



AI Report – Draup’s view on Global AI Talent Landscape

This report examines the transformative impact of artificial intelligence on the labor market and offers strategic insights for Strategic Workforce planning

DECEMBER 2024

Current Landscape: Artificial Intelligence (AI) is rapidly becoming integrated into the workplace, with 75% of knowledge workers already using AI tools, many having started within the last six months. This adoption is driven by AI's ability to save time, enhance creativity, and increase job satisfaction. However, this integration also poses significant challenges and opportunities for the labor market.

Job Displacement and Creation: AI is reshaping the job market by both displacing and creating jobs. Approximately 10% of total employment in the U.S. is classified as potentially AI-vulnerable, with signs of declining demand in these sectors. Conversely, new roles are emerging, particularly in AI development, data science, and related technical fields. The displacement primarily affects routine tasks, while new opportunities are more aligned with high-skilled, creative, or technical roles.

Emerging AI Skills in Demand:

- **AI Tool Development:** Skills in building AI-powered tools, including software engineering focused on AI integration, are increasingly sought after. This includes expertise in creating custom AI solutions or adapting existing AI models for specific industry needs
- **Machine Learning Engineering:** There's a growing demand for professionals who can design and implement machine learning algorithms, focusing on both model development and deployment. This includes skills in handling large datasets, model optimization, and real-time machine learning applications
- **AI Ethics and Safety:** As AI systems become more prevalent, there's a need for experts in AI ethics to ensure that AI applications are developed with fairness, transparency, and accountability in mind. This includes understanding the implications of AI decisions on society and managing AI biases
- **Prompt Engineering:** Skills in crafting effective prompts for AI systems, particularly for large language models, to achieve desired outputs or behaviors. This involves a blend of behavioral science, user interaction design, and a deep understanding of AI model capabilities
- **Data Science with AI Focus:** Professionals who can not only analyze data but also leverage AI for predictive analytics, anomaly detection, and decision-making support are in high demand. This includes proficiency in AI-driven data pipelines and machine learning for data insights
- **AI Interaction Design:** Designing how AI systems interact with humans, ensuring that these interactions are intuitive, ethical, and user-friendly. This skill set intersects with UX/UI design, focusing on AI's conversational and decision-support interfaces
- **Reward Engineering:** A critical skill in reinforcement learning, reward engineering involves designing and optimizing reward functions that guide AI agents' behavior. It's essential for creating adaptive, learning systems that can evolve based on feedback, enhancing the alignment between AI actions and intended outcomes

Economic Impact: While AI can potentially boost global economic growth, the labor market effects are nuanced. AI might reduce wage inequality by automating tasks traditionally associated with high-wage jobs, particularly those with high cognitive demand but repetitive elements. However, the overall impact on employment is mixed, with some predictions of job polarization reversing, and others suggesting a more balanced impact across skill levels.

Policy and Education: To navigate these changes, there's an increasing call for policy interventions to manage AI's impact on employment. This includes education and retraining programs tailored to the new skill demands, ensuring that the workforce can adapt to or leverage AI technologies. There's also a need for policies that address potential negative outcomes like job displacement, focusing on worker protections and equitable AI application.

Market Sentiment: Public discourse on platforms reflects both optimism and concern. There's acknowledgment of AI's potential to transform industries, potentially leading to significant unemployment in certain sectors, while also creating new markets and job categories. The sentiment underscores a labor market in flux, with a call for strategic adaptation.

Conclusion: The latest developments in AI from a labor market perspective highlight a dynamic shift towards an AI-augmented workforce. This transition requires proactive measures in education, policy-making, and business strategy to harness AI's potential while mitigating its disruptions. The future of work appears to be one where AI and human skills complement each other, necessitating a balanced approach to technological integration.

Report Components

1. AI Trends to Observe in 2025

Artificial Intelligence (AI) continues to revolutionize industries, redefine roles, and catalyze transformative change.

2. Transforming Work: The Evolving Role and Skill Competency Landscape in the Age of AI

Traditional roles are hybridizing with AI competencies, demanding a blend of domain expertise and AI fluency. Skill requirements are shifting toward adaptability, digital literacy, and the ability to collaborate effectively with AI systems.

3. AI Talent Hotspots and Demand Landscape

AI talent remains a global battleground. Established hubs like the U.S., China, and Europe will continue to dominate, but emerging regions such as Southeast Asia, the Middle East, and parts of Africa are positioning themselves as new AI talent destinations.

4. View on How AI Teams got created and Impact of AI on Hyperscalers/Big Tech Companies

Big tech companies are at the forefront of AI-driven transformation, adapting to changing workloads, fostering innovation, and redefining workforce structures. We have included insights on **Changing Workloads, New Roles, and Workforce Evolution**

5. Changing University Ecosystem in the AI Age and Rising Investments in Startups

The educational ecosystem is rapidly evolving to meet the demands of the AI age. With **AI-Centric Curricula and targeted Industry-academia Collaborations, the preference of talent graduating from niche courses are changing. Additionally, there's** rising investments in AI-focused startups across geographies.

6. AI Role Progression Analysis

Roles in AI are witnessing rapid progression. From **Entry-Level like** Data Annotators, AI Trainer to **Mid-Level roles like** AI Specialists, Machine Learning Engineers and to **Leadership Roles such as** Chief AI Officers, AI Governance Leads. This progression reflects the deepening complexity and specialization required as AI adoption matures.

7. Compensation Trends for AI Roles

AI professionals command premium salaries, with compensation influenced by **Role Specialization** (Niche roles like Deep Learning Engineers and AI Ethics Officers), **Regional Variations, and Demand-Supply Dynamics**: As the talent gap widens, companies are offering lucrative packages, including equity, to attract top talent.

8. Pertinent AI Focused Models Released

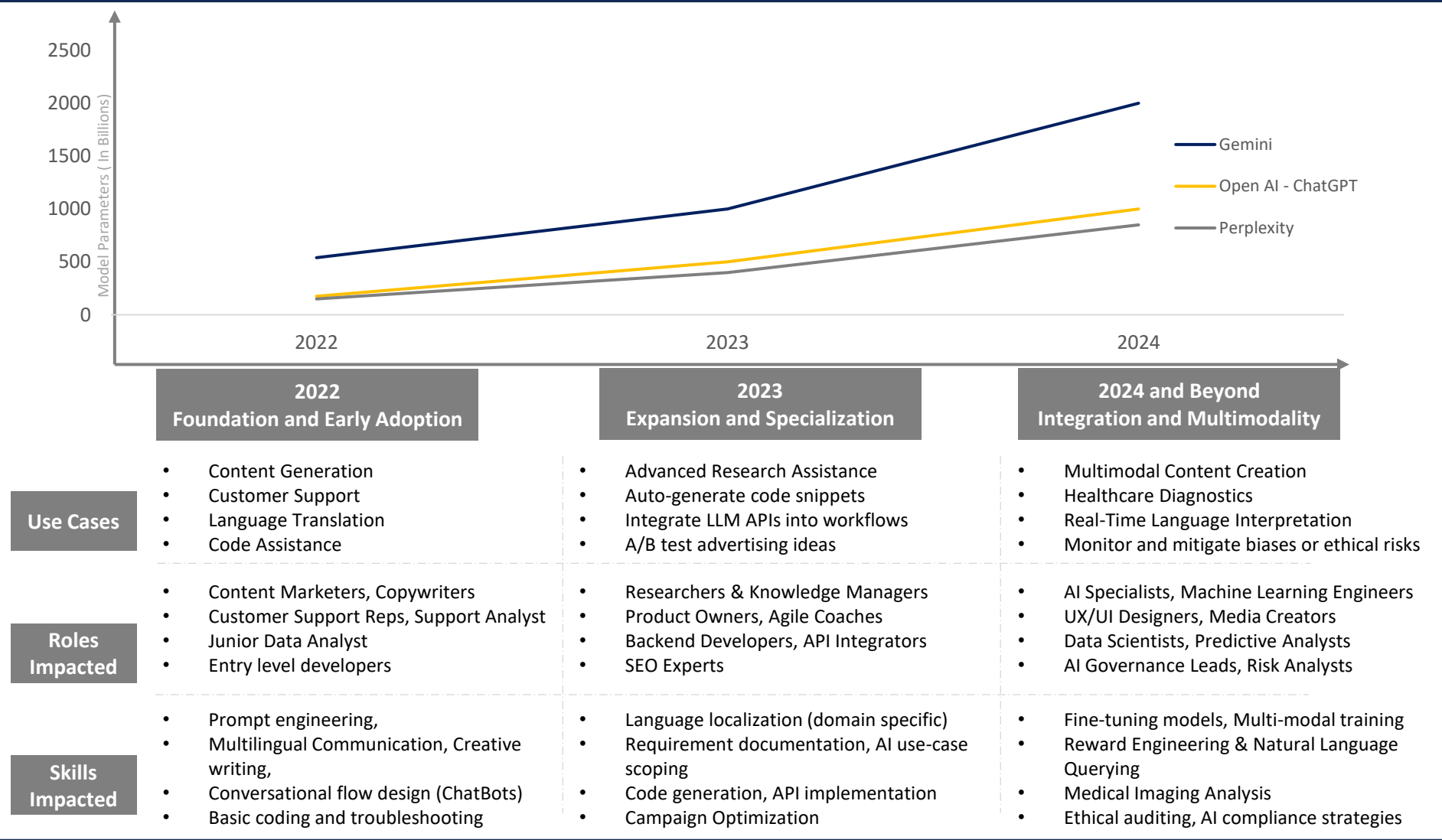
The evolution of LLMs & LQMs have been marked by significant milestones achieved by leading technology companies/New Age Startups who are releasing AI Focused Models across domains

Last 2 years have seen transformational leap in AI capabilities impacting some of the most critical roles in the industry; AI platforms in 2025 will exhibit enhanced reasoning abilities, greater integration into daily workstreams, & increased specialization through fine-tuning



Analysis of LLMs and their evolving capabilities

View on expanding Use cases and Roles/Skills getting impacted with every new version (From 2022 to 2024 and beyond)



Recommendation for 2025:

Workforce Planning in Light of Advancements in AI Language Models

1. Emphasize **AI-Enhanced Skillsets** Across Functions
2. **Redefine Roles** with AI Collaboration in Mind
3. **Foster Collaboration Between Humans and AI**
4. Incorporate **Ethical Considerations and Governance** into **Workforce Strategy**
5. Plan for **AI-Driven Efficiency Gains** with **Consideration of Computational Costs**

Note - The graph represents the evolution of LLM Models across Google, Open AI, and Perplexity in their assessing power by the no. of model parameters (in Billions) between 2022 to 2024

Source: Draup conducted the analysis of 850+ roles and 450M+ JDs posted for last three years to access the impact of AI on different roles

While LLMs are capturing public attention, LQMs are quietly becoming more sophisticated, fueled by advancements in deep learning and increased computational power; With lines between LLMs and LQMs becoming blur, Researchers started exploring ways to combine the strengths of both

LLM

A large language model (LLM) is a type of artificial intelligence (AI) program that can recognize and generate text, among other tasks. LLMs are trained on huge sets of data — hence the name "large."

LLM Focused Roles

- Prompt Engineer
- NLP Engineer/Scientist
- AI Ethics and Safety Specialist

LQM

Large Quantitative Models are advanced AI systems that process and analyze large-scale numerical datasets, performing complex calculations, statistical analysis, predictive modeling, and optimization tasks.

LQM Focused Roles

- Quantitative Analyst (Quant)
- Data Scientist (Specialized in DL)
- ML Ops Engineer

LLMs and LQMs - What is Hyperscaler's preference

Preference for LLMs

- Search and Information Retrieval
- Natural Language Understanding
- Content Generation and Moderation
- Code Generation and Completion

Preference for LQMs

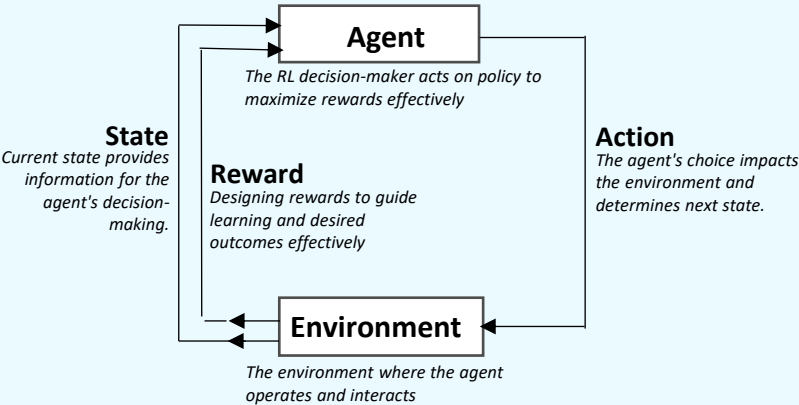
- Search Recommendation Systems
- Ad Targeting and Optimization
- Financial Modeling and Risk
- Supply Chain Optimization

Draup's Observation:

- **Hyperscalers** and Big Tech companies **require both LLMs and LQMs** to maintain their competitive edge and drive innovation
- While LLMs are currently experiencing a surge in popularity and investment, LQMs remain crucial for many core business functions
- Indeed, the job postings for LLM has seen massive surge in last 2 years, off late we observe organizations rolling out select LQM job postings as well. This reflects the increasing adoption of these technologies across various industries
- The US, particularly Silicon Valley and major tech hubs, remains a primary center for both LLM and LQM jobs. Canada also shows strong growth, especially in AI research
- The ideal approach is a balanced one, where both types of models are developed and deployed to address the diverse needs of these tech giants

Reward Engineering is a critical process in an AI model pipeline that has seen increasing focus from top companies as a response to increasing complexity of models and data sources leverage

REINFORCEMENT LEARNING (RL)



REWARD ENGINEERING (RE)

RE crafts effective reward systems that steer an agent's learning journey in Reinforcement learning

Benefit of RE in RL:

- Guide Agent Behaviour
- Enhance Learning Stability
- Support Complex Tasks
- Improve efficiency of learning algorithms

CHALLENGES BEFORE RE



Slow Convergence:

Traditional RL **suffered slow convergence** and **extended training** times from **poorly defined reward structures**, leading to **suboptimal agent performance**.



Reward Design Issues:

Designing accurate reward functions is **complex**; **misaligned rewards** can cause **unintended behaviors**, complicating the learning process.



Action-Reward Link:

Identifying actions linked to rewards **is challenging**, especially with **long-term rewards** or **multiple factors**, **complicating agent learning**.

IMPACT OF RE



Personalized Rewards:

Enables **tailored reward systems** that align with individual preferences, **boosting engagement** and **motivation in AI applications**



Dynamic Adaptability:

AI-driven reward systems can adjust dynamically to **real-time data**, enabling organizations to quickly respond to challenges and maintain effective rewards



Facilitates Complex Behaviour Learning:

Reward engineering helps **agents learn complex behaviors** through **multi-objective rewards** and shaping, **advancing AI systems**.

INDUSTRY CASE STUDIES

FINANCE

JPMorganChase

Implementation: JPMorgan Chase employs reinforcement learning in algorithmic trading, using sparse and dense rewards to optimize strategies and ensure risk compliance.

Impact: This has enhanced trading efficiency, profitability, and navigation of complex market conditions.

GAMING



Implementation: Reward engineering shaped AlphaGo's learning, enabling mastery of Go through reinforcement learning and self-play.

