 2022, the five fastest-growing AI-related skills added to LinkedIn member profiles, were all skills hinting at the emergence of GAI:

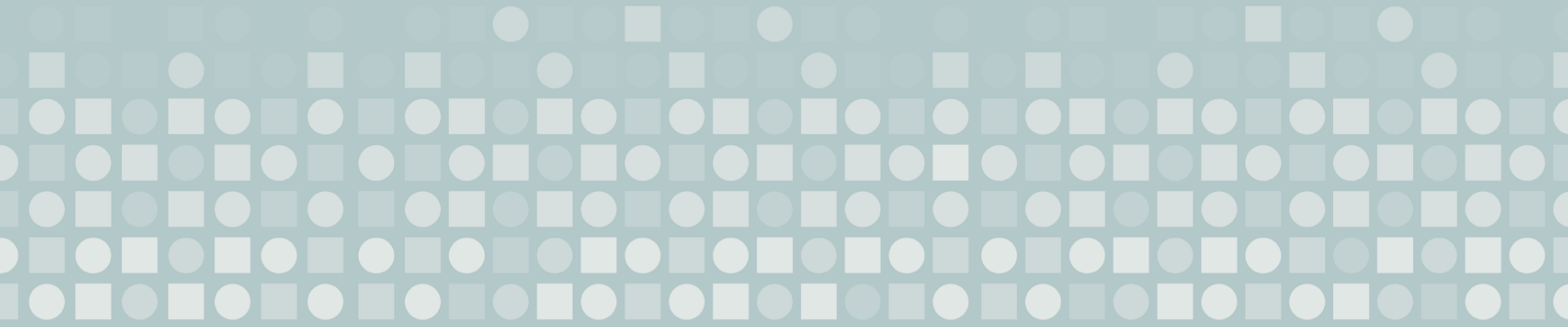
Question Answering:	+332%
Classification:	+43%
Recommender Systems:	+40%
Computer Vision:	+32%
Natural Language Processing (NLP):	+19%



**3x**

In the last five years, the number of US LinkedIn members in “Head of AI” roles has nearly tripled.

# Acceleration of AI skills across industries and geographies



The rise of AI talent and members adding AI skills has been accelerating since 2016. With the launch of ChatGPT we are seeing the promise of AI and how it's re-shaping the skills required at work and at the same time helping people become more productive. An analysis of how AI skills are diffusing across 25 countries shows that the pace at which LinkedIn members added AI skills to their profiles nearly doubled since the launch of ChatGPT, rising from 7.7% (May–November 2022) to 13% (November 2022–June 2023).

LinkedIn's new AI Skills Index offers a unique look at how AI skills are being adopted across geographies and industries. Tracking the speed and direction of AI skills as they spread throughout the global economy gives us a sharper read on how quickly and in what ways we can expect the workplace to transform.

### Understanding LinkedIn's AI Skills Index

LinkedIn's AI Skills Index shows the speed at which members are adding AI skills to their profiles across industries and countries. For example, a country that has an index of 10 in June 2023, means its share of members with at least two AI skills has grown by 10x since January 2016.

**How we define AI skills in LinkedIn's skills taxonomy:** There are 38,000 skills in LinkedIn's skills taxonomy, of which 121 are considered AI skills, including machine learning, natural language, and deep learning.<sup>2</sup>

**How we define AI talent:** Members who are employed in an AI-related job or with at least one AI skill.

<sup>2</sup>. See methodology page 27 for full details.

In 2016, only 3 out of every 1,000 members could be considered AI talent. By 2022, that number had increased to 17 in 1,000 (based on the median share of AI talent across 25 countries).

2016

3 out of every 1,000

2022

17 out of every 1,000





We're seeing more LinkedIn members around the globe adding AI skills to their profiles than ever before. Based on AI Skills Index data from 25 countries, by June 2023, the number of AI-skilled members was 9x larger than in January 2016.

The index shows that Singapore, Finland, Ireland, India, and Canada are experiencing the fastest rate of AI skills diffusion. We're also seeing the adoption of AI skills extend beyond tech to a range of industries, including retail, education, financial services, and many others.

“ To realize the full promise of AI productivity gains depends on the diffusion of skills across geographies, industries, and talent. AI adoption and optimization of its use will of course take time, but at this early stage it appears that the pace of diffusion is getting underway. The brightest global economic outcome is one where innovation can scale borders and boost productivity growth for all. ”

