ECONOMIC GRAPH RESEARCH INSTITUTE

METHODOLOGY NOTE | MARCH 2026

AI Data Partnerships: LinkedIn Methodology

Rosie Hood, LinkedIn Economic Graph Research Institute

Akash Kaura, LinkedIn Economic Graph Research Institute

Mar Carpanelli, LinkedIn Economic Graph Research Institute

OVERVIEW

In this note we outline the methodologies used to define AI Talent on LinkedIn and several LinkedIn metrics developed to understand and monitor AI workforce trends, including: Top AI Skills, Fastest Growing AI Skills, AI Talent Concentration, the Relative AI Talent Hiring Rate, Relative AI Skills Penetration, Female Representation with AI Talent, AI Talent Migration, Career Transitions into AI jobs, AI Job Postings, the Top AI occupations, the Fastest Growing AI Occupations, and the AI Skills Diffusion Index.

DIMENSIONS

LinkedIn Data

This body of work represents the world seen through LinkedIn data, drawn from the anonymized and aggregated profile information of LinkedIn's 1.3+ billion members around the world. As such, it is influenced by how members choose to use the platform, which can vary based on professional, social, and regional culture, as well as overall site availability and accessibility. In publishing these insights from LinkedIn's Economic Graph, we want to provide accurate statistics while ensuring our members' privacy. As a result, all data show aggregated information for the corresponding period following strict data quality thresholds that prevent disclosing any information about specific individuals.

Country Sample

We provide data on Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, Costa Rica, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong SAR, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Saudi Arabia, Singapore, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Türkiye, United Arab Emirates, United Kingdom, United States, and Uruguay.

Skills

LinkedIn members self-report their skills on their LinkedIn profiles. Currently, more than 42,000 distinct, standardized skills are identified by LinkedIn.

LinkedIn categorizes AI skills into two mutually exclusive groups: “AI Engineering” and “AI Literacy” skills, where, broadly, AI Engineering skills refer to the technical expertise and practical competencies required to design, develop, deploy, and maintain artificial intelligence systems, and AI Literacy skills refer to the knowledge, abilities, and critical thinking competencies needed to understand, evaluate, and effectively interact with artificial intelligence technologies. As skills are ever evolving, we maintain and refresh these classifications on a periodic basis.

Industry

Our industry taxonomy is a collection of entities that share economic activities and contribute to a specific product or service. An industry represents the products or services that a company offers or sells. We analyze the following industries in the context of AI skills penetration: Education; Financial Services; Manufacturing; Professional Services; and Technology, Information and Media. For all other metrics we analyze the following industries: Accommodation and Food Services; Administrative and Support Services; Construction; Consumer Services; Education; Entertainment Providers; Farming, Ranching, Forestry; Financial Services; Government

Administration; Hospitals and Health Care; Manufacturing; Oil, Gas, and Mining; Professional Services; Real Estate and Equipment Rental Services; Retail; Technology, Information and Media; Transportation, Logistics, Supply Chain and Storage; Utilities; and Wholesale.

Gender

We recognize that some LinkedIn members identify beyond the traditional gender constructs of "man" and "woman." If not explicitly self-identified, we have inferred the gender of members included in this analysis either by the pronouns used on their LinkedIn profiles or inferred on the basis of first name. Members whose gender could not be inferred as either man or woman were excluded from any gender analysis. Please note that we filter out countries where our gender attribution algorithm does not have sufficient coverage.

AI Jobs or Occupations

LinkedIn member titles are standardized and grouped into over 16,000 occupations. These are not sector or country specific. An AI job is an occupation that requires AI skills to perform the job. Examples of such occupations include (but are not limited to): Machine Learning Engineer, Artificial Intelligence Specialist, Data Scientist, Computer Vision Engineer etc.

AI Talent

A LinkedIn member is considered AI talent if they have explicitly added at least two AI engineering skills to their profile and/or they are or have been employed in an AI job. A LinkedIn member is considered AI literate if they have added at least one AI literacy skill to their profile.

METHODOLOGIES

1. Top AI Skills

These are the AI skills most frequently added by all members by year.

Example interpretation: The most added AI Engineering skills globally are Machine Learning, AI, and Deep Learning.

2. Fastest Growing AI Skills

The Year-over-Year (YoY) growth rate for AI skills most frequently added by all members. Please note that we implement thresholds to skill add volumes in the most recent year, which are set at the 50th percentile of the most recent year's AI skill adds distribution by country.

Example interpretation: The fastest growing AI Engineering skills globally are Custom GPTs, AI Productivity, and AI Agents.