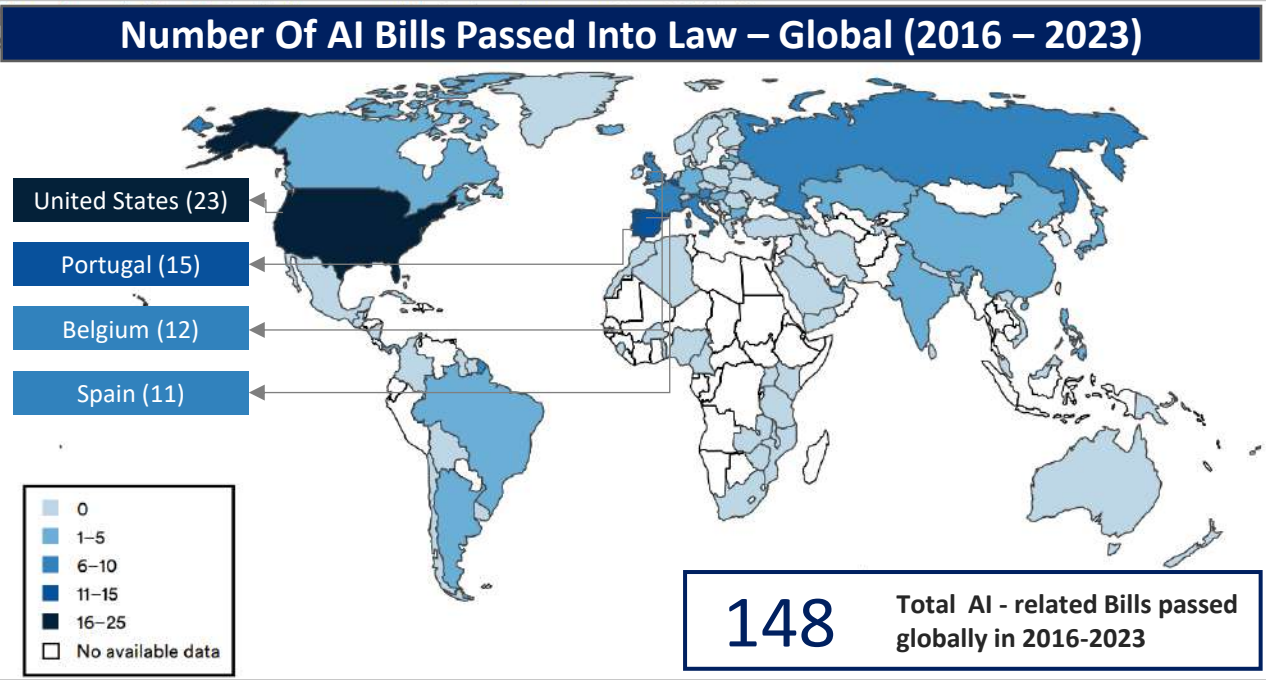
Impact: This achieved superhuman performance, defeating top players and showcasing AI's potential in complex decision-making.

AUTOMOBILE



Implementation: Tesla uses reinforcement learning in self-driving technology, applying reward engineering to optimize path planning and driving policies.

Impact: This improves generalization across diverse scenarios, enhancing safety and efficiency in autonomous navigation.



National AI Regulation Strategy – US v/s EU (2022 and Beyond)



USA

- A sharp increase in of AI regulations in the US. In 2023, there were **23** AI-related regulations, up from 1 in 2016
- Focus on **Ethical AI development, addressing societal challenges**, balancing competition and collaboration globally
- Bolstering **AI infrastructure, talent cultivation, and recalibrating regulatory frameworks** to navigate ethical conundrums



EU

- The number of AI-related regulations passed by the European Union increased from 22 in 2022 to **32** in 2023
- Focus on **ensuring safety and fundamental rights, strategic leadership in high-impact sectors, supporting startups and SMEs in AI**
- Enhance **flexibility in implementing the EU AI Act** and improve cooperation with the US

Recommendation on AI Ethics and Governance at Organizational level

1

Role of Regional Ethics Leaders

Appointing AI Ethics Leaders in different regions allows firms to address local ethical concerns while adhering to global standards

2

Adopt a Risk-Based Approach

Implement a risk management framework that is adaptable to evolving technologies and regulations by conducting **algorithmic impact assessments**

3

Create an AI Ethics Committee

Form a dedicated task force AI experts, ethicists, legal professionals, representatives to ensure adherence to ethical standards

4

Implement Internal Frameworks

Develop robust internal governance frameworks that incorporate principles such as transparency, accountability, fairness, and privacy

Prominent Roles in the AI Ethics/Governance vertical

Chief AI Ethics Officer

AI Governance Lead

AI Compliance Specialist

AI Risk Manager

AI Policy Advisor

AI Ethics Researcher

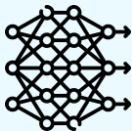
POTENTIAL INNOVATION’S AND BREAKTHROUGH’S



Artificial General Intelligence

AGI refers to AI systems with the ability to perform any intellectual task that a human can do

Impact: Revolutionizes industries with highly adaptive, human-like problem-solving abilities



Liquid neural networks

LNNs are a type of deep learning architecture that can adapt to new situations and solve complex problems involving sequential data

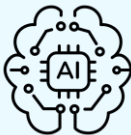
Impact: Enhances performance in unpredictable settings, such as robotics and autonomous systems



Test-Time Compute

TTC is a concept in AI that refers to how much computational power a model uses to generate predictions and solve problems

Impact: Reduces latency and power consumption, enabling efficient deployment on edge devices



Explainable AI

Explainable AI (XAI) is a set of methods and processes that help people understand the results of machine learning algorithms

Impact: XAI helps organizations build more secure systems by enabling users to understand and interpret AI decisions

INDUSTRY TRENDS



Robotic AI

AI-driven robots revolutionize industries with autonomy, collaboration, advanced sensing, and ethical considerations

Amazon's Sequoia robotic system boosts efficiency in its Houston fulfillment center by storing inventory 75% faster and processing orders 25% quicker



Rise of open-source models

Open-source AI democratizes innovation, reduces costs, fosters collaboration, and ensures transparency

Meta has launched Llama 3, an open-source model with 8B-70B parameters, enhances performance, safety, and multilingual capabilities.



Prioritizing AI Infrastructure

AI infrastructure evolves with edge computing, cloud platforms, efficiency, and large model hosting

NVIDIA's DGX Cloud offers AI supercomputing via the cloud, enabling scalable AI model training and deployment

Job Family	AI ENGINEERING						AI RESEARCH			
	Gen AI	AI Deployment & Integration	AI Performance, Optimization	NLP	Computer Vision	Deep Learning	Fundamental Research	Specialized Research	Data & Decision Science	Quantum AI
RELEVANT JOB ROLES	Conversational AI Engineer	AI DevOps Engineer	AI System Engineer	NLP Software Engineer	Camera Software Engineer	Deep Learning Engineer	AI Research Scientist	NLP Research Scientist	Applied Data Scientist - Speech	Quantum-AI Integration Specialist
	Generative AI Developer	AI Cloud Engineer	AI Optimization Specialist	NLP Automation Engineer	Image Processing and Computer Vision Algorithms Engineer	Deep Learning Compiler Staff Engineer	AI Computational Scientist	Deep learning Research Engineer	AI-Driven Decision-Making Specialist	Quantum Machine Learning Engineer
	Gen AI Integration Engineer	AI Software Tester	AI Framework Developer	AI/ML - Data Engineer (NLP/Speech)	ML Engineer - Computer Vision	Deep Learning Engineer for Text-to-Speech	Applied Scientist	LLM Research Scientist	AI-augmented Decision Analyst	Quantum Computing Research Scientist
	AI Copilot Developer	AI Prompt Engineer	AI Training Optimization and Efficiency Engineer	Natural Language Specialist	Data Compression Engineers	Optimization & Deep Learning Engineer	Collaborative Intelligence Specialist	Explainable AI (XAI) Researcher	AI Behavioral Data Scientist	
		Domain-Specific Copilot Specialist	GPU Specialists		Image and Video data specialists		AI Interpretability Research Scientist	Cognitive AI Specialist	AI Copilot Data Curator	
		AI Creativity Facilitator	AI Copilot Performance Analyst				Responsible AI Content Reviewer	Research Scientist - Multimodal AI, Conversational AI		
		AI Workflow Orchestrator	Applied AI Strategist					Research Engineer, Vision Foundation Model and Generative AI		

Job Family	AI INFRASTRUCTURE			AI ETHICS AND SECURITY			
	Network Engineering	Cloud Infrastructure	IT Operations	AI Ethics	Cybersecurity	Threat Intelligence	Adversarial AI
RELEVANT JOB ROLES	Network Automation, AI Ops and Data Analytics Product Engineer	AI/ML Solutions & Cloud Infrastructure Engineer	IT Operations, AI Infrastructure Engineer	AI Ethics Researcher	DevRel Engineer, AI Security	AI Threat Intelligence Analyst	Adversarial AI Mitigation Engineer
	AI Network Engineering and Digital Services Specialist	Cloud AI Engineer	IT Specialist, AI, Infrastructure Operations & Security	AI Governance Specialist	AI Security Software Engineer	ML Incident Response Analyst	AI Red Team Specialist
	Network Engineering and Digital Services Specialist	Data/Cloud Infrastructure Engineer (AI Research)	IT Infrastructure & AI Network Operations Engineer	AI Trust Engineer	Application Security AI Engineer	Product Management – AI Threat Prevention Engineer	Adversarial Machine Learning Issue Resolving Specialist
	Network AI Solutions Engineer	AI Cloud Infrastructure Engineering & Data Center Analyst	HPC & AI infrastructure Expert	AI Fairness Specialist	Cybersecurity and AI Engineer	Gen AI Threat Analyst	Adversarial AI Researcher
	Engineer- Network Assurance Data, and AI Platform	Cloud Engineer- Data AI	AI and Infrastructure Product Operations Engineer	Generative AI Ethic Specialist	Product Manager, Cybersecurity AI	Manager Cloud Security - Threat Research(AI)	Adversarial AI Mitigation Engineer
	HPC/AI Network Architect	AI Cloud and Infrastructure Engineer	Open-Source AI Contributor (Agentic Tools)	Research Scientist – Responsible AI	Senior Enterprise Cybersecurity and AI Security Innovation Lead	Cybersecurity Threat Analyst & AI Ethicist	Gen AI Adversarial Robustness Researcher
	Network Enablement Engineer (AI & Data)	Tech Lead, AI Cloud Infrastructure	AI Ops Engineer (Co-Pilot Systems)	AI Ethics Strategist	Cybersecurity and AI Management Engineer	Malware Analyst, AI Technologies Specialist, Threat Intelligence Expert	AI Adversarial Ethics Analyst

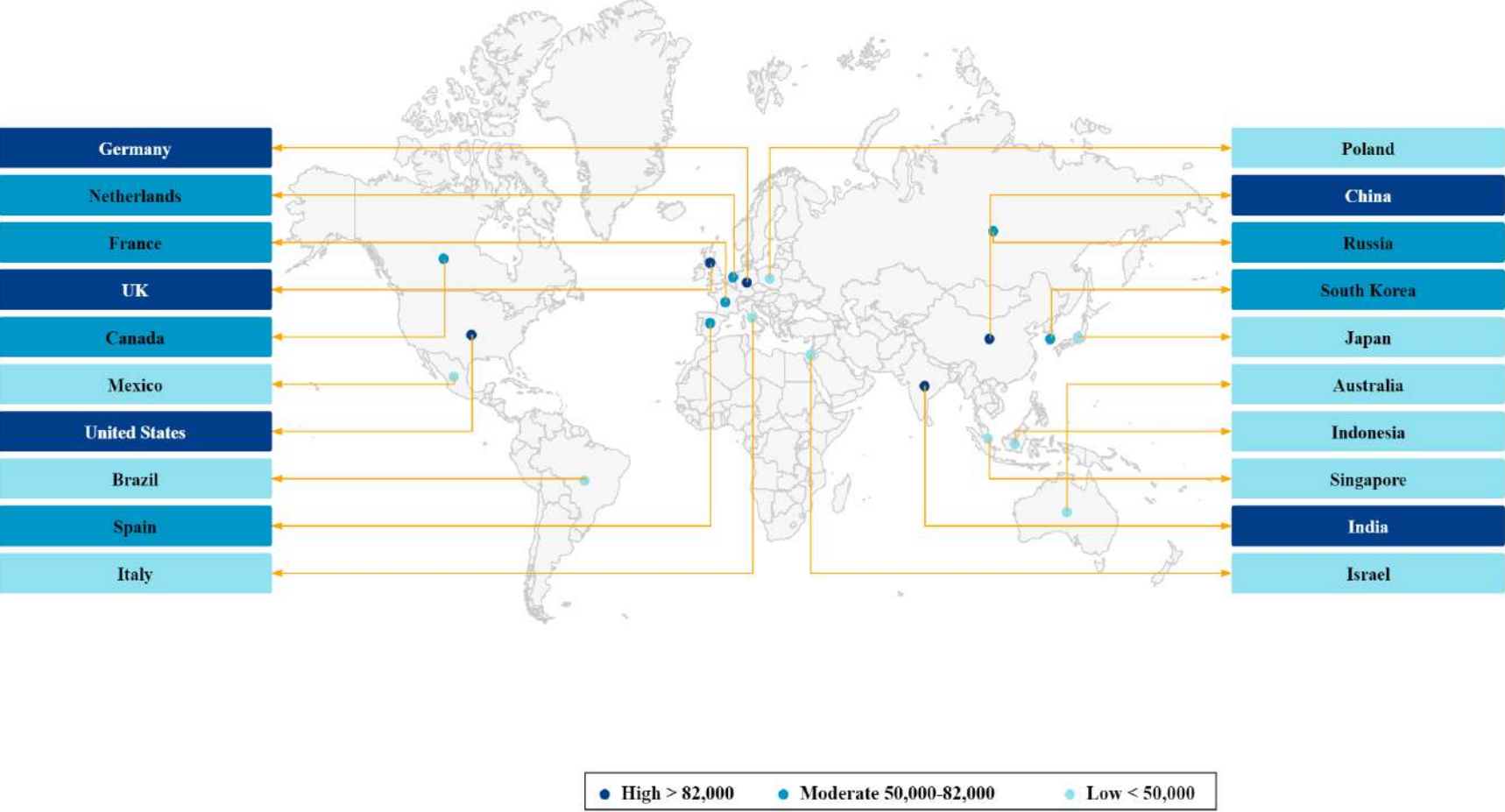
Job Family	AI Engineering, Research, Ethics										
Sub Functions	Gen AI	AI Deployment & Integration	AI Performance, Optimization	NLP	Computer Vision	Deep Learning	Fundamental Research	Specialized Research	AI Ethics	Data & Decision Science	Quantum AI
Unique Skills	Large Language Model (LLM) & Transformer Architecture	Model Deployment Frameworks (e.g., TensorFlow Serving, TorchServe)	Hyperparameter Tuning	Parsing, Stemming & Lemmatization	Depth Estimation	Neural Networks Architecture	Neural Architecture Search (NAS)	Interpretable Model & Cognitive Architecture	Human-Centric Design	Behavioral Analytics	Quantum Mechanics
	Multi-Modal Models	API Development for AI Models	Model Compression Techniques	Tokenization & Part-of-Speech (POS) Tagging	Scale-Invariant Feature Transform (SIFT)	Activation Functions & Backpropagation	Vision Transformers (ViTs) & Diffusion Models	Artificial General intelligence (AGI)	Transparency and Explainability	A/B Testing	Quantum Algorithms
	Generative Adversarial Network (GAN)	Cloud Services (AWS, Azure, GCP)	Profiling and Debugging AI Models	Word Embeddings & Named Entity Recognition (NER)	Features from Accelerated Segment Test (FAST)	Normalization & Regularization	Self-Supervised Learning (SSL)	Artificial Super Intelligence (ASI)	Bias Mitigation & Algorithmic Accountability	Statistical Analysis	Quantum ML
	Synthetic Data Generation	Containerization (Docker, Kubernetes) & Retrieval-Augmented Generation	Resource Management for AI Workloads	Stop Words Removal & Dependency Parsing	Speeded-Up Robust Features (SURF)	Deep Learning Constructs	Model-Agnostic Meta-Learning	General Purpose Knowledge Representation & Symbolic AI	Beneficence and Non-maleficence	Decision-making heuristics.	Quantum Information Theory
	Adversarial Autoencoders	Continuous Integration/Continuous Deployment (CI/CD)	AI Benchmarking	Bag-of-Words (BoW) & N-grams	Semantic Segmentation	Stochastic Gradient Descent (SGD) & Gradient Descent	Neural Ordinary Differential Equations	Natural Language Understanding & Neural Response Generation	Human Oversight	Sequence modeling (RNNs, LSTMs)	Quantum Simulation
Common Sub Function Skills*	Classification, Clustering, Regression, Random Forest, K means Clustering, K-Nearest Neighbors (KNN), Principal Component Analysis (PCA), Bayesian Networks, Decision Trees, Apriori Algorithm, DBSCAN, Attention Mechanism, Boltzmann Machine, Support Vector machine, Bagging, Boosting, Stacking						Algorithm Design, Computational Modelling, System Design, Experimental Design, Ontology Engineering, Model Auditing, Task-Agnostic Model Updates, Impact Assessment				
Common Job Family Skills*	Python Programming, R Programming Language, Julia, Data Collection, Data Cleaning, Data Wrangling, Handling Missing Data, Data Normalization, Exploratory Data Analysis (EDA), Data Pre-Processing, Data Visualization, Descriptive Statistics, Correlation Analysis, Hypothesis Testing, Statistical Analysis, Pattern Recognition, Linear Regression, Logistic Regression, Autoregression (AR), Time Series Analysis, ARIMA, Supervised Learning, Unsupervised Learning, Semi-Supervised Learning, Reinforcement Learning, Feature Engineering, Feature Selection, Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN), Long Short-Term Memory Networks (LSTM), Gated Recurrent Units (GRU), Deep Belief Networks (DBNs), SpaCy, SciKit Learn, Hugging Face, h2O.ai, PySpark, PyTorch, NumPy, TensorFlow										