**Karin Kimbrough**, Chief Economist, LinkedIn

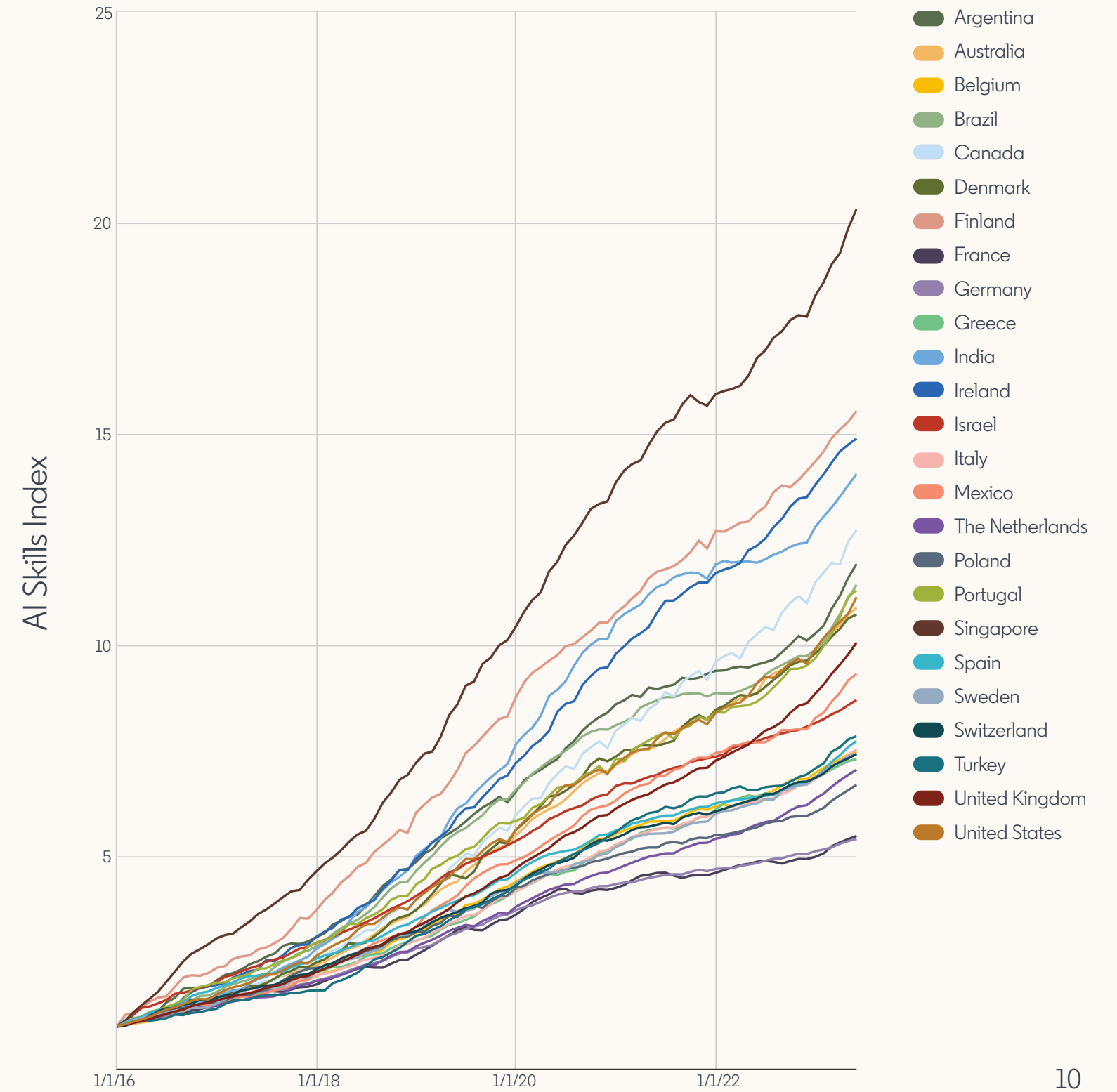


## Geographic snapshot

As of June 2023, Singapore has the highest diffusion rate over time (20x); in other words, the share of members who have added AI skills to their profiles is 20x as compared to January 2016. Finland (16x), Ireland (15x), India (14x), and Canada (13x) round out the top five countries with the highest rates of AI skills diffusion.