3. AI Talent Concentration

The counts of AI talent are used to calculate talent concentration metrics, e.g., to calculate the country-level AI talent concentration, we use the counts of AI talent in a country divided by the counts of LinkedIn members in that respective country. Note that concentration metrics may be influenced by LinkedIn coverage in these countries and should be utilized with caution.

Example interpretation: AI Talent with AI Engineering skills represents 0.88% of LinkedIn members in the United States.

4. Relative AI Talent Hiring Rate YoY Ratio

The LinkedIn hiring rate is a measure of hires normalized by LinkedIn membership. It is computed as the percentage of LinkedIn members who added a new employer in the same period the job began, divided by the total number of LinkedIn members in the corresponding location.

The AI hiring rate is computed utilizing the overall hiring rate methodology, but only considering members classified as AI talent. The relative AI talent hiring rate YoY ratio is the year-over-year change in the AI hiring rate relative to the overall hiring rate in the same country. We share a 3-month moving average.

Example interpretation: In the United States, the ratio of AI talent hiring relative to overall hiring has grown 24.7% year-over-year.

5. Skills Penetration

Skills Genome

For any entity (occupation, country, industry, etc.), the skills genome is an ordered list (a vector) of the 50 most characteristic skills of that entity. These most characteristic skills are determined using a TF-IDF algorithm, which down-ranks ubiquitous skills that add little information about that specific entity (e.g. Microsoft Word) and up-ranks skills unique to that specific entity (e.g., Artificial Intelligence). Further details are available at LinkedIn's Skills Genome and our LinkedIn-World Bank Methodology note.

As an example, Table 1 details the Skills Genome of the Technology, Information and Media industry in the United States in 2024, displaying the top 20 skills ranked by TF-IDF.

Skills Genome of the Technology, Information and Media industry in the United States in 2024
Top 20 skills ranked by TF-IDF

TF-IDF Skill Rank	Skill Name
1	Amazon Web Services (AWS)
2	Software as a Service (SaaS)
3	Artificial Intelligence (AI)
4	Python (Programming Language)

5	Go-to-Market Strategy
6	Customer Success
7	Large Language Models (LLM)
8	Salesforce.com
9	SQL
10	Generative AI

AI Skills Penetration

This metric measures the intensity of AI skills in a given entity through the following methodology:

- We compute frequencies for all self-added skills by LinkedIn members in a given entity (occupation, industry, etc.) from 2015 onwards.
- We re-weight skill frequencies using a TF-IDF model to get the top 50 most representative skills in that entity. These 50 skills compose the "skill genome" of that entity.
- We compute the share of skills that belong to the AI skill group out of the top skills in the selected entity.

Example interpretation: The AI skill penetration rate signals the prevalence of AI skills across occupations, or the intensity with which LinkedIn members utilize AI skills in their jobs. For example, the top 50 skills for the occupation of engineer are calculated based on the weighted frequency with which they appear in LinkedIn members' profiles. If four of the skills that engineers possess belong to the AI skill group, this measure indicates that the penetration of AI skills is estimated to be 8% among engineers (e.g., 4/50).

Relative AI Skills Penetration

To allow for skills penetration comparisons across countries, the skills genomes are calculated, and a relevant benchmark is selected (e.g., a global average). A ratio is then constructed between a country and the benchmark's AI skills penetrations, controlling for occupations.

Example interpretation: A country's relative AI skills penetration of 1.5 indicates that AI skills are 1.5 times as frequent as in the benchmark, for an overlapping set of occupations.

Global Comparison

For cross-country comparison, we present the relative penetration rate of AI skills, measured as the sum of the penetration of each AI skill across occupations in a given country, divided by the average global penetration of AI skills across the overlapping occupations in a sample of countries.

Example interpretation: A relative penetration rate of 2 means that the average penetration of AI skills in that country is two times the global average across the same set of occupations.

Global Comparison: By Industry

The relative AI skills penetration by country for a given industry provides an in-depth sectoral decomposition of AI skill penetration across industries and countries.

Example interpretation: A country's relative AI skill penetration rate of 2 in the education sector means that the average penetration of AI skills in that country is two times the global average across the same set of occupations in that sector.

Global Comparison: By Gender

The relative AI skills penetration by gender provides a cross-country comparison of AI skill penetrations within a gender. Since the global averages are distinct for each gender, this metric should only be used to compare country rankings within each gender, not for cross-gender comparisons within countries.

Example interpretation: A country's AI skills penetration for women of 1.5 means that members who are women in that country are 1.5x more likely to list AI skills than the average female member in all countries pooled together across the same set of occupations that exist in the country-gender combination.