Global Talent Hotspots – Artificial Intelligence: The United States, followed by China, India, and Germany, together contribute to about 40% of the total AI talent globally due to their strong government-led AI initiatives, funding, and presence of trailblazing hyperscalers

TOTAL GLOBAL AI TALENT ACROSS ANALYSED FUNCTIONS: 2.2 Million

TOTAL GLOBAL AI ETHICS TALENT ACROSS ANALYSED FUNCTIONS: 13,300

TOTAL ANALYSED TALENT COUNT ACROSS THE TOP COUNTRIES WITH AI JOB FUNCTIONS



Top MSAs	Total AI Talent	
	AI E,R, & I*	AI Ethics
United States	310,000	3,000
China	210,000	1,400
India	200,000	700
Germany	105,600	460
UK	83,500	950
France	81,000	350
Netherlands	72,500	660
Russia	63,400	340
Canada	61,600	450
South Korea	52,000	550
Spain	51,500	300
Indonesia	48,000	140
Japan	47,000	940
Italy	41,100	250
Poland	40,300	80
Brazil	40,100	100
Australia	37,500	350
Israel	36,600	200
Mexico	30,000	50
Singapore	25,000	220

Source: Draup’s proprietary talent database of 850Mn+ publicly available profiles and 450Mn+ JDs. Note: The above Map was Generated via Draup AI. AI E,R,& I represents talent from AI Engineering, research, and Infrastructure verticals

AI Talent Hotspots in North and South America: The AI ecosystems in North and South America are flourishing, characterized by prominent universities, vibrant research hubs, and collaborative initiatives, contributing to ongoing advancements in AI Policy framework and economic development



New York's thriving AI university ecosystem, including Cornell and NYU, fosters innovation through collaborations and research centers. An example is **Columbia University's CAIT, a partnership with Amazon**



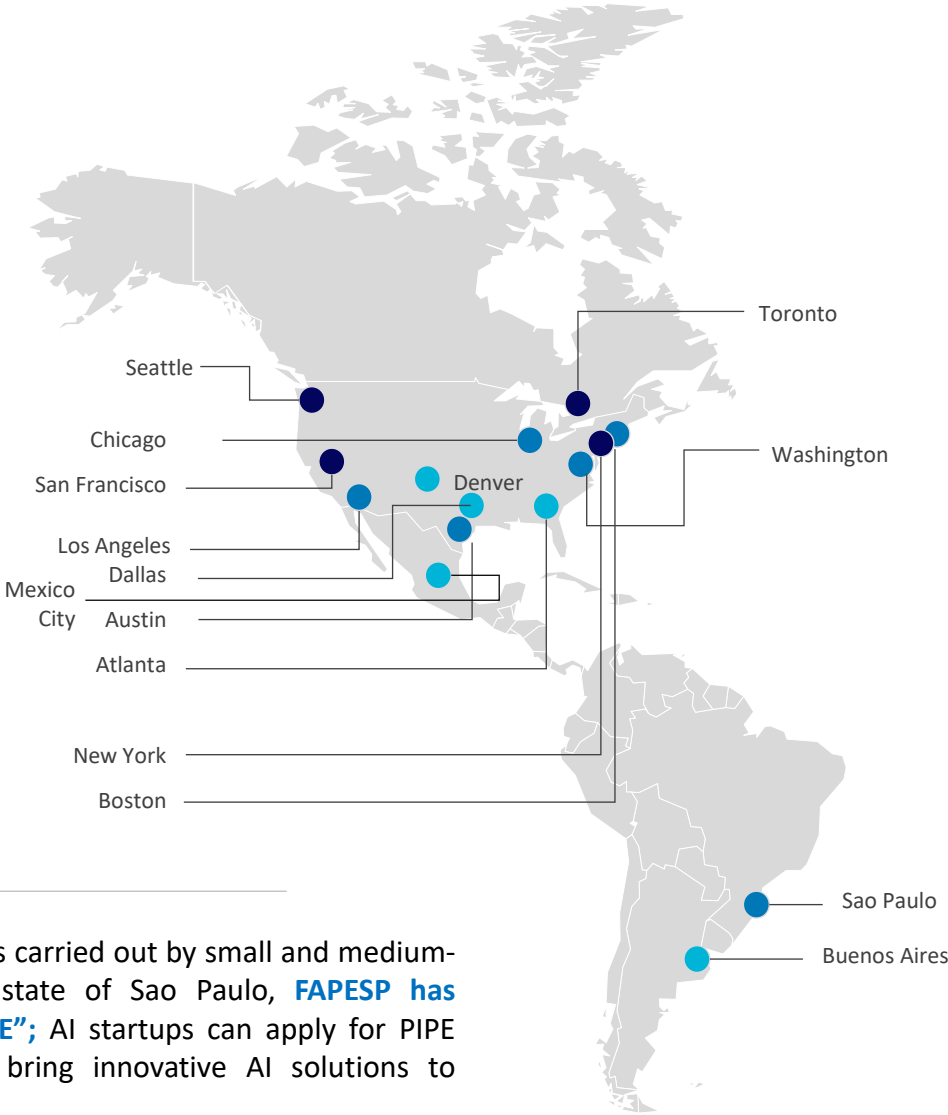
Atlanta's top universities, including **Georgia Tech, Emory, and Kennesaw State** offer exclusive **AI programs focusing on core research areas like AI, computer vision, and machine learning**



Canada is investing **\$125 million in AI research** from **2021 to 2026** through the Pan-Canadian AI Strategy



Toronto is becoming an **AI startup hub**, following Silicon Valley's lead. The thriving Gen AI ecosystem **boasts over 600 startups**



TALENT AVAILABILITY INDEX

- **High** > 27,000
- **Moderate** 11,000-27,000
- **Low** < 11,000

To fund innovative projects carried out by small and medium-sized companies in the state of Sao Paulo, **FAPESP has designed a program “PIPE”**; AI startups can apply for PIPE funding to develop and bring innovative AI solutions to market

Locations	Installed Talent*
San Francisco	83,210
Toronto	32,300
New York	30,120
Seattle	22,550
Boston	16,090
Los Angeles	15,240
Washington	13,430
Austin	8,350
Sao Paulo	8,010
Chicago	7,540
Atlanta	5,790
Dallas	5,740
Denver	5,300
Mexico City	10,330
Buenos Aires	2,820

Note: Draup primarily analyzes its proprietary database of 850M+ Professional profiles, and 450M+ Job descriptions, and compliments it with multiple publicly available career websites, ML annotated research videos and company websites; This data strengthens over 75 ML models and over 12 Psychology models to derive actionable insights, which is also complimented by the analysis carried over by strategic consulting teams within Draup. ***Installed Talent** includes the professionals having relevant skills in the fields of AI/ML, Deep Learning, and Generative AI across the various MSAs in North and South America. Here we have not separately captured AI Ethics Talent at an MSA Level

Source: The above insights are curated through various strategic and tactical signals from news articles, journals, Industry reports, and other official organizations

AI Talent Hotspots in Europe: Beyond traditional hubs like France and the United Kingdom, countries like Germany, Spain, and Switzerland are emerging as the AI hotspots in Europe



With 45% of the total UK AI companies and a £17 billion turnover, London demonstrates a steadfast commitment to the growth of the AI sector, expanding at an estimated rate of 8%



The French government strongly backs the AI sector, aiming to position France as Europe's leading Gen AI market. Initiatives like a €500 million fund support French 'AI Champions' in research and development.



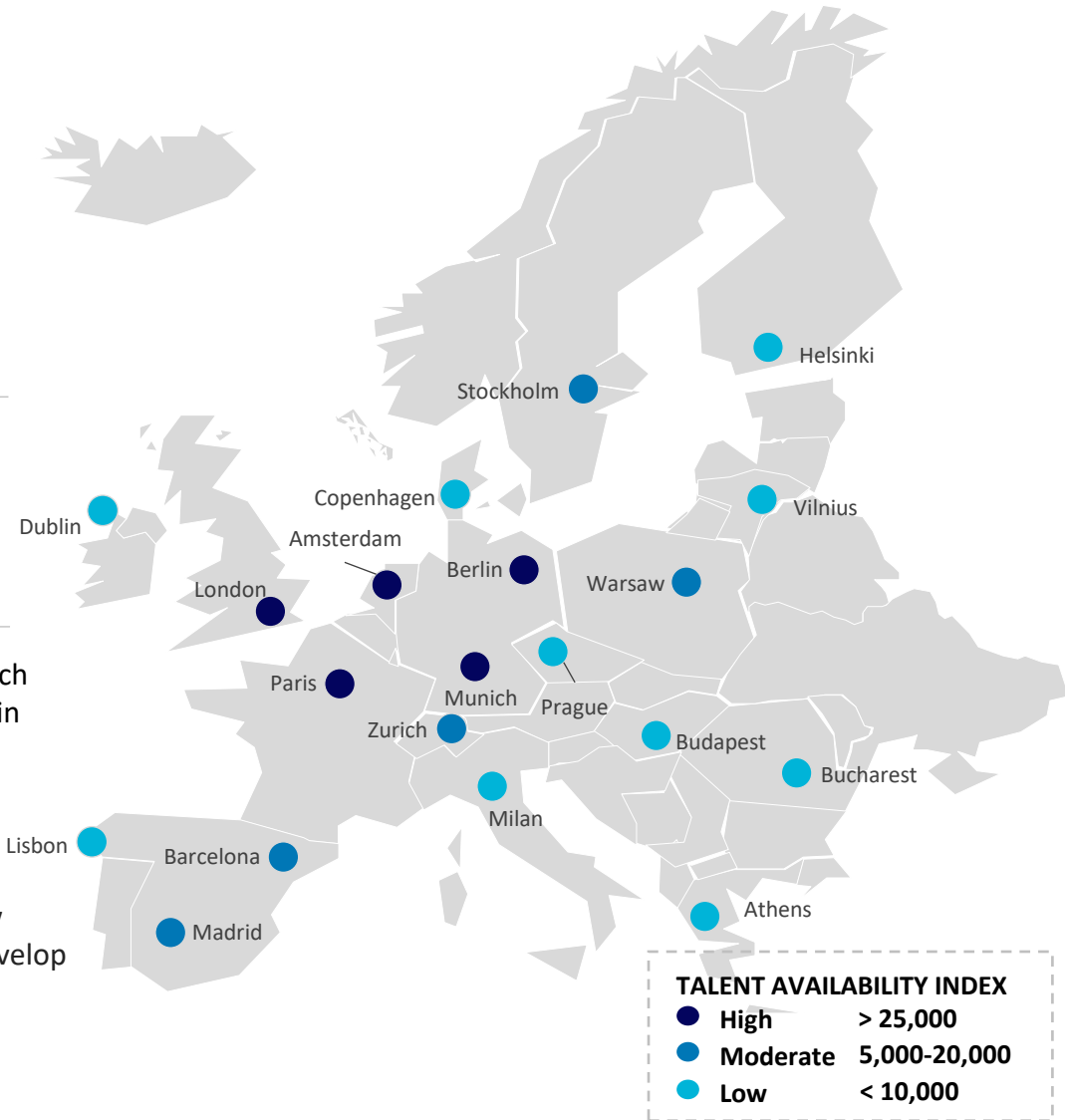
In Germany, the cities of Berlin and Munich continue to dominate the AI Startup Landscape. Their share amounts to approximately 50% of German AI startups. There are 687 startups on the German AI Startup Landscape 2024, representing a 35% growth compared to the previous year.



The Polish Government has shown active promotion of research in the field of AI by adopting the "Policy for AI Development" in 2020; the policy highlights AI's economic opportunities for Poland and sets the framework for its deployment



Lithuania has launched a pilot artificial intelligence (AI) environment, known as an "AI sandbox". The space will allow Lithuanian technology companies to safely design, test and develop AI solutions before bringing them to market



Locations	Installed Talent*
London	51,800
Paris	42,000
Berlin	31,010
Munich	28,490
Amsterdam	35,000
Barcelona	16,820
Madrid	12,780
Zurich	7,410
Warsaw	5,480
Milan	4,250
Helsinki	4,160
Copenhagen	3,390
Bucharest	3,330
Dublin	2,930
Prague	2,420
Athens	2,320
Budapest	2,240
Lisbon	2,010
Vilnius	1,480

Note: Draup primarily analyzes its proprietary database of 850M+ Professional profiles, and 450M+ Job descriptions, and compliments it with multiple publicly available career websites, ML annotated research videos and company websites; This data strengthens over 75 ML models and over 12 Psychology models to derive actionable insights, which is also complimented by the analysis carried over by strategic consulting teams within Draup. ***Installed Talent** includes the professionals having relevant skills in the fields of AI/ML, Deep Learning, and Generative AI across the various MSAs in Europe. **Source:** The above insights are curated through various strategic and tactical signals from news articles, journals, Industry reports, and other official organizations. Here we have only captured the talent coming in from AI Research, AI Engineering and AI Infrastructure domains



The **Asia Pacific** Generative AI market is expected to witness a growth of **33.1% CAGR from 2022-28***



Beijing is among the **top 3 MSAs (Globally)** for all the Generative AI job roles



Indeed experienced a **158%** surge in job postings related to Generative AI in **India** in the **last 5 years**



According to industry reports, **China's AI sector** is experiencing a **talent shortage for individuals skilled in building AI products which will grow sixfold by 2030 from current levels**



The demand is driven by fierce competition among **major Chinese tech players like ByteDance, Alibaba, Tencent, and Huawei** to launch extensive language models and AI applications