### AI Skills Index across countries

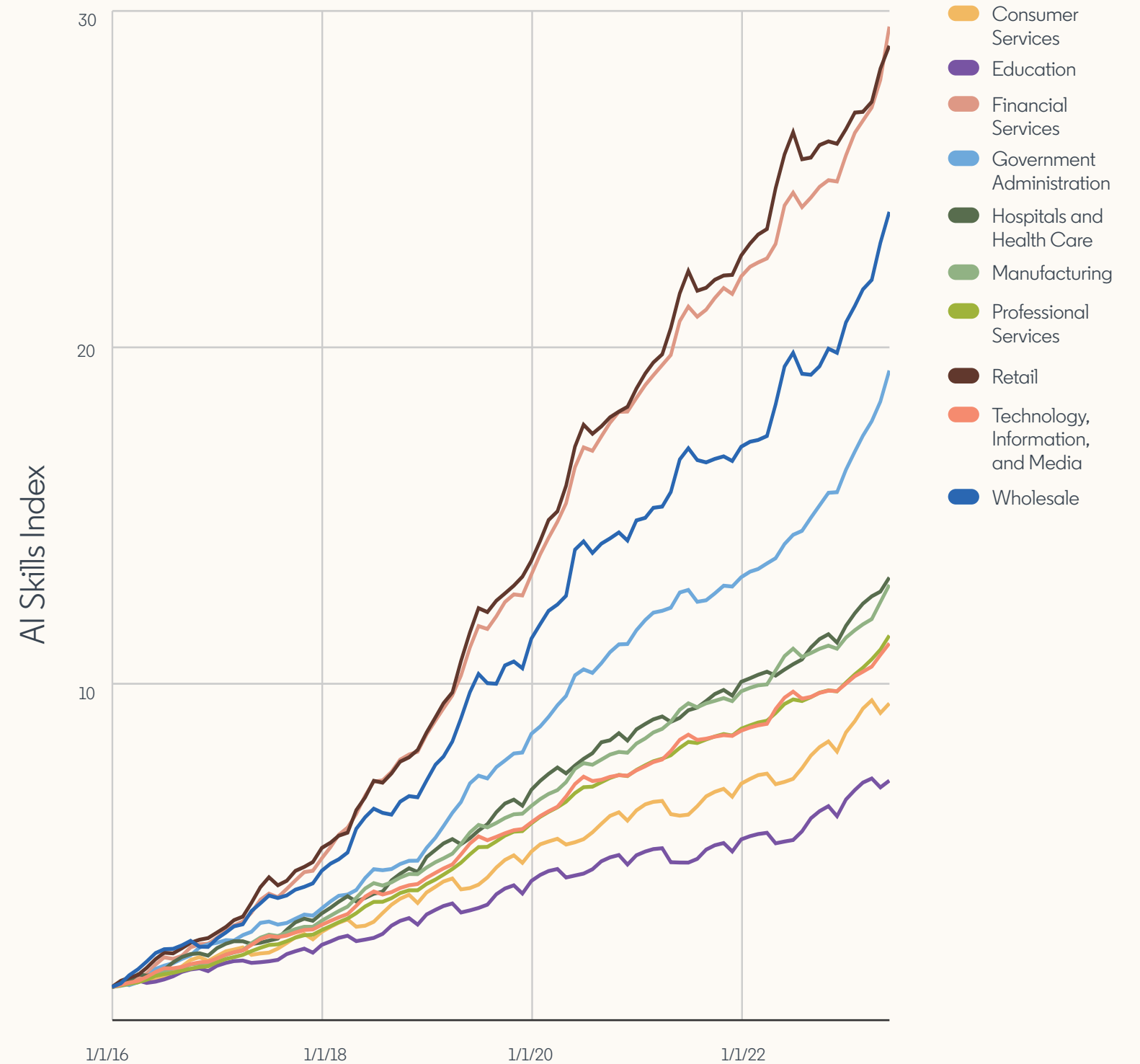


## Industry snapshot

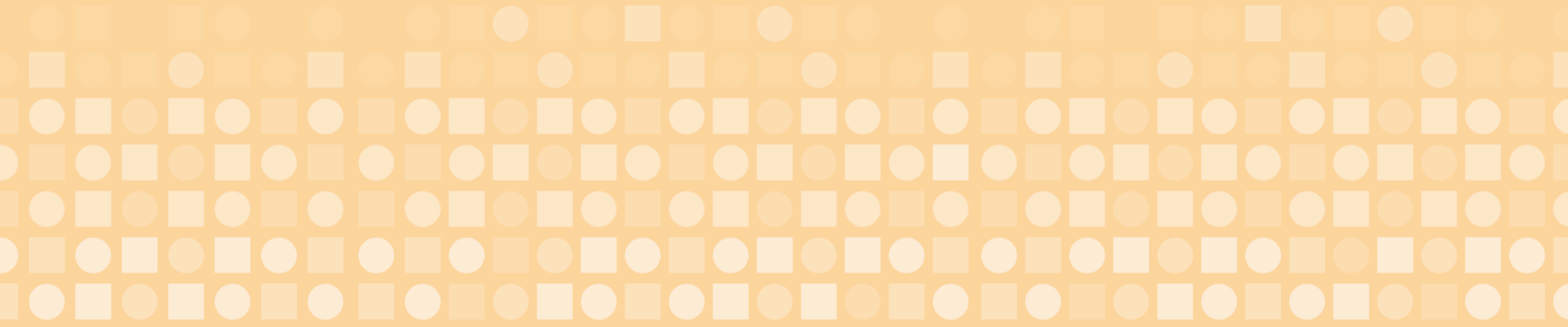
As might be expected, in the US, Technology, Information, and Media have the largest share of AI-skilled members (2.2%); while small, this is still well above other industries such as Education (1.2%), Professional Services (0.9%), Financial Services (0.9%), and Manufacturing (0.8%). However, other industries are quickly catching up. When we look at the speed at which members are adding AI skills to their profiles, we see that professionals in Financial Services (30x), Retail (29x), and Wholesale (24x) are pivoting toward AI faster than in Technology, Information, and Media (11x).

Across 10 US industries, Financial Services stands out as the only industry in which the share of members with AI skills and the speed at which they are adding AI skills to their profiles is above that of the average industry. This is an example of how industries beyond Tech have the potential to be not only early adopters but drivers of AI innovation.

AI Skills Index across industries (United States)



# Executive and employee sentiment



## The potential of AI: Navigating the excitement and the unknowns

AI is ushering in a new era of work that will impact jobs, careers, and industries. People are looking for answers about how work will change and what they can do to be in control of their careers. Professionals and companies are coming together on LinkedIn to ask and discuss questions about how AI will shape the future.

### Point of view from the C-suite

LinkedIn's Executive Confidence Index delves into how C-suite and senior executives feel about changing workplaces, with a focus on business outlook, talent, and new technologies, including AI. The June 2023 results uncovered that US executives have a positive outlook on their overall business when it comes to their ability to drive profit and invest in future growth, despite lingering uncertainty around the macroenvironment. On the talent front, US executives express less confidence about attracting and retaining workers, and they see room for improvement in terms of developing talent. When it comes to AI, our data shows that senior executives are mostly optimistic that the technology will provide productivity and revenue enhancing benefits, even if it's unclear how AI will transform their organization over the long term.

While we're in the early days, AI is already accelerating noticeable shifts across the workforce that are spurring professionals and companies to adapt. Companies that embrace AI and support upskilling to help professionals adapt to and benefit from changes will have the most success attracting — and keeping — top talent.

**51%** of US executives are excited about AI advancements, but do not yet know how their organization will leverage AI tools and skills.

**47%** of US executives agree that “using GAI will increase productivity.”

**44%** of US executives agree that they are planning to increase their use of AI at their organization in the next year.

**40%** of US executives also agree that using GAI will help unlock more growth and revenue opportunities in the next year.

**4%** Currently, only 4% of executives plan to reassess roles and reduce headcount as an impact of AI on their workforce.