Global Comparison: Across Genders

The relative AI skills penetration across genders allows for cross-gender comparisons within and across countries globally, since we compare a country's AI skill penetration by gender to the same global average regardless of gender.

6. Female representation in AI

The share of AI talent that are women.

Example interpretation: Female representation within AI Talent with AI Engineering skills is 30.5% globally.

7. AI Talent migration

Data on migration was developed with the World Bank Group – LinkedIn "Digital Data for Development" partnership (please see https://linkedindata.worldbank.org/ and Zhu et al. [2018]). LinkedIn migration rates are derived from the self-identified locations of LinkedIn member profiles. For example, when a LinkedIn member updates their location from Paris to London, this is counted as a migration. Migration data is available from 2019 onwards.

LinkedIn data provide insights to countries on the AI Talent gained or lost due to migration trends. AI Talent migration is considered for all members with AI Skills/holding AI jobs at time t for country A as the country of interest and country B as the source of inflows and destination for outflows. Thus, net AI Talent migration between country A with respect to country B is calculated as:

$$\text{Net AI Talent Migration}_{a,b,t} = \text{Net AI Talent flows}_{a,b,t} \;/\; \text{Member count}_{a,t}$$

Net flows are defined as total arrivals minus departures within a given time period. LinkedIn membership varies between countries, which can prove challenging when interpreting absolute movements of members from one country to another. Migration flows are therefore normalized with respect to each country. For example, for country A, all absolute net flows into and out of country A, regardless of origin and destination

countries, are normalized based on the LinkedIn membership of country A at the end of each year and multiplied by 10,000. Hence, this metric indicates relative talent migration from all countries to and from country A. Please note that minimum thresholds have been applied such that transitions have a sufficient sample size.

Example interpretation: The United States had a positive net flow of AI Talent relative to its membership size at 1.07 net flow per 10k members.

8. Career Transitions into AI jobs

We consider the source occupations that feed AI occupations, analyzing the share of transitions into AI occupations pooled over a five-year period. Career transitions are computed by aggregating member-level job transitions from one occupation to another occupation that the member has previously not held. We exclude first occupations added by new graduates and intra-occupation transitions.

Example interpretation: In the United States, 26.9% of transitions into AI Engineer came from Software Engineers, followed by 13.3% from Data Scientists.

9. AI Job postings

This metric measures employer demand for AI talent by calculating the share of job postings that qualify as AI roles by country and month. A job posting is labelled as requiring AI talent if it either (i) lists at least two AI engineering skills, or (ii) is associated with an AI occupation. Talent demand is defined as the proportion of all job postings in a country that meet these criteria.

Example interpretation: In Germany, AI Engineering job accounted for 4.2% of all job postings in the latest month.

10. Top AI Occupations

This metric identifies the most common AI occupations by country. Occupations are ranked based on the share of members who list an AI occupation on their profile in the latest available month.

Example interpretation: In Ireland, within the AI Engineering segment, Machine Learning Engineer is the most common occupation, followed by Data Scientist.

11. Fastest Growing AI Occupations

This metric identifies the fastest growing occupations within each AI talent segment by country, based on year-over-year changes in occupation share. For each occupation, we calculate the year-over-year growth rate as the percentage change in the share of members listing an AI occupation compared with the same month one year earlier.

Example interpretation: In the United States, AI Product Manager is among the fastest growing occupations within the AI Engineering segment, showing the largest year-over-year increase.

12. AI Skills Diffusion Index

The AI Skills Diffusion Index measures the breadth and depth of adoption of AI skills across the LinkedIn member base. It captures both (i) how widespread a given group of AI skills is among members in a country and (ii) how diverse the set of AI skills represented on member profiles is within that group.

The index is constructed by tracking the share of members who list at least one AI skill on their profiles, adjusted for the diversity of distinct AI skills observed in a given country. Values are indexed relative to a baseline period where a member threshold is reached at the country level, which ensures stability and comparability across countries and over time.

The resulting index value at any point in the time series reflects how much the adjusted share of members with that AI skill group has increased relative to the baseline. Because the index is normalized to an early reference point, it is best interpreted as a measure of growth in diffusion rather than as a level or penetration rate.

Example interpretation: In the United States, the AI Skills Diffusion Index for AI Engineering indicates that the adjusted share of members listing AI Literacy skills is 1075x higher than it was in March 2023.

ACKNOWLEDGEMENTS

We gratefully acknowledge the contributions of Murat Erer and Carl Shan in the development of these methodologies and metrics, and the feedback from our collaborators at the OECD.AI, Stanford Institute for Human-Centered AI, World Bank, and Centro Nacional de Inteligencia Artificial (Cenia).