TALENT AVAILABILITY INDEX

● High

> 30,000

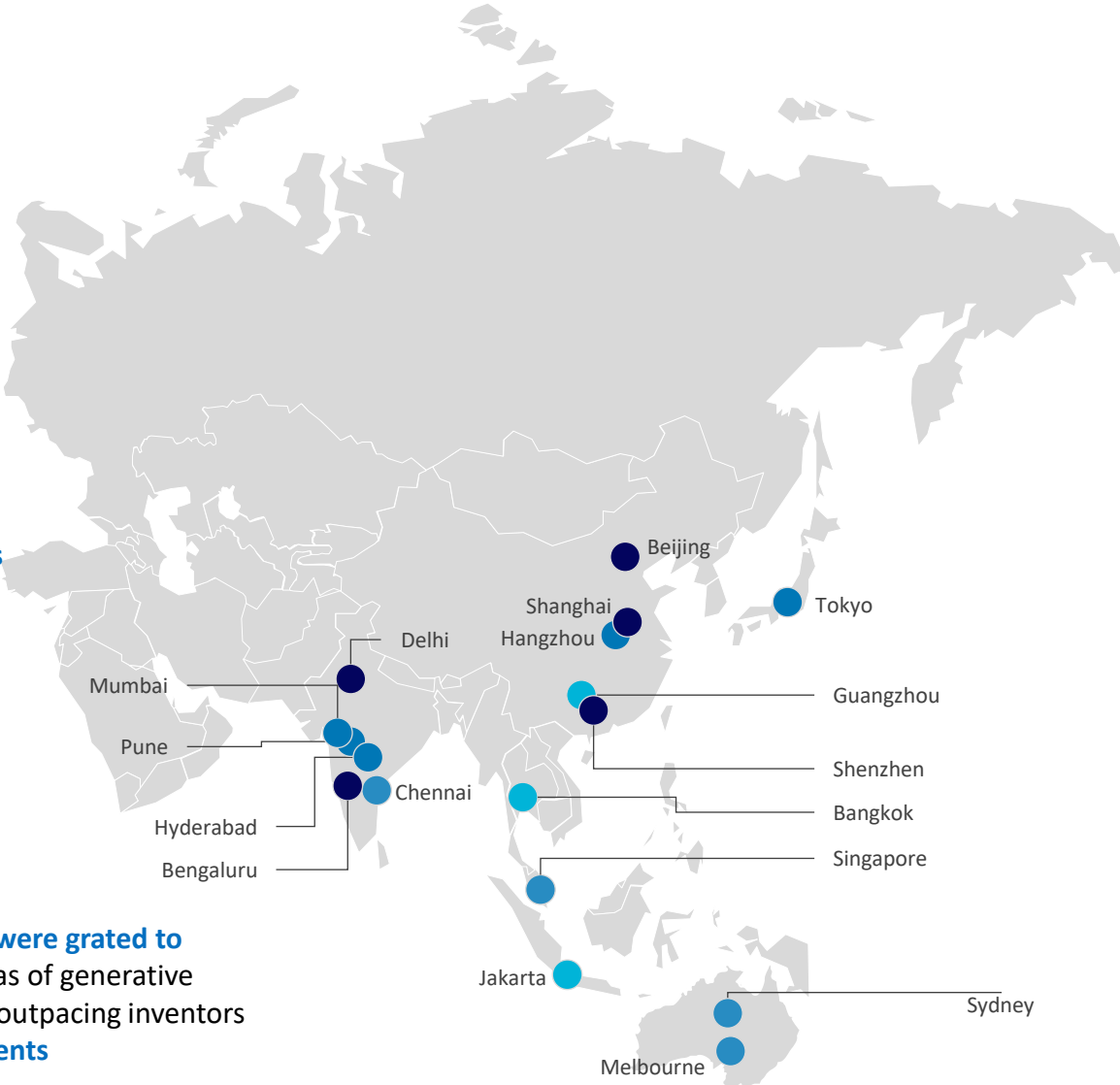
● Moderate

10,000 - 30,000

● Low

< 10,000

In 2024, **13,000 patents** were grated to **Chinese inventors** in areas of generative artificial intelligence, far outpacing inventors in the **US with 8,609 patents**



Locations	Installed Talent*
Shanghai	61,290
Beijing	56,310
Bengaluru	56,000
Shenzhen	28,520
Delhi	26,000
Tokyo	27,850
Jakarta	22,850
Hyderabad	24,000
Seoul	28,400
Pune	16,000
Melbourne	14,500
Sydney	10,000
Chennai	9,800
Hangzhou	9,390
Mumbai	9,130
Guangzhou	5,460
Bangkok	2,550

Note: Draup primarily analyzes its proprietary database of **850M+ Professional profiles**, and **450M+ Job descriptions**, and compliments it with multiple publicly available career websites, ML annotated research videos and company websites; This data strengthens over 75 ML models and over 12 Psychology models to derive actionable insights, which is also complimented by the analysis carried over by strategic consulting teams within Draup. . ***Installed Talent** includes the professionals having relevant skills in the fields of AI/ML, Deep Learning, and Generative AI across the various MSAs in Asia. Here we have only captured the talent coming in from AI Research, AI Engineering and AI Infrastructure domains

Source: The above insights are curated through various strategic and tactical signals from news articles, journals, Industry reports, and other official organizations.

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16

Location	Talent Size	Growth Rate %	Talent Demand %	Experience Split (0-5 Yrs. 6-10Yrs. 10+Yrs.)
United States	310,000	14%	27%	21% 29% 50%
China	210,000	16%	25%	29% 29% 41%
India	200,000	21%	22%	45% 34% 21%
Germany	105,600	12%	14%	27% 32% 50%
UK	83,500	11%	18%	24% 29% 47%
France	81,000	14%	16%	41% 28% 31%
Netherlands	72,500	10%	13%	24% 32% 44%
Russia	63,400	12%	15%	42% 25% 33%
Canada	61,600	13%	15%	28% 29% 43%
South Korea	52,000	13%	16%	49% 29% 22%
Spain	51,500	13%	15%	31% 29% 40%
Indonesia	48,000	11%	11%	46% 25% 29%
Japan	47,000	14%	13%	33% 33% 34%
Italy	41,100	12%	13%	35% 21% 44%
Poland	40,300	12%	14%	34% 34% 32%

National programs to integrate AI technologies in the various industrial sectors by Leading Global Countries is expected to increase the AI talent demand across regions



Top Markets – Key AI Initiatives



- The U.S. unveiled the Partnership for **Global Inclusivity on AI in 2024**, backed by **Amazon** and **Google**, investing **\$100 M** for **AI governance**
- AWS announced a **\$10 B** investment in 2024 in **Ohio** to bolster **cloud and AI services**



- China has introduced **AI ‘Capacity-Building Action Plan for Good and for All,’** focused on global cooperation to enhance **AI literacy** and assist developing nations **in building AI infrastructure in 2024**



- India's Ministry of Electronics and Information Technology allocated **\$1.25B for 2024 – 2029** to enhance the **AI ecosystem** through the **‘IndiaAI Mission’**
- Google launched **AI partnerships** in 2024 to enhance healthcare, sustainability, and agriculture through initiatives like **diabetic retinopathy screening and urban waste management**



- Microsoft invested **\$3.44B** in Germany between **2025 – 2028** to enhance **AI and cloud infrastructure**
- **HCL Tech** launched **an AI-focused innovation lab** in Munich to support clients transitioning **to SAP S/4HANA Cloud in 2024**



- Netherlands **Ranks 1** in the Global Index on Responsible AI reported in 2024 due to strong policies
- **Generative AI initiatives** are boosting its GDP by \$85B over the next decade, 6.5 M jobs augmented with Gen AI



- The Government of Canada is allocating **\$2 B** from **Budget 2024** to support **AI research**, including up to **\$700 M** for building **AI data centers**
- The government launched the **‘Canadian Artificial Intelligence Safety Institute’** with a **\$50 M** budget from **2025 - 2029** to address **AI safety risks**



- The Global Commission on REAIM is promoting **ethical AI integration** in **military applications** in South Korea in 2024
- **Microsoft** launched the **AI Skills Navigator** in South Korea in 2024 to enhance **AI capabilities** through **customized learning pathways**



- **SoftBank** partnered with **Nvidia in 2024** to build Japan's **AI supercomputer** using **DGX B200 systems**, aiming to establish itself as **Japan’s ‘AI grid’**
- Microsoft announced a **\$2.9 B** investment in Japan to expand **AI and cloud infrastructure** and **train 3 M people in AI skills** in 2024

Source: Draup’s ML Model, which tracks 2M+ news articles, publications, white papers and industry reports, was leveraged to gather the information.

321%

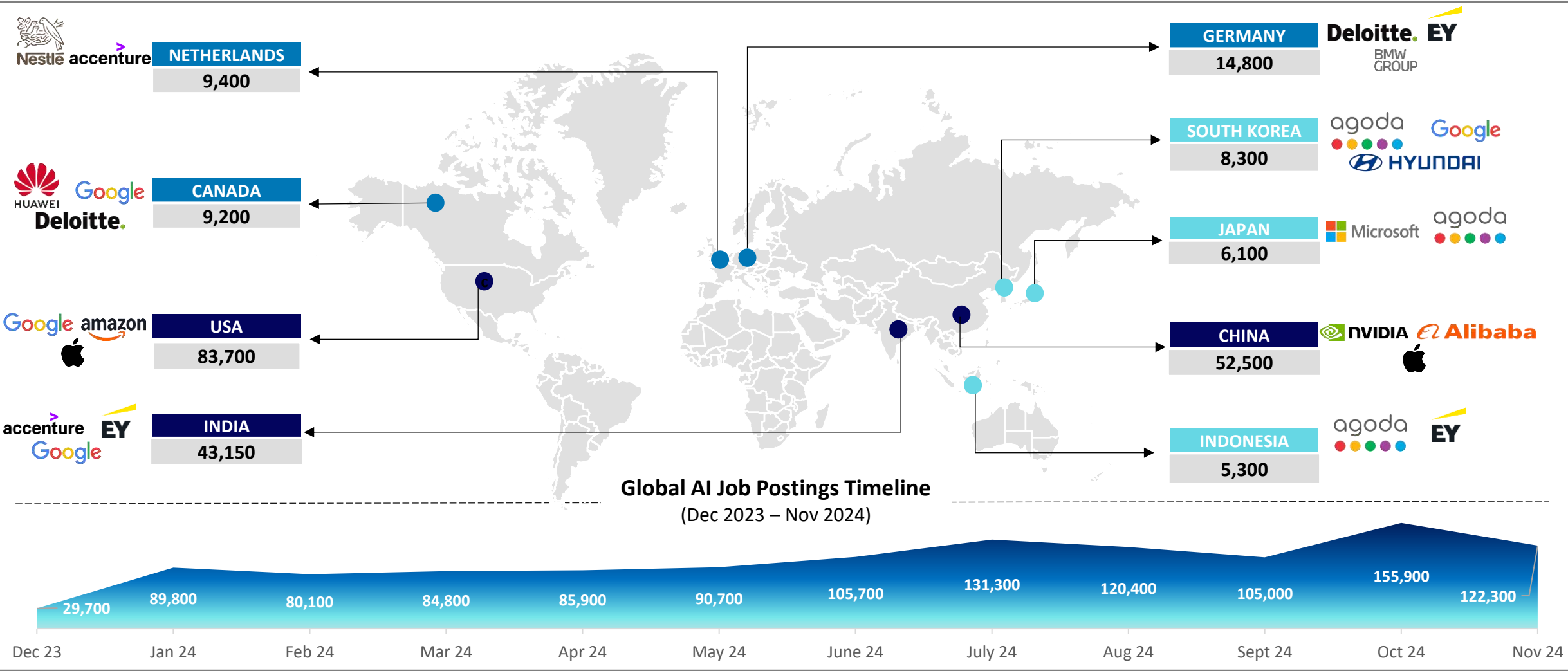
Demand for AI Related Jobs in China is surging drastically, soared 321.7% year-on-year during the Q1 of 2024

126%

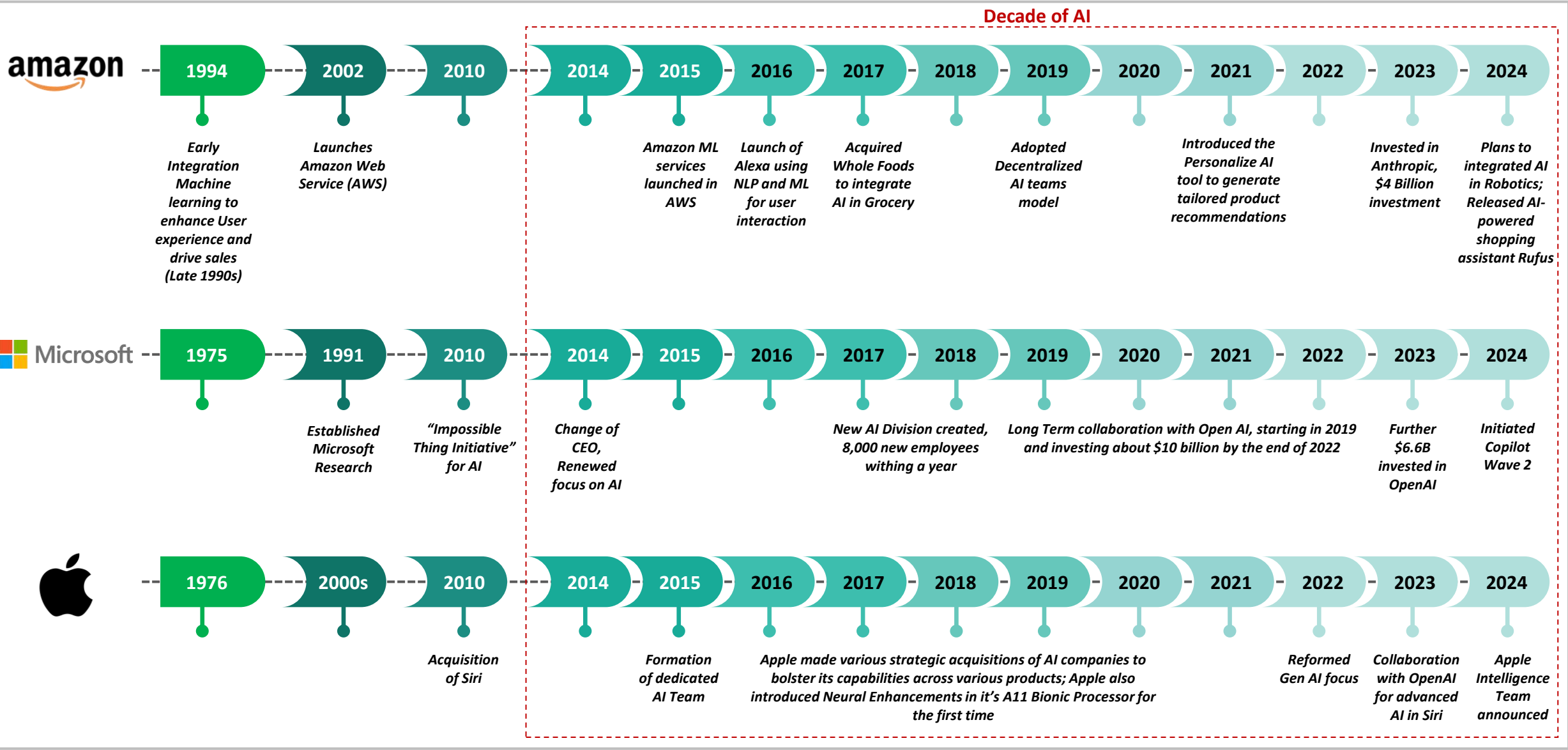
Job openings on natural language processing — one of the core vacancies in AI — surged 126% YoY in the Q1 2024

1.2M+

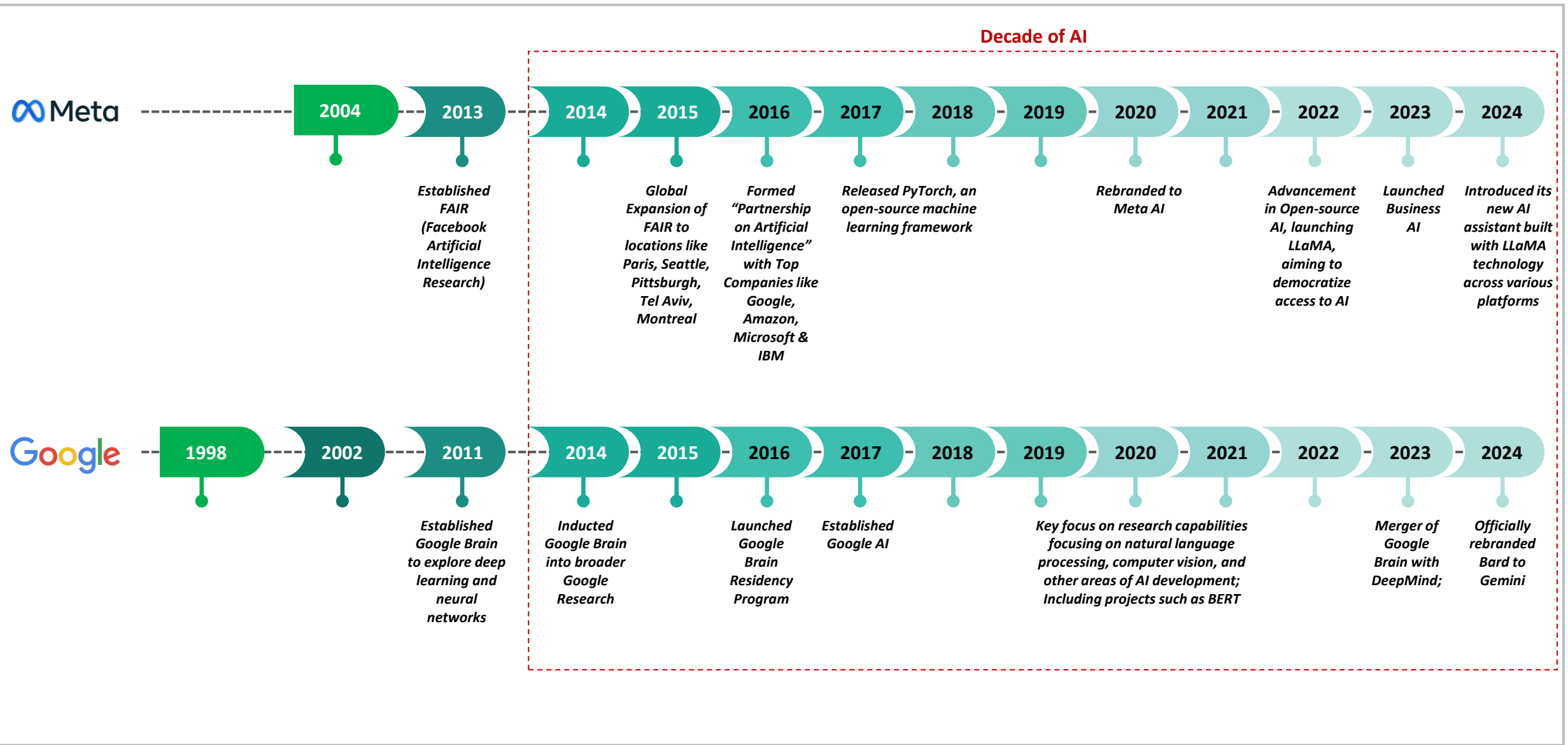
Job Postings observed for AI job roles between Dec 2023 – Nov 2024 globally