## Point of view from professionals

Trepidation is normal with any technological change, and AI is no exception. That said, we're seeing mostly excitement from professionals about how these tools can help improve their productivity and reduce their workloads. According to [Microsoft's 2023 Work Trend Index Annual Report](#), a large majority of **people (70%) would delegate as much work as possible to AI to lessen their workloads.**

“ Ultimately, when we talk about AI's impact on work, what we are really talking about is how people will adopt these tools and continue to strengthen the people skills that complement them. ”

**Karin Kimbrough**, Chief Economist, LinkedIn

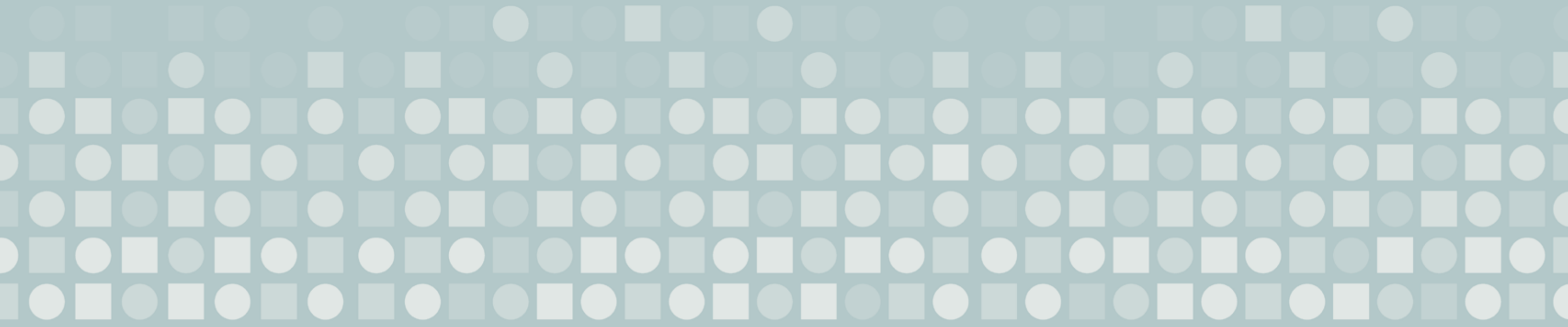
Not only did 3 in 4 people share that they would be **comfortable using AI for administrative tasks (76%)**, but most people also said they would be comfortable using it for **analytical (79%)** and even **creative work (73%)**.

People are also looking for AI to assist with finding the right **information and answers** they need (86%), **summarizing their meetings** and action items (80%), and **planning their day (77%)**.

Source: [2023 Microsoft Work Trend Index Annual Report](#)



**GAI is starting to change  
the way we work**



## GAI is reshaping the global workforce: A comparative look at the potential effect of generative AI on the workforce

While AI skills generally are accelerating across industries and geographies, we're also seeing GAI, such as ChatGPT, start to make its way into the world of work. As companies and organizations incorporate these new technologies into their daily operations, it will reshape our everyday jobs. GAI will reduce the time spent on some tasks and usher in new skills, while also raising the importance of people skills.

Almost every job requires skills that can be performed by GAI, but not every job is affected in the same way. According to [research from LinkedIn's Economic Graph Research Institute](#), 84% of US members are in jobs that could leverage GAI to automate at least a quarter of repetitive tasks and increase productivity. While GAI will reduce the time professionals spend on some skills, such as writing or data analysis, its influence isn't limited to reducing routine work. GAI will also drive up demand for other skills, especially people and specialized skills. For example, GAI might lead a language translator to shift their focus from doing literal translations to reviewing and certifying machine-generated translations, or specializing on specific legal or literary content.

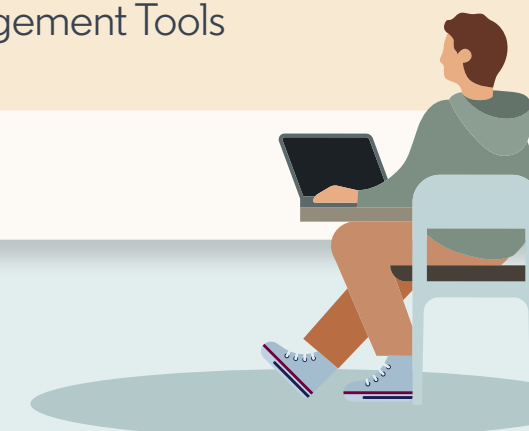
LinkedIn researchers identified a list of over **500 skills** likely to be affected by GAI technologies, including these skills that are among the most frequently featured by members:

**Business and industry:** Financial Reporting, Email Marketing, Data Analysis

**Communication and media:** Writing, Editing, Documentation, Translation, Content Creation

**Engineering:** Software Development Tools, Programming Languages, Data Science

**People:** Time Management Tools





## Understanding GAI

GAI is a fast-growing technology with the potential to perform tasks that, in the past, only humans could do — like writing, creating content, and analyzing data.

New GAI tools present an opportunity to potentially lighten workloads and help professionals, like teachers, focus on the most important parts of their job. To better understand this, we analyzed some of the most common occupations on the platform (representing nearly 1 in 5 US members) based on LinkedIn’s data. This is a look at how GAI can potentially transform productivity at these jobs by identifying which skills can be augmented by GAI and which ones can only be done by people.



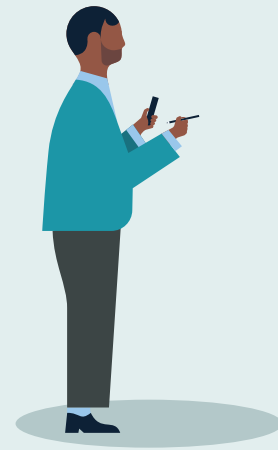
Occupation	Share of skills potentially augmentable by GAI	Top skills potentially augmentable by GAI: Top skills that could be partly performed by GAI-assisted software	Top people skills and specialized skills: Top skills that need to be performed by humans, and that complement skills potentially augmented by GAI	Share of people skills and specialized skills
Teacher	45%	Lesson Planning, Curriculum Development, Teacher Training, Literacy, Tutoring	Classroom Management, Differentiated Instruction, Elementary Education, Educational Technology, Special Education	53%
Software Engineer	96%	Jenkins, Docker Products, AngularJS, TypeScript, Git	Jira, Agile Methodologies, Microsoft Azure	3%
Nurse	6%	Patient Care, Quality Patient Care, Patient Assessment	Advanced Cardiac Life Support (ACLS), Nursing, Basic Life Support (BLS), Acute Care, Critical Care Nursing	90%
Salesperson	59%	Cold Calling, Retail Sales, Outside Sales, Sales Processes, Inside Sales	Stocking, Hospital Sales, Cardiology, Endocrinology, Medical Sales	15%
Project Manager	28%	Scrum, Submittals, Software Development Life Cycle (SDLC), Agile Methodologies, Agile Project Management	Construction Management, Project Estimation, Pre-Construction, Value Engineering, Change Orders	44%
Customer Service Rep	76%	Phone Etiquette, Typing, Customer Support	Warranties, Food and Beverage Operations, Stocking, Hospitality Service, Dispatching	4%
Driver	9%	Warehouse Operations, Logistics Management, Freight Transportation Planning	Truck Driving, Professional Driving, CDL Class A, CDL, Commercial Driving	88%
Medical Doctor	7%	Medical Research, Cancer, Heart Disease	Medical Education, Internal Medicine, Surgery, General Surgery, Family Medicine	63%
Cashier	59%	Food Service Planning, Merchandising	Stocking, Fast Food, Waiting Tables, Food and Beverage Operations	22%
Childcare Provider	20%	Lesson Planning, Tutoring	Childcare, Working with Children, Babysitting, Child Development, Nannyng	76%
Environmental Health Safety Specialist	3%	Risk Assessment, Root Cause Analysis, Geographic Information Systems (GIS)	Environment, Health, and Safety (EHS), Accident Investigation, Occupational Health, Industrial Hygiene, Environmental Compliance	70%
Event Manager	39%	Event Marketing, Hospitality Management, Catering Planning, Virtual Events	Corporate Events, Event Production, Special Events, Meeting Planning, Private Events	44%
Construction Specialist	11%	Construction Drawings, Submittals, Revit	Construction Management, Construction, Flooring, Construction Safety, Pre-Construction	78%
Oil Field Operator	1%	Project Commissioning, Preventive Maintenance Planning	Oil and Gas Drilling, Rig, Oilfield, Well Control, Directional Drilling	89%

Note: Percentages may not add up to 100% due to some skills not falling under these categories.

## Understanding GAI

GAI brings mixed feelings of uncertainty and excitement. The capabilities and efficiencies unlocked by GAI will undoubtedly affect all of our jobs in some way. In fact, as we found in our June 2023 US Executive Confidence Index, only 4% of executives plan to reassess roles and reduce headcount as an impact of AI on their workforce.

To better understand this **we examined how GAI could start to impact three occupations** — teachers, software engineers, and construction specialists.

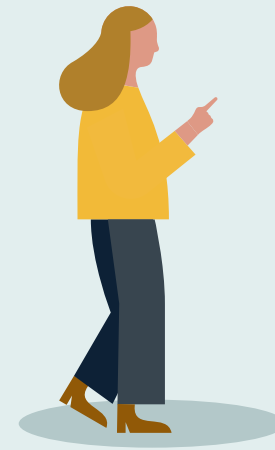


### Teachers

45% of teacher skills support tasks where GAI could enable greater productivity (ex: lesson planning, curriculum development, teacher training).

More than half of a teacher's job involves people skills such as working directly with students, which are unlikely to be replaced by GAI.

Areas where teachers might benefit from GAI's support: classroom management, differentiated instruction, special education.



### Software engineers

Most software engineers spend a lot of time writing code in different programming languages, which is why 96% of software engineers' skills may be augmented by GAI, leading to significant productivity gains (ex: programming, coding, and technical abilities).

People skills and specialized skills complement an engineer's technical work. For example, as software engineers spend less time writing code, they can focus more on other parts of their jobs, including those that involve Agile methodologies, Microsoft Azure, and Jira (a tool for tracking workflow progress and communicating effectively with key stakeholders), which are critical to their success. These types of skills represent almost 3% of the skills engineers use every day.

One of the key areas where software engineers might benefit from GAI's support: communicating more effectively with technical and nontechnical audiences.



### Construction specialists

Only 11% of construction specialists' skills may be augmented by GAI (ex: construction-related drawing, Revit software).

The job largely requires specialized skills (78%), such as construction management, flooring, and construction safety.

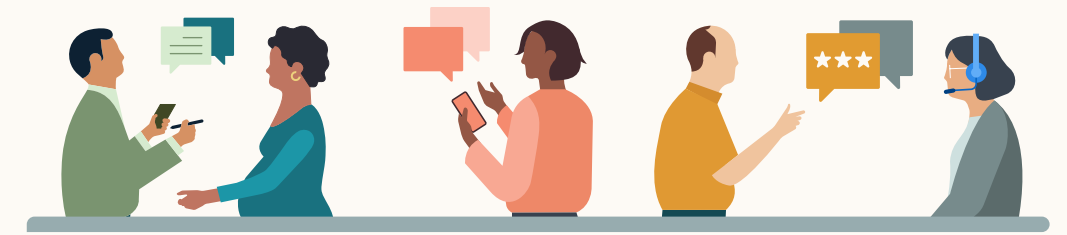
One of the key areas where construction specialists can leverage GAI: performing repetitive tasks like permit submittals.