AI teams curation within Hyperscaler organizations has been pivotal in shaping the trajectory of artificial intelligence, driving innovation, and influencing both the tech industry and society at large



Note: The Data has been sourced from Draup’s proprietary talent module, which tracks 1000+ Custom Reports, 2M+ Publications, 380 Mn+ JDs and 800 Mn+ professional profiles



Big Tech/Hyperscale Dashboard: There is an increased focus on emerging roles like Gen AI and Computer Vision Engineers, leading to an increase in demand for skills like NLP, GANs, MLAs, and Predictive Analytics; Big Tech floated about 35% - 40% job postings in Q4 2024 as against Q3 2024



Talent Attributes \ Peers	amazon	Microsoft	Google	Meta	Apple
Total AI Talent Availability	16,800	12,100	8,390	8,720	7,840
Top Markets Employing AI Talent	8,400 3,800 50	6,400 1,700 370	5,260 600 280	3,000 400 360	2,100 440 300
Experience Split	35% 34% 31%	22% 26% 48%	30% 30% 40%	19% 33% 48%	19% 30% 51%
Talent Demand (Past 1 Year)	2,400	1,740	1,490	1,500	1,400
Top Gen AI Roles Hired in Tech in 2024	- Gen AI Solution Architect - Applied Scientist - Generative AI Strategist - NLP Engineer	- Gen AI Principal Researcher - Gen AI Research Engineer - GAI Cloud Solution Architect - Gen AI Applied Researcher	- Prompt Engineer - Gen AI Architect - Gen AI Engineer - Computer Vision Engineer	- Gen AI Partner Engineer - Gen AI Research Scientist - Computer Vision Software Engineer	- Gen AI Intelligence, Applied Research Scientist - Computer Vision Gen AI Manager - Gen AI software Engineer
Quarterly Job Postings (Past 1 Year)	310410700980 Q1 2024Q2 2024Q3 2024Q4 2024	230300530730 Q1 2024Q2 2024Q3 2024Q4 2024	180300430570 Q1 2024Q2 2024Q3 2024Q4 2024	260290400560 Q1 2024Q2 2024Q3 2024Q4 2024	250310370490 Q1 2024Q2 2024Q3 2024Q4 2024
AI-related Patent Secured (2013-2024)	1,819	3,728	3,859	1,023	713

In-Demand AI Skills

- Natural Language Processing (NLP)
- Deep Learning
- Generative Adversarial Networks
- Machine Learning Algorithms
- AI Integration and API Development
- Predictive Analytics
- MLOps in Model Development
- Neural Networks Architecture
- Quantum Algorithms

Degree of Centralization – Big Tech AI Teams									
Competitor	Global AI Talent Distribution			Global AI Leadership Talent Distribution			Global SVP/VP AI Talent Distribution		
	Talent Size	HQ AI Talent	Non HQ AI Talent	Talent Size	HQ AI Talent	Non HQ AI Talent	Talent Size	HQ AI Talent	Non HQ AI Talent
	16,800	48%	52%	1,200	70%	30%	100	73%	27%
	12,100	52%	48%	300	57%	43%	< 50	76%	24%
	8,390	63%	37%	320	56%	44%	< 50	79%	21%
	8,720	82%	18%	430	81%	19%	< 50	89%	11%
	7,840	72%	28%	220	83%	17%	< 50	81%	19%

AI Team Divisions across Competitors – Key Insights



Apple combined its **core ML and Siri teams** under the head of the newly formed **AI/ML team** in **2018** to deploy centralized AI team



Google consolidated **Google DeepMind** and **Google Research** AI teams in 2024 - focused on models, research, and responsible AI, under the umbrella of **Google DeepMind**



Microsoft AI CoE oversees **AI initiatives** with broader business goals, and consists of experts from data science, ML, product development to prioritize AI projects



Amazon's **AI initiatives** are **distributed among different business units**, such as AWS and the Alexa team. Each unit operates its own AI teams that focus on specific applications



Meta has developed a ML-Ops ecosystem **that consolidates key elements** while also offering flexible, **decentralized tools** for different product teams with different needs.

Big Tech AI Implementation: Big Tech adopted LLM techniques to improve efficiency, reduce costs, and provide better customer experiences; Google implemented AI for code generation/correction for increased efficiency; Meta’s Code Compose helps engineers in AI-based coding, and Microsoft leverages AI to enhance the decision-making

AI Developments – Big Tech Competitors	
Competitor	AI Implementation Overview
	- Google integrated AI into its operations and created “Goose” for its workforce. Employees use Goose to answer queries related to Google's proprietary technologies, generate code using internal tech stacks, and edit code based on natural language prompts - By implementing Goose, Google aims to drive efficiency and innovation within its workforce.
	- Microsoft is leveraging generative AI, mainly through tools like Copilot, to transform its user experience (UX) design and product creation approach It facilitates more efficient prototyping, data-driven decision-making, and user behavior prediction, enabling designers to iterate designs more rapidly and accelerating the product development cycle
	- Amazon implemented Gen AI into various aspects of the business, crating a conversational Alexa with generative AI making Alexa understand context, have back and forth conversations, leveraging Gen AI to improve product listings helping sellers, produces more thorough product listings, and helps customers make more confident purchase decisions Simplifying reading prescriptions allows the pharmacy to scale operations, fill prescriptions more quickly and efficiently, and reduce human error
	- Meta employs AI in its software development through CodeCompose, a generative AI-based coding assistant. This tool enhances developer productivity by streamlining workflows, suggesting code snippets, and improving code quality - By leveraging AI, Meta accelerates development cycles, ensuring efficient and high-quality software delivery
	Apple developed a machine learning framework called “MLX,” enabling developers to build models that run efficiently on Apple Silicon and deep learning model library MLX Data, focusing more on machine learning and LLM’s.

Source: Draup’s ML Model, which tracks 2M+ news articles, publications, white papers and industry reports, was leveraged to gather the information.

The Anatomy of an AI Team: Roles, Skills, and Synergies – View on how organizations go about setting up AI Teams



Building the Future: Optimizing AI Team Composition for Strategic Success

At Draup, we analyzed AI teams created within select enterprise companies* over the past two years. This analysis **offers directional insights** into how organizations structure these teams based on experience levels.



Strategic Workforce Planning: Shifting Focus from Headcounts to Optimizing Skills and Experience in AI Teams

Workforce Planners and Recruiters have traditionally focused on headcounts and meeting hiring targets. However, there's a much greater opportunity to add strategic value by considering the optimal mix of skills and experience within teams, especially in the context of building AI teams.



Building Well-Balanced AI Teams: The Role of Technical Experts and Mid-Tier Talent will be crucial to success of AI Teams

A well-balanced team typically includes technical experts like data scientists working alongside analysts and domain specialists who contribute to developing AI solutions that generate real business value. A common trend is the focus on building a strong **"mid-tier" layer**, with employees typically possessing **6 to 11 years of experience**, as this group is seen as critical to team stability and project success.

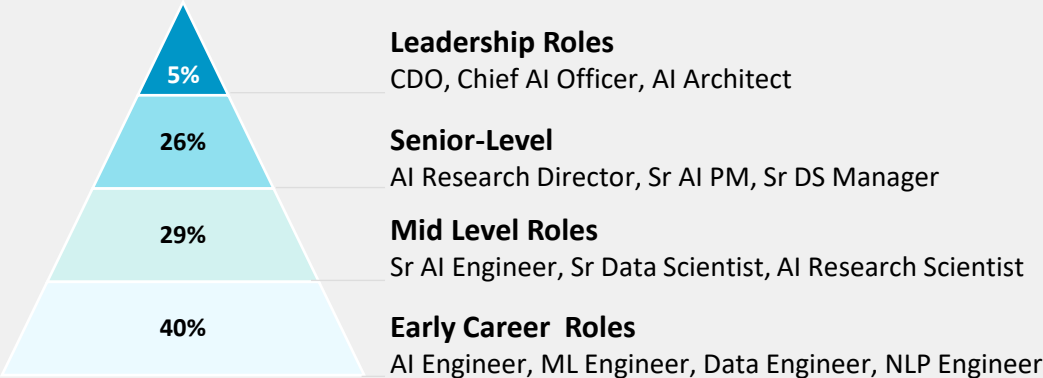


Empowering Early-Career Professionals in AI Teams: Key Roles in Deployment and Development

- One area that deserves more attention is the role of **early-career professionals** in setting up AI teams. AI teams' skill composition and organizational structure are essential for aligning AI initiatives with overarching business objectives.
- Interestingly, there are growing opportunities for **early-career professionals, particularly in AI deployment roles**, where implementation skills are in high demand. Within the **development phase**, areas like **synthetic data creation** present **promising entry points for early-career talent**, offering them the chance to contribute meaningfully while building expertise in cutting-edge technologies.

Composition of AI Teams

AI Talent Distribution across Seniority Level



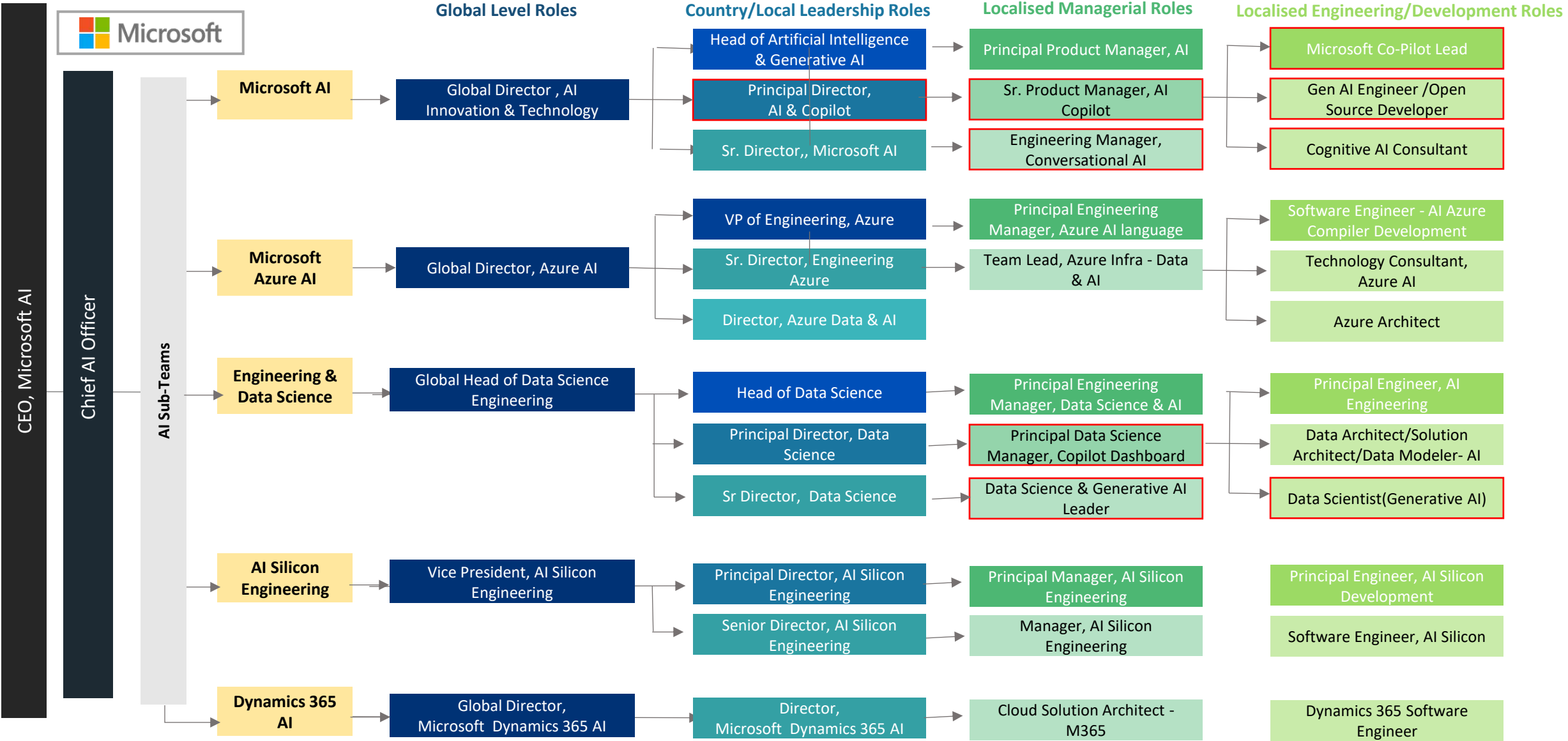
AI Talent Distribution by workload

	DEVELOPMENT			DEPLOYMENT & SUPPORT	DEPLOYMENT & SUPPORT	DEPLOYMENT & SUPPORT	DEPLOYMENT & SUPPORT	GOVERNANCE		
	IDA/EDA/Synthetic data Creation	Data Science	Artificial Intelligence Research & Development	Machine Learning Operations (MLOps)	Big Data & Data Engineering	Infrastructure and Cloud Support	Quality Assurance and Model Validation	AI Governance and Compliance	Security	Deployment & Support and Governance
Early Career (0-5 YOE)	4%	6%	2%	6%	7%	6%	6%	1%	2%	11.90% 27.59%
Mid-Level (6-11 YOE)	3%	5%	3%	4%	5%	3%	3%	1%	1%	11.61% 17.57%
Senior-Level (11-17 YOE)	2%	5%	4%	4%	4%	3%	1%	1%	1%	11.17% 15.24%
Leadership (17+ YOE)	0%	1%	1%	0%	1%	0%	0%	0%	0%	2.11% 2.58%
Total	10%	17%	10%	14%	17%	12%	11%	3%	5%	

Source: Draup's ML Model, which tracks 2M+ news articles, publications, white papers and industry reports, was leveraged to gather the information. *Small Sample of Enterprise organizations have been studied to share the result

MICROSOFT TEAM STUCTURE – ARTIFICIAL INTELLIGENCE

Microsoft AI Organizational Chart: Microsoft AI team is headed by Chief AI Officer, oversees AI initiatives with broader business goals, and consists of experts from data science, ML, to prioritize AI projects; It is categorized across Microsoft AI, Azure AI, DSA, AI Silicon Engineering, and Dynamics 365 AI