**People skills are becoming more critical than ever.** In fact, since the launch of ChatGPT, some of the fastest-growing skills in job postings in the US are people skills, such as flexibility and ethics. This demonstrates how people skills are at the heart of jobs and how we come together to collaborate at work.

**92%** of US executives agree that people skills are more important than ever.

Source: LinkedIn US Executive Confidence Index Survey, June 2023

In the US, **communication** remains the top skill demanded across all job postings.

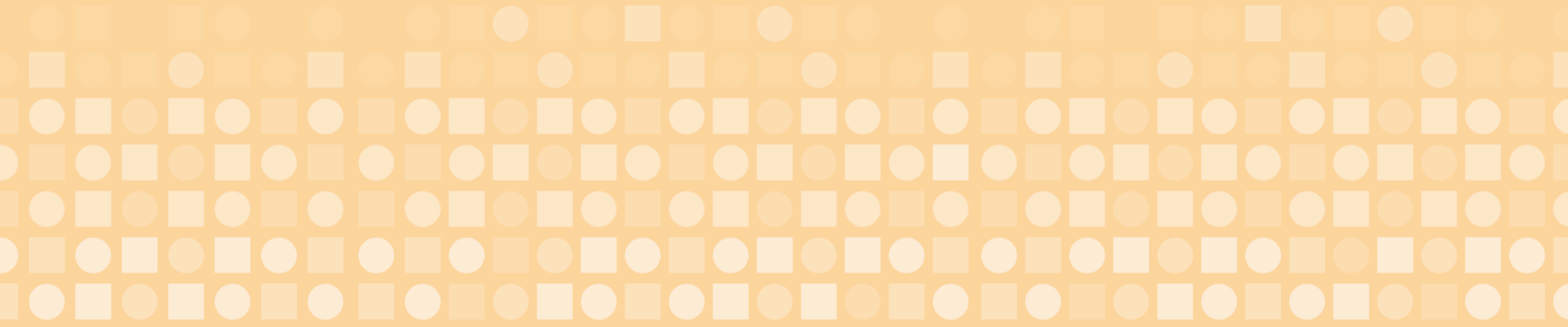


In the US, the fastest-growing **in-demand skills** since November 2022 are:

Flexibility	+158%
Professional ethics	+120%
Social perceptiveness	+118%
Self-management	+83%



**Engage on LinkedIn  
to build AI confidence**



## Use our AI products and tools to share knowledge, upskill and find talent

AI may still feel like a buzzword to many. While it is early days, engaging with AI at work is quickly becoming the norm, as businesses start to look to integrate GAI into everyday work. The meteoric rise of AI skills and AI-related roles demonstrate that more people are taking advantage of this opportunity to position themselves at the forefront of this emerging technology.

Analyzing how employers and professionals interact on LinkedIn provides valuable insights on how AI is starting to influence work— from which AI skills are growing and in which industries, to the pace of AI skills adoption, to how AI is transforming what employers are looking for.

Job seekers, hirers, marketers, and sellers are engaging in diverse ways to share knowledge about AI, to upskill, to find top AI talent, and to leverage the power of LinkedIn's learning, recruiting, sales, and insights products to unlock new opportunities and growth. We've had **AI-assisted products for more than 15 years**, and we are continually introducing new ones into the market to help job seekers, hirers, marketers, sellers, and thought leaders embrace AI. Inspired by, and aligned with, Microsoft's leadership in responsible AI, we've shared the **Responsible AI Principles** that we use at LinkedIn to guide our work. Our principles serve as the true north for our responsible use of AI as a tool to help members achieve their goals and accelerate progress toward economic opportunity for all.

**2.6x**

In the past five years, the number of US companies that have a Head of AI position has increased 2.6x.



## Here's how LinkedIn creates economic opportunity:



### Opportunities for job seekers

We've heard from members that capturing their professional identity in a succinct way is a tall order. That's why we're **testing personalized writing suggestions** for profiles and messaging on LinkedIn. On **profiles**, the tool uses content already on a member's profile, such as recent experience, to showcase their skills in the best way possible through crafted Headline and About sections.

In suggested **messaging**, personalized writing suggestions help solve the blank page problem using information from the job seeker's public profile and the job description — including identity of the hiring manager, the hiring manager's profile, and the hiring company — to create a customized draft message for the job seeker to get a conversation started. This is currently being tested with Premium members and is expected to roll out more broadly in the coming months.

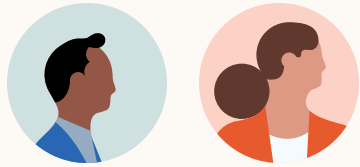


### Opportunities for hirers

We know that 75% of hirers expect that GAI can free up time for more strategic work and two-thirds (67%) hope that GAI can help them uncover new candidates. That's why we're testing things like **AI-assisted messages** and **AI-assisted job descriptions** to help hirers source qualified candidates more quickly and free up time for the more strategic parts of their hiring process — like speaking to and building relationships with candidates.

When recruiters personalize InMails, they see an overall 40% increase in acceptance rates. But manually researching each candidate and personalizing every message is nearly impossible to do at scale. That's why we're rolling out AI-assisted messages in LinkedIn Recruiter to help hirers start personalized messages, so they can save time, increase candidate engagement, and spend more time building meaningful connections, which are skills only people can do.

We also know that writing a job description can be a time-consuming and painful task, particularly if you're struggling to attract the right candidates. That's why **we're testing a new AI-assisted job description tool** that will make it faster and easier to write job descriptions.



## Opportunities for marketers and sellers

Our market research helps keep the pulse on what sales and marketing professionals can do to stay productive and strategic as they sell, and what they can do to help buyers see the commercial value of their companies. What we found in our latest surveys shows the relevance of GAI in many daily tasks already — from writing copy to sending outreach emails. Beyond the GAI tools of today, there's strong interest from sales and marketing professionals in using even more automation and AI tools to get their work done and become the most effective at their work.

Our data shows that 69% of sales professionals expect their use of AI to increase in the next six months<sup>3</sup>. We also know that about 59% of skills among sellers and marketers will be impacted by GAI. Given the opportunity this provides to help empower sellers and marketers, we've examined the most critical tasks that enable their success, and we are building functionality into our Campaign Manager and Sales Navigator products.

These tasks range from building effective campaigns, to finding the best leads to target with the highest chance of responses, to researching key company priorities for executive-level conversations. LinkedIn Campaign Manager and Sales Navigator will help sellers and marketers do these tasks even faster than they can today, so they can focus on the human aspects of selling and marketing that are so important: identifying the right buyers, deeply understanding customer motivations, and building relationships that lead to consideration of products and closed deals.

3. LinkedIn Macroeconomic Pulse Survey of Decision Makers, April - June 2023. Question: Within the next 6 months, how do you expect your sales organization's use of generative AI to change? Generative AI is a type of artificial intelligence technology that can be used to create new content, including text, audio, image, and video. Total, N=1569.





## Opportunities for everyone

Unlocking the roughly 10 billion years worth of knowledge that exists within our collective members can help tackle common work problems. With collaborative articles, our AI-assisted conversation starters that brings together the insights and perspectives of members with knowledge topics published by LinkedIn, we are unlocking the collective knowledge of our members to spark conversation, learning, and connections.

The skills required for many jobs have changed by a staggering 25% since 2015, with that number expected to reach at least 65% by 2030 due to the rapid development of new technologies like AI. We understand the importance of keeping your skills up to date, which is why we have over 300 AI courses within LinkedIn Learning and we partnered with Microsoft to launch the world's first **Professional Certificate on Generative AI** — available on LinkedIn Learning, and free through 2025. Whether you're just starting out in your career, a seasoned professional, or a business leader looking to stay on top of the latest advancements, our courses are designed to help you learn new skills that can boost your productivity and accelerate your career growth.

We added over 30 GAI courses and many more rolling out over the coming year, including:

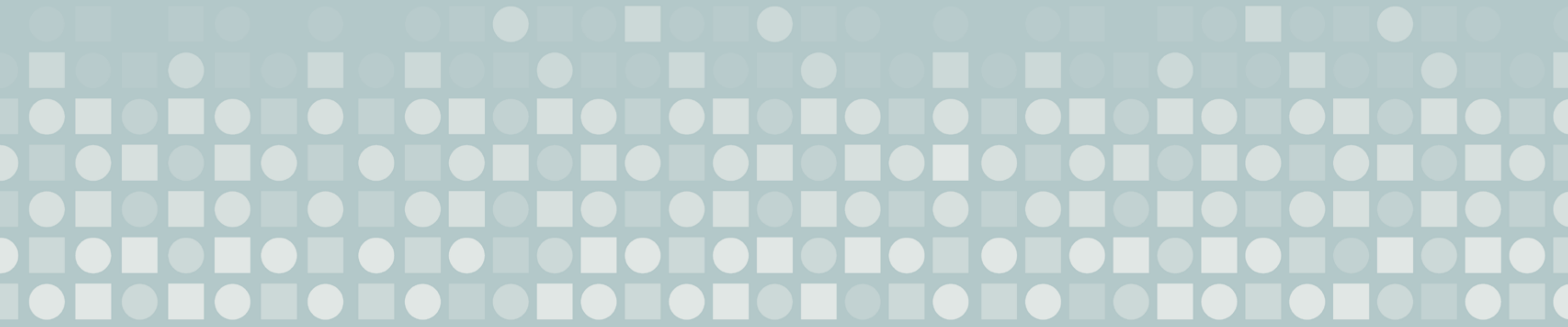
- **What Is Generative AI?** by **Pinar Seyhan Demirdag**
- **Introduction to Prompt Engineering for Generative AI** by **Ronnie Sheer**
- **Introduction to Conversational AI** by **Ian Barkin**
- **Generative AI for Business Leaders** by **Tomer Cohen**

And we have experts in the field sharing their knowledge about AI. Follow, engage with, and learn from top AI voices, such as **Bernard Marr, Cassie Kozyrkov, Greg Coquillo, Morgan Cheatham, Allie Miller,** and **Tomasz Tunguz**. Check out our recent editorial coverage, including more top voices to follow, on what the rise of AI means for workers and how it's already changing key industries.

At LinkedIn, we are uniquely positioned to understand what is top of mind for business leaders and professionals, and how they're approaching AI. We have only just begun to understand the potential for AI to transform the way we work, the way we learn, and the way we interact with others. It's an exciting time of change, and we look forward to discovering and sharing future analyses of AI's impact on work.