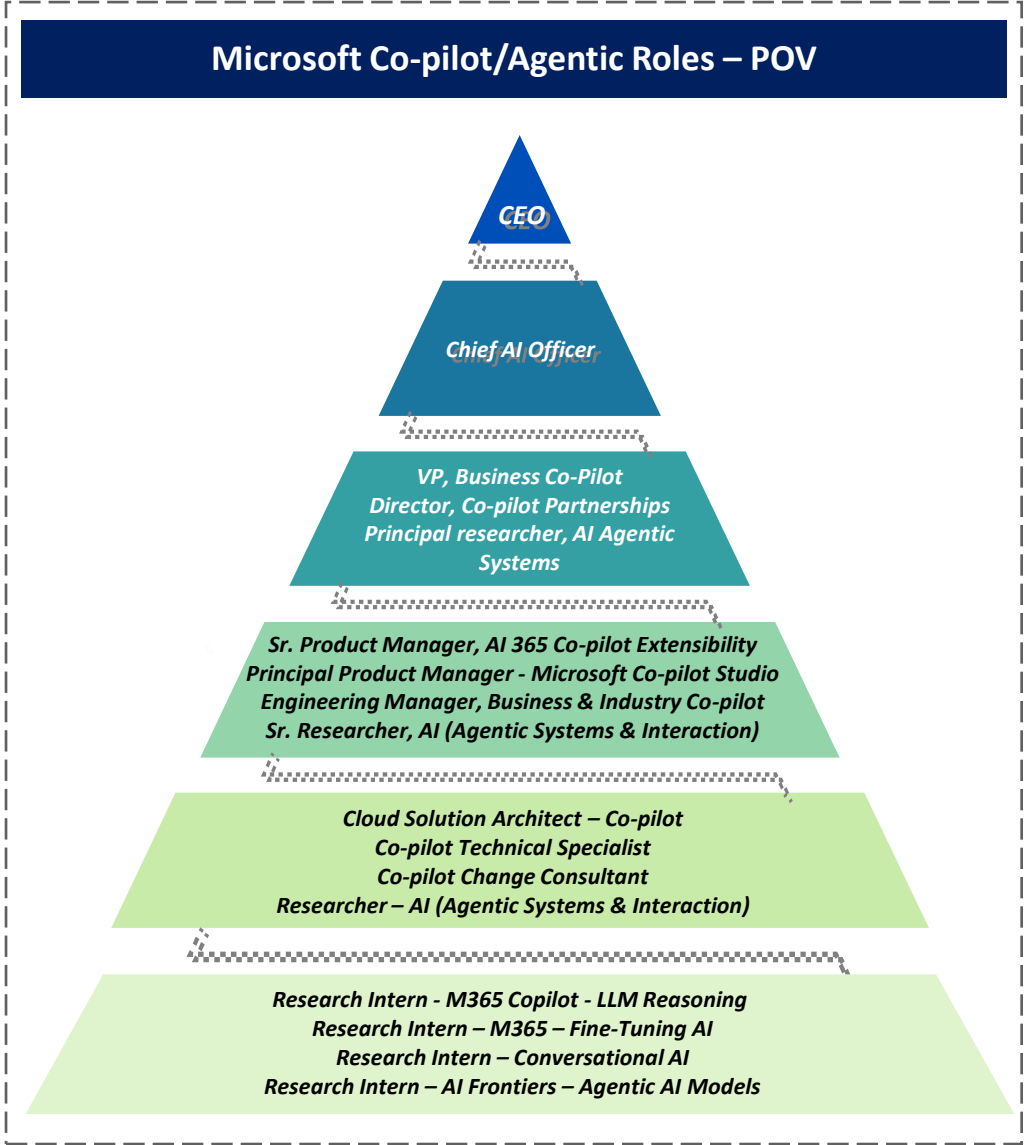
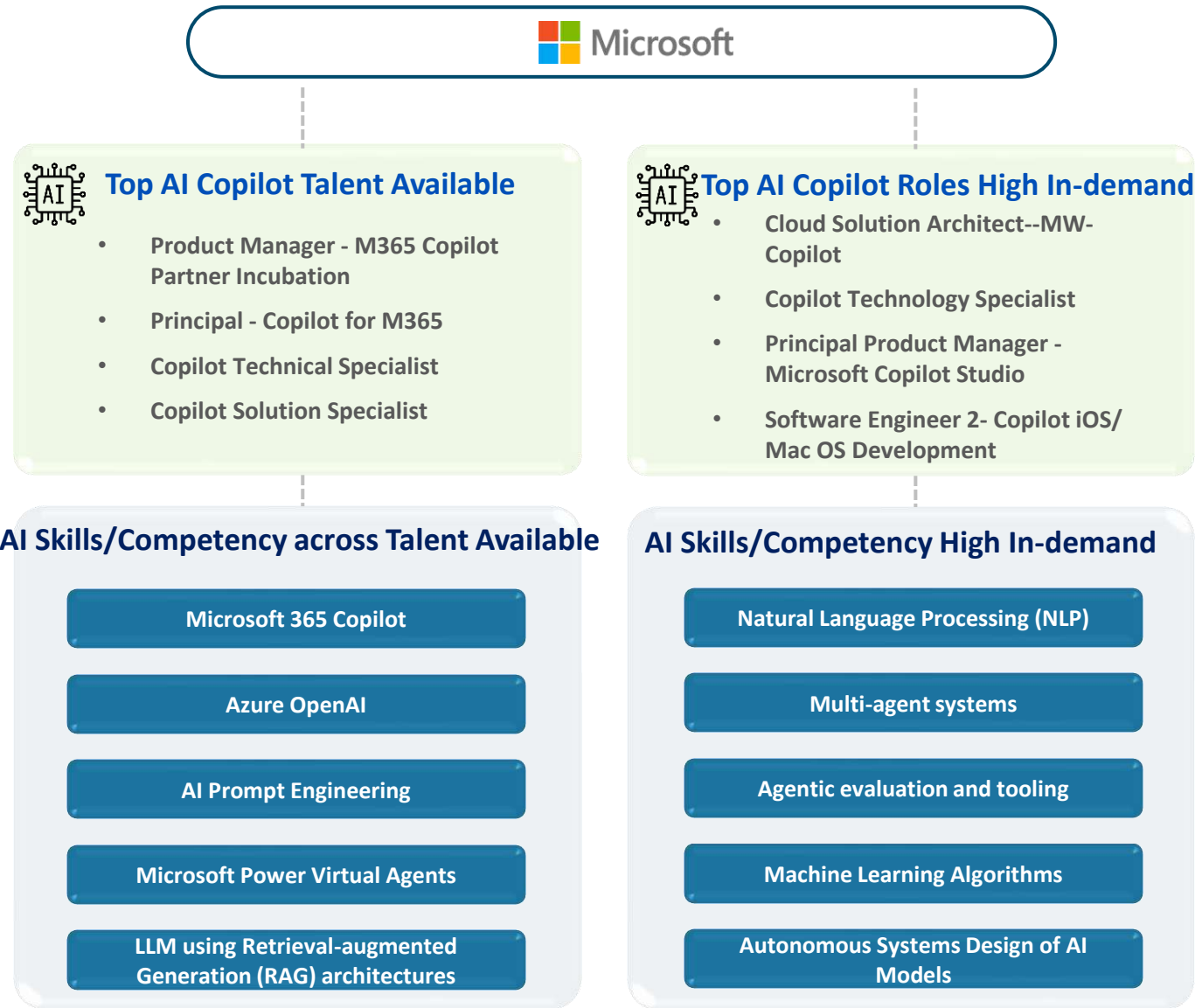


Note: This is an indicative structure based on an extensive study of Professional profiles employed in the AI Team for respective companies. Draup has conducted extensive research based on secondary sources to collate centralized/ decentralized organizational structures in respective companies. This is not exhaustive and can be expanded on requirement basis

Emerging Agentic/Copilot AI Roles

Comparative Seniority Level

Microsoft AI Co-pilot/Agentic Job Roles: Microsoft’s hiring policy focuses on a variety of emerging co-pilot roles like Co-Pilot Technical Specialists, Co-pilot Solution Architect and Product managers for the Co-Pilot studio, with emphasis on skillsets/tools viz., Natural Language Processing, Multi-Agent systems and Microsoft 365 Co-Pilot



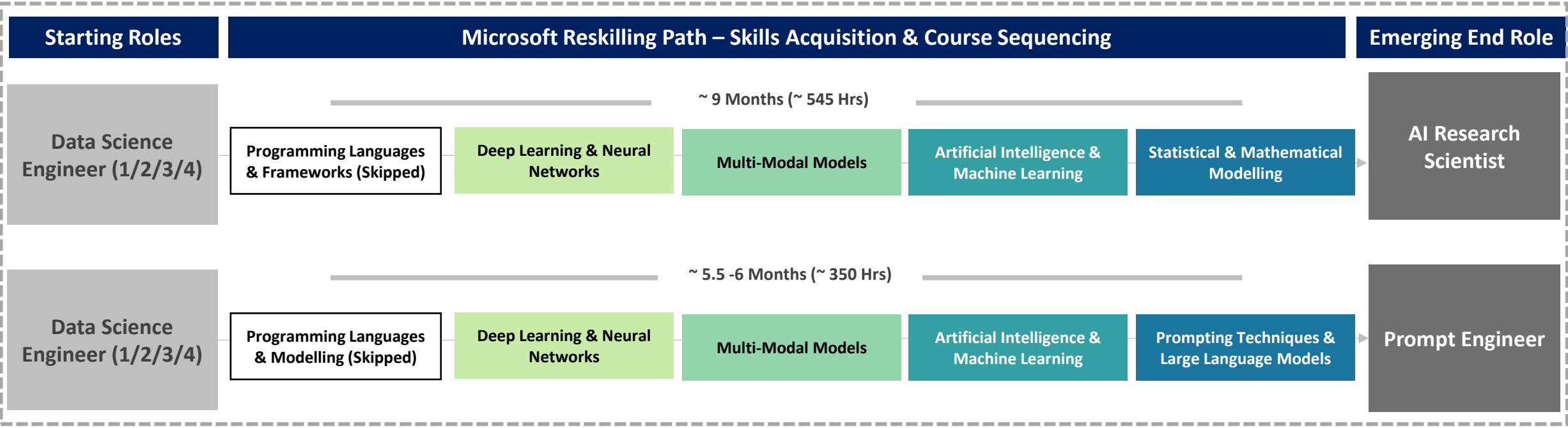
Note: Draup’s database of 850M+ professional profiles and 450M+ JDs were leveraged to derive job roles and skills taxonomy. The AI Co-pilot job roles and new age AI listed skillsets/competencies are not exhaustive and can be expanded as per the requirement

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Microsoft Role Transition – AI Research and Prompt Engineering : Draup has developed a learning plan with the sequence of skill cluster acquisition that helped transition Microsoft employees transition into roles associated with AI workloads



- The transition from Data Science Engineer to Research Scientist or Prompt Engineer is feasible due to the significant overlap in the skill sets required for both roles. Both professions require a strong foundation in data analysis, programming, and statistical methods
- However, to successfully make the shift, Data Scientists must acquire additional specialized skills

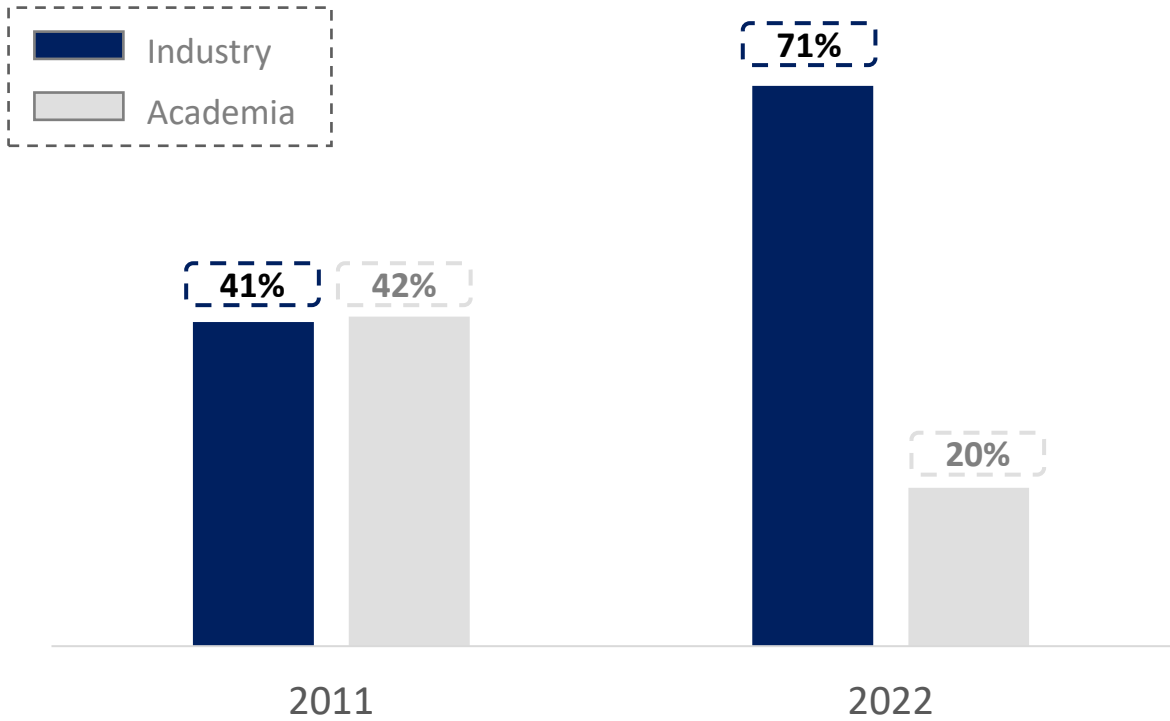


Source: Draup Tracks 4M+ Career paths across 16M+Data Points from Over 8000 Data Sources
Note: The paths showcased are not exhaustive, the ones mentioned here are the most commonly occurring and plausible paths. Skill level data has been extracted from DRAUP Reskill Navigator. The time durations mentioned are based on preliminary analysis considering 50 hours of dedicated learning per month, subject to change upon deeper analysis

Talent Migration from Academia to Industry: AI PhD holders are increasingly preferring to take roles in industry over academia in the last decade

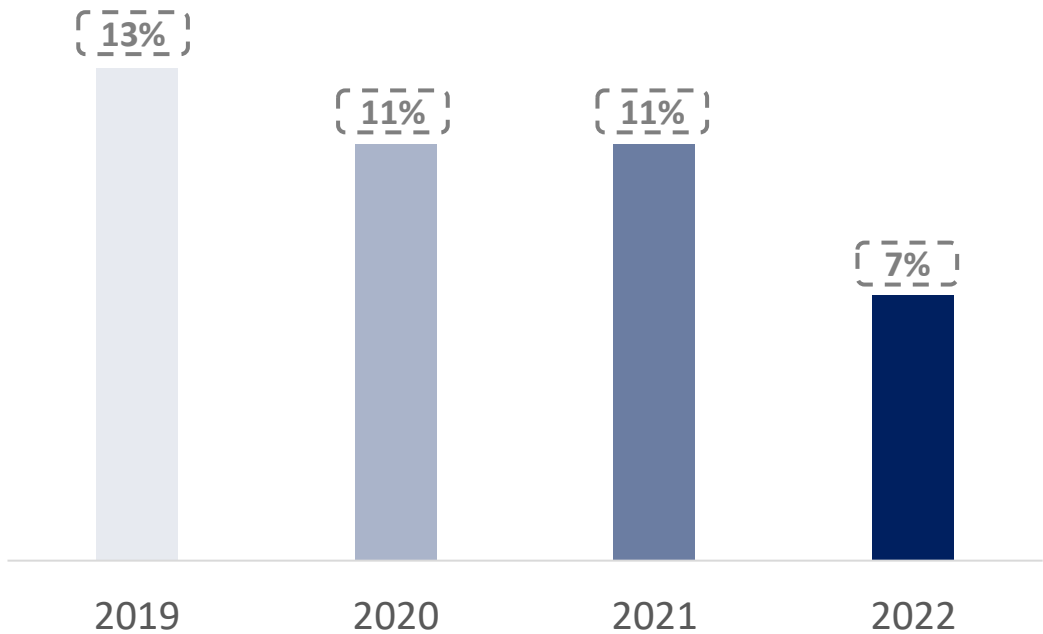


Preferred Domains of work for AI PhD holders in 2011 vs 2022*



- Reason for higher preference of jobs in the Industry
- The tremendous growth in the AI industry and the demand for research expertise in this domain is showcased here as greater number of AI PhDs are opting to work in industry
 - The opportunity to work in diverse fields such as healthcare, finance, e-commerce, and retail also provides is also a driver for AI PhD holders to opt for industry roles

Migration of AI Talent from Industry to Academia**



- Reasons for reduced migration from industry to academia
- The growing prominence of cutting-edge development within the industry has allowed research focused professionals to stay in the industry
 - Currently, industry roles in AI research labs such as Google DeepMind, OpenAI, Microsoft Research, etc now rival academia in reputation and influence