# Methodology and Credits



## AI Skills Index

1. The AI Skills Index value measures how much the share of members with at least 2 AI skills on their profiles has increased, compared to the level in January 2016. For example, a value of 3x means the share of members with AI skills is 3x higher than as compared to January 2016. The metric helps us understand the pace at which members are adopting AI skills, or the pace at which AI skills are diffusing in a given country, industry, etc.
2. AI Skills Index is available at the country level for the following 25 countries:

Argentina	France	Mexico	Switzerland
Australia	Germany	Netherlands	Turkey
Belgium	Greece	Poland	United Kingdom
Brazil	India	Portugal	United States
Canada	Ireland	Singapore	
Denmark	Israel	Spain	
Finland	Italy	Sweden	
3. Country data available at the industry levels is subject to liquidity to ensure data quality as well as to preserve the privacy of our members.
4. Unless otherwise mentioned, latest data from June 2023 is utilized throughout this analysis.
5. LinkedIn members self-report their skills on their LinkedIn profiles. Currently, more than 38,000 distinct, standardized skills are identified by LinkedIn. These have been coded and classified by taxonomists at LinkedIn into 249 skill groupings, which are the skill groups represented in the dataset. The top skills that make up the AI skill grouping are machine learning, natural language processing, data structures, artificial intelligence, computer vision, image processing, deep learning, TensorFlow, Pandas (software), and OpenCV, among others.

## We track the following 121 AI skills:

3D Reconstruction  
Alexa  
Algorithm Analysis  
Algorithm Development  
Artificial Intelligence (AI)  
Artificial Neural Networks  
Association Rules  
Audio Synthesis  
Autoencoders  
Automated Clustering  
Automated Feature Engineering  
Automated Reasoning  
Autoregressive Models  
Caffe  
Classification  
Cognitive Computing  
Common Lisp  
Computational Geometry  
Computational Intelligence  
Computational Linguistics  
Computer Vision  
Concept Drift Adaptation  
Conditional Image Generation  
Convolutional Neural Networks (CNN)  
Data Structures  
Deep Learning  
dSPACE  
Evolutionary Algorithms  
Expert Systems  
Facial Recognition  
Feature Extraction  
Feature Selection  
Fuzzy Logic  
Gaussian 03  
Generative Adversarial Imitation Learning  
Generative Design Optimization  
Generative Flow Models  
Generative Modeling  
Generative Neural Networks  
Generative Optimization  
Generative Pre-Training  
Generative Query Networks (GQNs)  
Generative Replay Memory  
Generative Synthesis  
Gesture Recognition  
Graph Embeddings  
Graph Networks  
Graph Theory  
Hyperparameter Optimization  
Hyperparameter Tuning  
IBM Watson  
Image Generation  
Image Inpainting  
Image Processing  
Image Synthesis  
Information Extraction  
Information Retrieval  
Intelligent Agents  
Jena  
Julia (Programming Language)  
Keras  
Knowledge Discovery  
Knowledge Representation and Reasoning  
Linked Data  
Lisp  
Machine Learning  
Meta-learning  
Microsoft Azure Machine Learning  
Model Compression  
Model Interpretation  
Model Training  
Music Generation  
Natural Language Generation  
Natural Language Processing (NLP)  
Natural Language Understanding  
Neural Network Architecture Design  
Neural Networks  
NLTK  
Object Recognition  
Ontologies  
OpenCV  
Pandas (Software)  
Parallel Algorithms  
Parsing  
Pattern Recognition  
Perl Automation  
Probabilistic Generative Models  
Probabilistic Programming  
Prompt Engineering  
PyTorch  
Question Answering  
RapidMiner  
Recommender Systems  
Reinforcement Learning  
Resource Description Framework (RDF)  
Scikit-Learn  
Semantic Technologies  
Semantic Web  
Sentiment Analysis  
Smalltalk  
Speech Recognition  
Statistical Inference  
Style Transfer  
Supervised Learning  
Support Vector Machine (SVM)  
Synthetic Data Generation  
TensorFlow  
Text Analytics  
Text Classification  
Text Generation  
Text Mining  
Text-to-Image Generation  
Thean  
Time Series Forecasting  
Unsupervised Learning  
Variational Autoencoders  
Variational Autoencoders (VAEs)  
Video Generation  
Web Mining  
Weka  
WordNet

**LinkedIn's Workforce Confidence Index** is based on a quantitative online survey distributed to members via email every two weeks. Roughly 3,000 to 5,000 US-based members respond to each wave. Members are randomly sampled and must be opted into research to participate. Students, stay-at-home partners, and retirees are excluded from analysis so we can get an accurate representation of those currently active in the workforce. We analyze data in aggregate and will always respect member privacy. Data is weighted by engagement level to ensure fair representation of various activity levels on the platform. The results represent the world as seen through the lens of LinkedIn's membership; variances between LinkedIn's membership and the overall market population are not accounted for.

**LinkedIn Executive Confidence Index** is an online survey taken by roughly 5,000 LinkedIn members (at the VP-level or above) every quarter. Members are randomly sampled and must be opted into research to participate. We analyze data in aggregate and will always respect member privacy. Data is weighted by Seniority and Industry to ensure fair representation of executives on the platform. The results represent the world as seen through the lens of LinkedIn's membership; variances between LinkedIn's membership and the overall market population are not accounted for.

**LinkedIn Macroeconomic Pulse Survey of Decision-Makers** is a non-blinded survey conducted among 1,569 sales decision-makers from June 14 to June 30, 2023. Includes both Sales Navigator customers and non-customers.

**Head of AI Roles:** We searched members' job titles for the keywords "AI," "Artificial Intelligence," or "Machine Learning" coupled with the keyword "Head," or LinkedIn's standardized seniority levels "Director," "VP," and "CXO." Each year from 2019 to 2023 represents dates from July 1 to June 30 (for timely insights mid-year). We indexed results to 2019 to showcase five-year growth.



## Credits

A special thanks to the co-authors of this report, LinkedIn's market research team and data scientists, as well as contributions from extended teams.

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