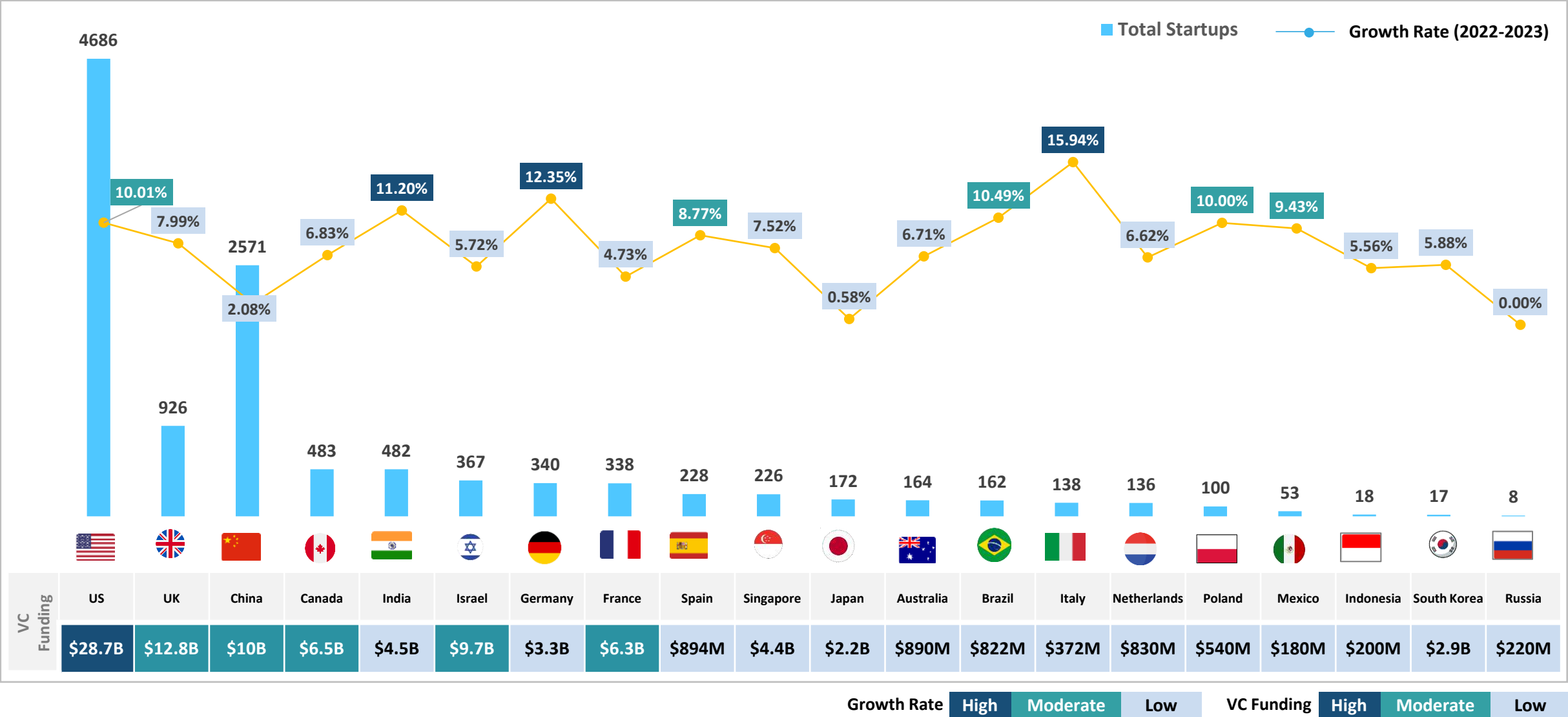
Industry-Academia Partnerships to Foster AI Talent

COMPANY	NUMBER OF AI PATENTS FILED BY THE COMPANY (2023-24)	UNIVERSITY	TYPE OF PARTNERSHIP	INSIGHTS
	111	 Stanford University	AI/ML PhD Fellowships, Funding and Mentorship	Every year, Apple University, in a joint program with Stanford University's McCoy Family Center for Ethics in Society, hosts postdoctoral fellows whose research focuses on issues at the intersection of ethics and AI technology. Each Scholar receives funding as they pursue their PhD, internship opportunities, and mentorship with an Apple researcher in their field.
	273	 Carnegie Mellon University	Joint Technology Center	Nvidia will establish "Joint Technology Centers" with Carnegie Mellon University and the University of Pittsburgh. CMU's center will focus on robotics, while Pitt's is centered on health sciences, including applications of AI in clinical medicine and biomanufacturing. The schools will get access to Nvidia's latest AI software and frameworks.
		 University of Pittsburgh	Technology Transfer and AI Research Programs	The partnership between the University of Florida and NVIDIA aims to integrate AI education across all disciplines. By leveraging NVIDIA's expertise, the university will enhance academic quality and bolster its reputation for research and innovation. This initiative prepares students for a future driven by AI, fostering interdisciplinary collaboration and equipping graduates with essential skills.
	97	 Georgia Tech	Specialized Courses	Meta's Artificial Intelligence Learning Alliance (AILA) partners with Georgia Tech to offer a free, accessible deep learning curriculum to increase diversity and equity in AI. The initiative focuses on underrepresented groups through collaborations with HBCUs, HSIs, and AANAPISIs, empowering students with the skills and resources to pursue careers in AI and build a more inclusive workforce
	154	 筑波大学 University of Tsukuba	AI Research, Funding and Specialized Trainings	Amazon has partnered with NVIDIA, the University of Washington in Seattle, and the University of Tsukuba in Japan in a \$110 million initiative to enhance AI research and workforce development, focusing on areas such as robotics, healthcare, and climate change. This collaboration aims to address the global AI talent shortage by equipping students in both the U.S. and Japan with cutting-edge AI skills through access to high-performance computing resources and advanced training opportunities

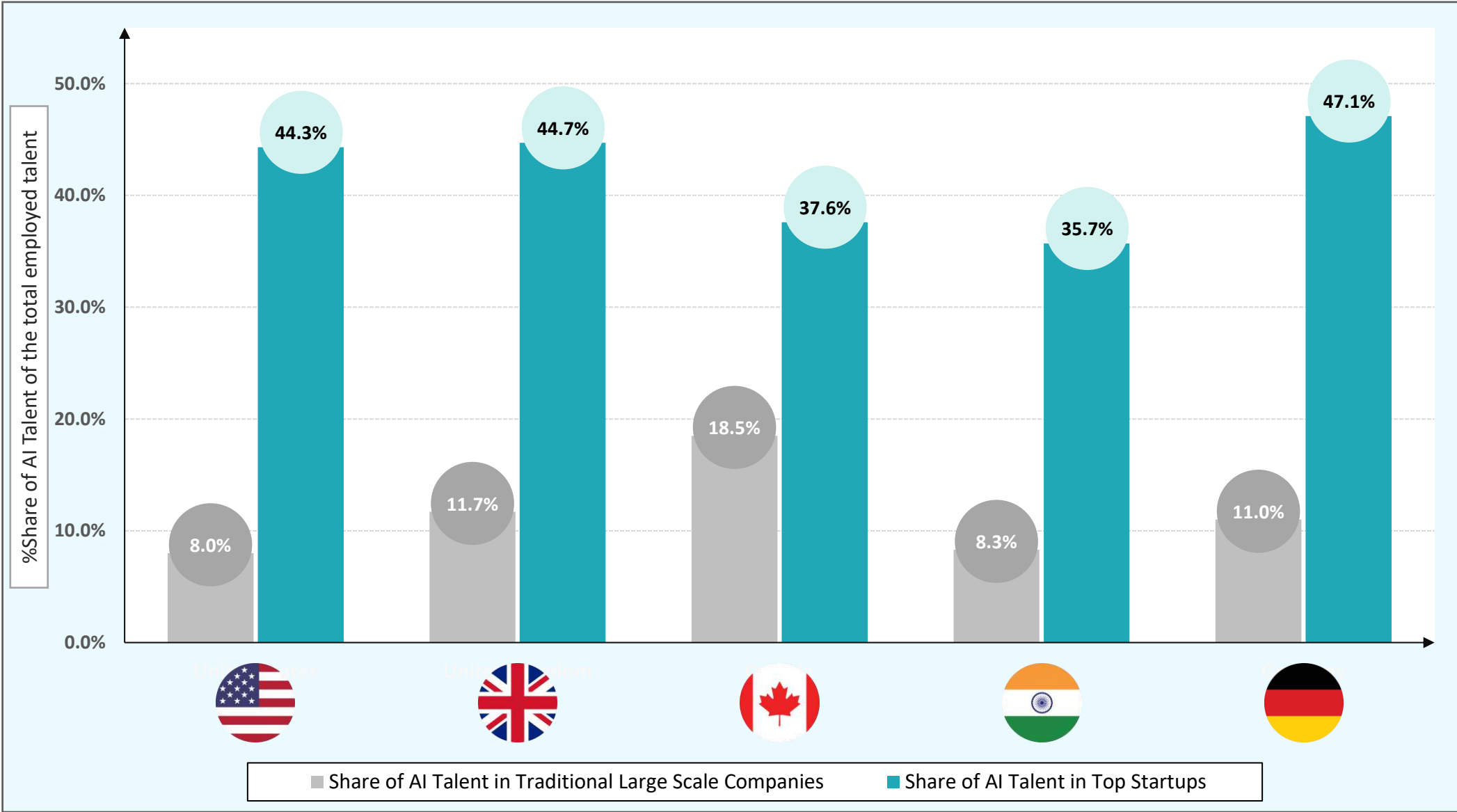
Startup Ecosystem – AI: United States has the highest number of Artificial Intelligence startups and raised higher VC fundings; China is witnessing an increased growth in AI funding in recent years as a part of its government plan to lead in AI by 2030



Total Number of AI Startups across the Analyzed Countries



In top AI Geographies, share of talent with AI capabilities is much higher in startups than that in traditional large-scale companies, showcasing the trend of startups driving innovation in the field of AI

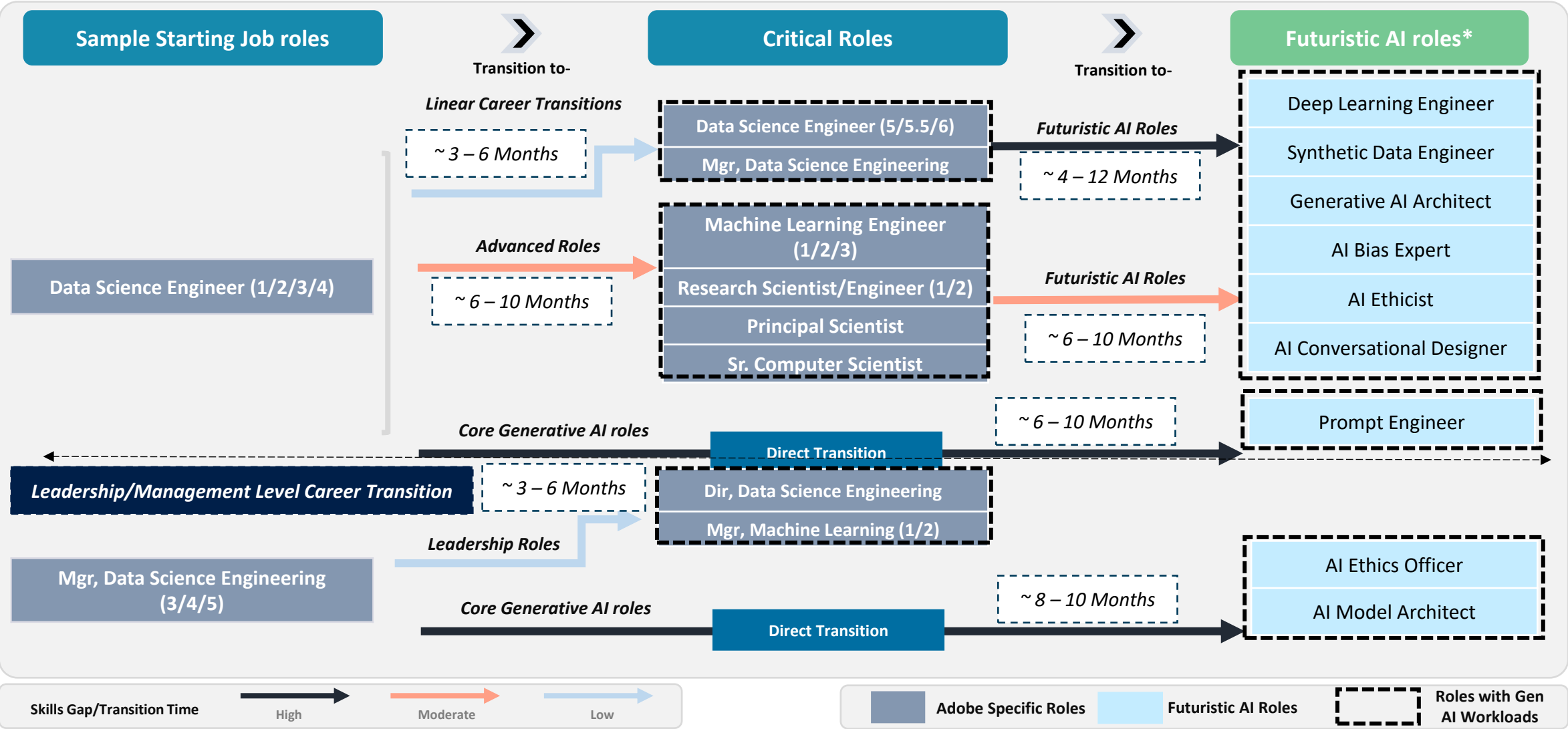


Observations:

- 1. Enterprise Software Vertical has seen the highest utilization of AI Workloads across top geographies
- 2. Share of AI talent in startups has shown high correlation to the Digital Infrastructure Index of IMF, showcasing the increasing opportunities for innovation with better infrastructure in the country
- 3. With rapidly increasing VC funding in countries such India & Germany in AI Startups, the Share of AI talent can be projected to increase in coming years

Note: The Data has been sourced from Draup’s proprietary talent module, which tracks 1000+ Custom Reports, 2M+ Publications, 380 Mn+ JDs and 800 Mn+ professional profiles; Top Startups are defined by top 15 startups in the geography that have raised highest funding in the calendar year of 2024 **Source:** <https://www.imf.org/external/datamapper/DI@API/ADVEC/EME/LIC>

Futuristic AI Role Transitions (1/3): Job Roles like Data Science Engineers can be transitioned into ML Engineer, Research Scientist Engineer, Computer Scientist among other critical roles before transitioning into Futuristic, Generative AI roles such as Generative AI Architect, Prompt Engineer, and AI Bias Expert



Note: Draup performs complex assessments around various critical parameters between existing and desired roles to understand skill gaps. The above analysis is illustrative and intended to provide an overview. The estimated reskilling time captured for different transitions in the slide may vary depending on the existing skillsets for an individual professional and the skill gap to be covered, as well as on the starting and the end role considered. Definitions: 1) Starting Job Roles: Refers to the cluster of Job titles currently present in Adobe Job Taxonomy and have been referenced from the Adobe Job Taxonomy data previously shared as well as Adobe Job Openings data present in Draup JD Database 2) Critical: Refers to the clusters of roles that have experienced inclusion and utilization of AI/ML workloads along with core design competencies; *Futuristic AI roles: Refers to the clusters of Job roles that either currently are leveraging Gen AI in existing workloads or projected to leverage Gen AI in future

Learning Journey (2/3): Draup has developed a comprehensive 6-month learning journey for Data Science Engineer (Level 1/2/3/4) to transition into Prompt Engineer with beginner level Job Ready Proficiency



- **Coursera** -- Neural Networks and Deep Learning (24 Hours)
- **Edx** - Professional Certificate in Deep Learning (109 Hours)
- **Coursera** - Machine Translation (30 Hours)

Approximate Timeline: 163 hours

- **Pluralsight** – Design Principles for Machine Learning Framework (2 Hours)
- **Coursera** - Scikit-Learn For Machine Learning Classification Problems (2 Hours)

Approximate Timeline: 4 hours

Deep Learning & Neural Networks

Multi-Modal Models

Artificial Intelligence & Machine Learning

Prompting Techniques & Large Language Models

- **Edx** – Applications in Communication Acoustics (80 Hours)
- **Futurelearn** – Applied Artificial Intelligence: Speech Recognition Systems (15 Hours)
- **Coursera** – Natural Language Processing with Attention Models (35 Hours)

Approximate Timeline: 130 Hrs

- **Udemy** – Open AI ChatGPT, Midjourney and DALL-E Bootcamp [2023] (13 Hours)
- **Coursera** – Generative Pre-trained Transformers (GPT) (12 Hours)
- **Coursera** – Prompt Engineering for ChatGPT (18 hours)
- **Udemy** – The Complete Prompt Engineering for AI Bootcamp (10 Hours)

Approximate Timeline: 53 Hrs

Total Job Ready Proficiency*: 5 – 6 Months (350 hours)
considering 2 hours of dedicated learning/day

Recommended Certification Courses



Data Science Engineer (1/2/3/4)

Certified Prompt Engineer Certification - GSDC

Prompt Engineer Certification - Prompt Institute



Prompt Engineer

Note: Skill-level data has been extracted from Draup’s Reskill Navigator. The time durations mentioned are based on preliminary analysis considering 2 hours of dedicated learning per day, subject to change upon deeper analysis. The course selection model considers the following parameters - (i) Rating of the content, (ii) Number of users/enrolments, (iii) Issuing Authority (any user preferences are recorded), (iv) Duration of the content (in case of courses, preference is not given to very short duration content), (v) Individual / Enterprise level costs, and (vi) Skills scope and coverage within the course.

*Completion of courses recommended will provide employees with beginner-level proficiency in the end role.



Data Scientist ➡ Machine Learning Scientist

Apple is a data-driven company committed to enhancing customer satisfaction by applying cutting-edge machine-learning techniques. This strategic focus has led to a consistent demand for Machine Learning Scientists within the organization. As machine learning becomes increasingly pivotal in the job market, the demand for skilled professionals in this domain is surging. This trend has motivated many Data Scientists to consider transitioning into roles as Machine Learning Scientists

The transition from Data Scientist to Machine Learning Scientist is feasible due to the significant overlap in the skill sets required for both roles. Both professions require a strong foundation in data analysis, programming, and statistical methods. However, to successfully make the shift, Data Scientists must acquire additional specialized skills

Key Skills for ML Scientist

ML Algorithms

Artificial Intelligence

Statistics



Applied Scientist ➡ Machine Learning Engineer

Amazon is at the forefront of developing cutting-edge Artificial Intelligence products, necessitating a workforce with deep mathematical and analytical expertise. This creates a high demand for professionals such as Applied Scientists who possess these skills. Given the rapid expansion and integration of machine learning across various fields, transitioning from an Applied Scientist to a Machine Learning Engineer offers significant career potential. It is becoming an increasingly wise career choice

While Applied Scientists already possess a robust skill set, transitioning to a Machine Learning Engineer role requires acquiring additional specialized knowledge

Key Skills for ML Engineer

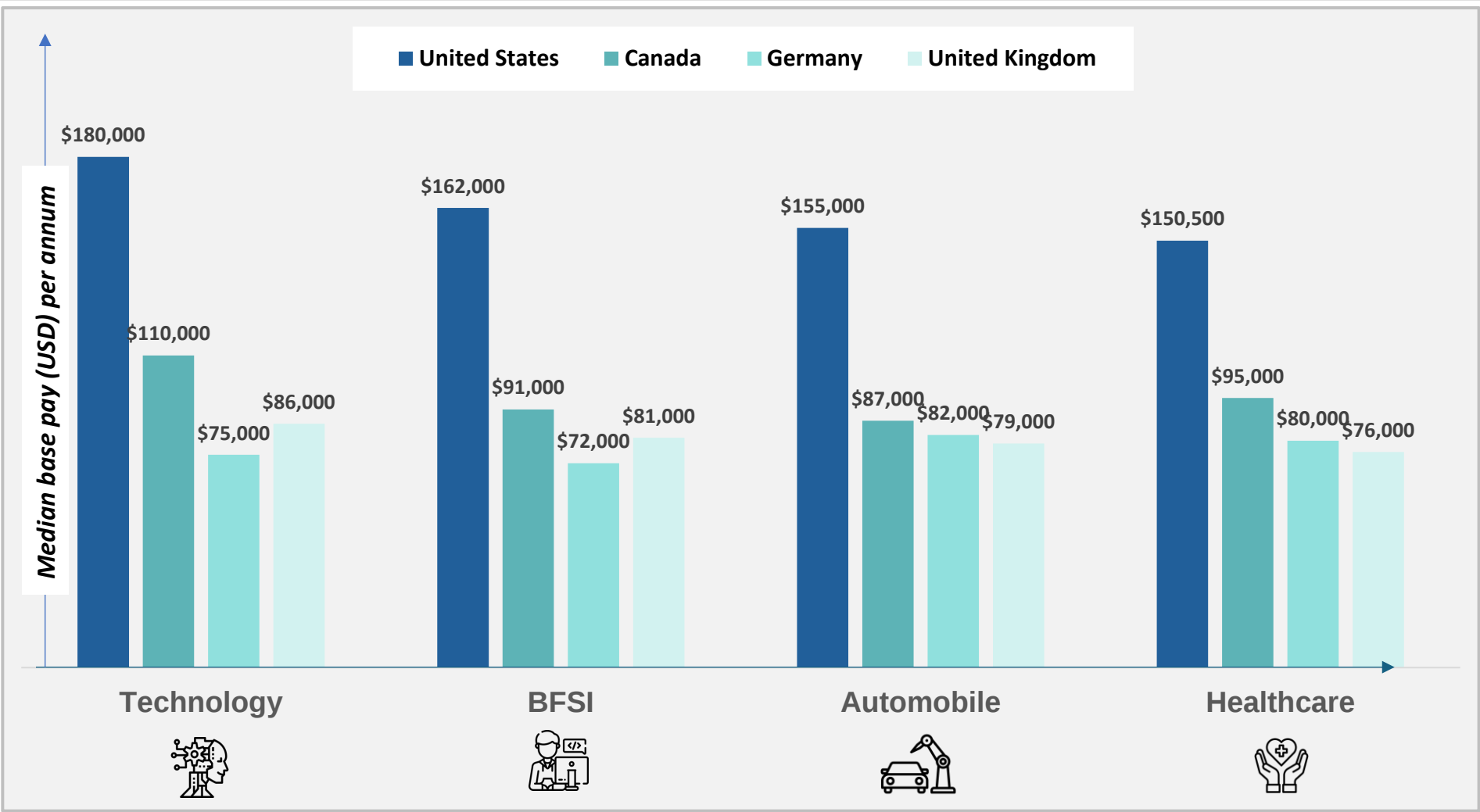
Neural Networks

ML Algorithms

Deep Learning

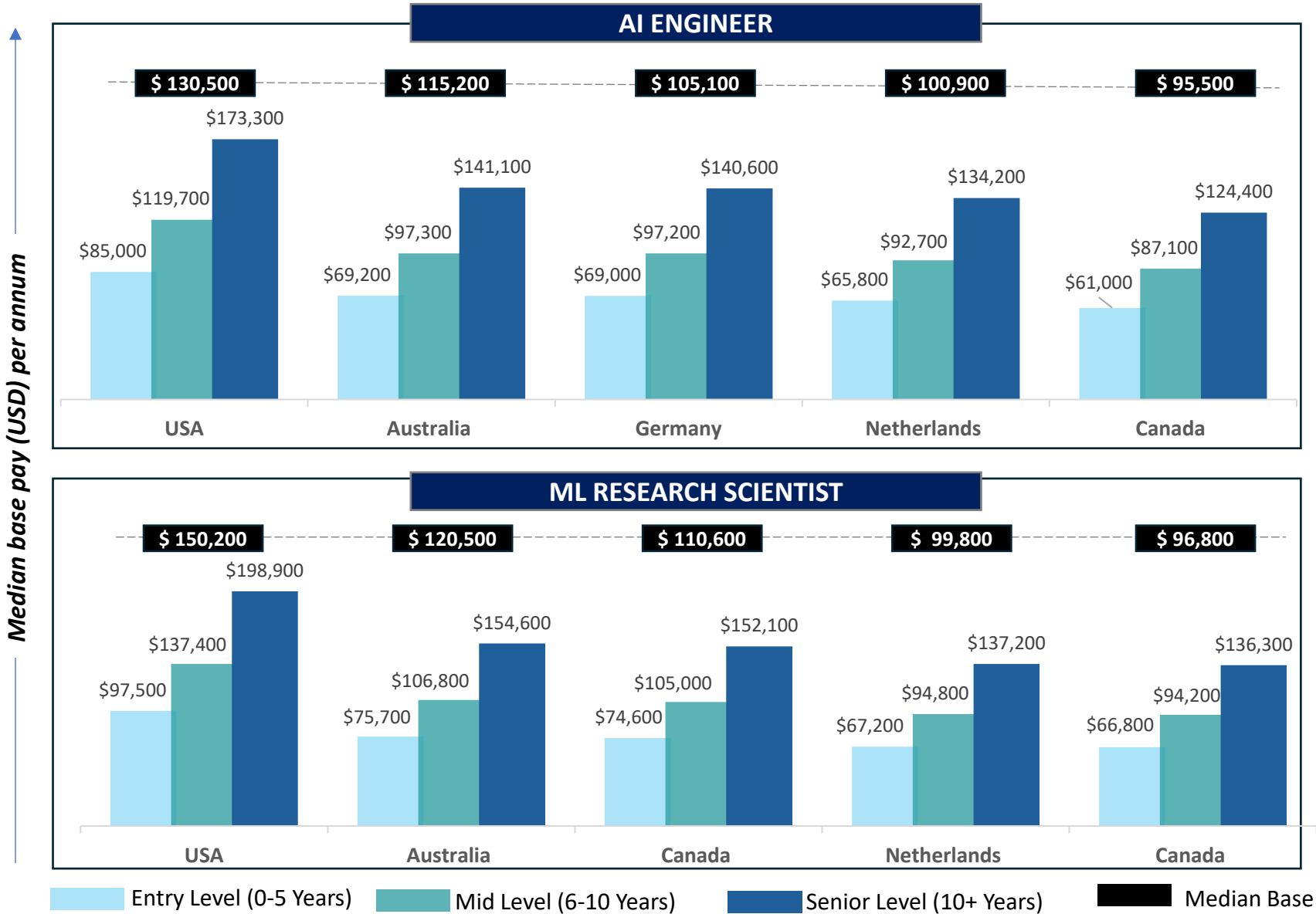
Sectoral AI Compensation Trends: Tech giants are offering the highest median base pay to AI Engineers across all the countries mentioned, followed by the BFSI, Automobile and Healthcare sector

MEDIAN BASE PAY – SECTORAL TRENDS: AI ENGINEER



Observations:

1. The median base pay for AI engineers in the **USA** is **41% higher** than in **Canada**, which is offering the second highest median base pay across all the sectors. The **pay gap is highest** in the **BFSI and Automobile** sector at **44%**
2. Median base pays in **Germany and the United Kingdom** are comparable, with AI Engineers in **Germany** being offered more median base pay in the **Automobile and Healthcare** sectors and the AI Engineers from the **United Kingdom** being offered more median base pay in the **Technology and BFSI** sectors

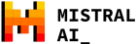


Advanced AI Skills – Wage Disparity

- AI engineers that develop expertise in **ML, NLP, neural networks** skills get substantial **financial rewards** due to the high demand where Employers are willing to pay up to **47% more** for employees with AI skills
- Proficiency in **ML algorithms and DL frameworks**, help earn substantial premiums, often **30% more** than their non-specialized counterparts
- Certifications in AI platforms (AWS, Azure, Google AI) and open-source** contributions are becoming key salary differentiators

Pay Parity in Remote AI Roles

- Big Tech companies are willing to be **‘Pay Neutral’** when offering **remote AI roles globally**
- AI engineer based in India** may receive an offer from a U.S. tech firm with a **salary that aligns with U.S. market rates**, which are significantly higher than local salaries, creating a scenario where **pay parity is sought across borders**

Model Category	Broad Summary	Pertinent Examples
1 GENERAL PURPOSE AI MODEL	- General-purpose AI models are designed to perform a wide range of tasks across various domains without being limited to a specific function. - These models are typically trained on extensive datasets and can adapt to multiple applications, making them versatile tools in many industries. - Their flexibility to adapt to new contexts makes them invaluable for productivity.	perplexity 
2 OPEN SOURCE AI MODEL	- Open-source AI models are freely available to the public, allowing anyone to access, study, and understand their architecture, code, and training methods. - These models can be modified and adapted to specific needs, fostering innovation through community-driven contributions and shared improvements - By reducing barriers to entry, open-source AI models enable widespread adoption of advanced AI technologies across industries, promoting equitable access and ethical development.	 
3 Domain Specific AI MODEL	- Domain-specific AI models are like precision instruments, fine-tuned to excel in particular fields or tasks. - These models are crafted with a deep understanding of their target domain, whether it's finance, healthcare, or marketing. - Their focused nature allows them to deliver more accurate, reliable, and actionable insights for niche domains	 

General purpose AI models		
Company	Founding Year	Broad Summary
	2023	AI-powered search engine and research assistant
	2023	General chatbot ideal for collaborative projects and idea sharing
	2022	AI model with Advanced Voice Mode for interactive conversations

Open Source Models		
	2023	Open-source model matching GPT-3.5 Turbo performance with commercial usability
	2024	Advanced multilingual model with strong performance across various NLP tasks and commercial usage options
	2024	High-performance bilingual model for text-image conversations and human-like text and code generation
	2024	Best performing open-source LLM with 85+ scores on MMLU and HumanEval, excelling in coding, math, and general tasks

View on leading Domain Specific AI Models prevalent in the market (1/2) – Covering Product, Engagement, and Creativity focused models

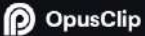


Product focused AI models		
Company	Founding Year	Broad Summary
	2023	AI code editor that understands codebase for enhanced productivity
	2024	AI agents that turn natural language into functional apps and websites
	2024	Use any AI model in one unified platform
	2024	AI autocomplete tool that streamlines your coding process with smart suggestions

Engagement focused AI Models		
Company	Founding Year	Broad Summary
	2023	Social app for creating and sharing AI-generated images and videos
	2024	Generate AI images of yourself, family, and friends within Meta apps
	2023	Chatbot from xAI that engages users in interactive conversations
	2023	AI-powered toys that allow kids to engage in conversations using realistic voices

Creativity focused AI Models		
Company	Founding Year	Broad Summary
	2023	Create realistic AI voices for various applications, including voice cloning and text-to-speech
	2023	Generate songs and music from text prompts effortlessly
	2022	AI platform for generating stunning images based on user prompts
	2023	AI-powered video generation, enabling creative storytelling through visuals
	2023	Creative canvas for making and enhancing images and videos with AI tools
	2020	AI image editor designed for creating professional product photos and visuals

Productivity focused AI models		
Company	Founding Year	Broad Summary
	2024	AI notetaker that transcribes meetings and enhances notes with key details
	2024	Voice dictation tool that converts speech to text in any application
	2024	Create presentations, documents, and websites effortlessly using AI
	2024	Summarizes and facilitates interaction with PDFs for easier content management
	-	Email assistant that organizes your inbox and automates responses for efficiency
	2017	Build AI agents to streamline and automate your workflows effectively

Audience and Content focused AI models		
Company	Founding Year	Broad Summary
	2022	AI clones for text, voice, and video that engage your audience in personalized conversations
	2023	Create AI avatars to scale content production and translate videos effortlessly
	2023	AI avatars designed specifically for creating engaging social media videos
	2023	Transform long-form videos into short, viral clips using AI technology
	2021	AI-powered avatars and video editing tools for automatic captions and improved video quality

Niche AI models		
Company	Founding Year	Broad Summary
	2019	Create realistic AI voices for various applications, including voice cloning and text-to-speech
	2021	Personalized parenting co-pilot offering tailored support and resources
	2011	AI-powered tool that provides assessments of medical symptoms for informed health decisions.
	-	Personalized AI counselor and coach designed to support mental well-being and personal development
	2023	Transform any document into an engaging AI podcast for easy listening and learning
	2024	AI news app that summarizes multiple articles into concise stories for quick updates



HOUSTON | BANGALORE

www.draup.com | info@draup.com

