AI CERTs™

AI Employment Trend

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1. Introduction and Scope of AI in employment

1.1 Executive Summary

Artificial Intelligence (AI) is transforming the way we work. Its impact in various industries is visible in many forms such as uses of robots in assembly line, robot-advisory in investment advisory, targeted marketing in retail, auto grading of constructed responses in academics, and innumerable others. While there is danger in the existence of traditional jobs, it is bound to create immense opportunities in jobs that involve aspects of AI.

As per an estimate by McKinsey, the number of new technology jobs will be between 20 million and 50 million by 2030 [1]. The report further stresses the importance of AI related roles such as AI specialists, data scientists, ML experts, and Robotics engineers which will be at the forefront of the next phase of AI innovation.

In 2012, a Harvard business review named "Data scientist" as the sexiest job of the 21st century. What a futuristic statement. However, the biggest hurdle in filling the vacancies in AI is the skill gap. Investment in skilling the workforce on AI, adopting AI in curriculum, and implementing continuous learning as practice will ensure that the jobs are filled with right skills.

This report provides a comprehensive overview of AI job scenarios across various domains as well as in generic data science, highlighting its increasing relevance in the modern business environment.

1.2 Introduction

1.2.1 Trend in automation

Automation was the buzzword in the 1980s. Since then, it has been expanding its wings to capture various aspects of industry. The automation landscape is rapidly expanding and evolving owing to technological development and changing business needs.

It started with automating mundane tasks which did not add any value to human intelligence. These tasks were repetitive and standard. Hence it was easier to automate them with the least application of technology. The scope kept increasing and now automation is being applied to even those areas where human thinking is required.

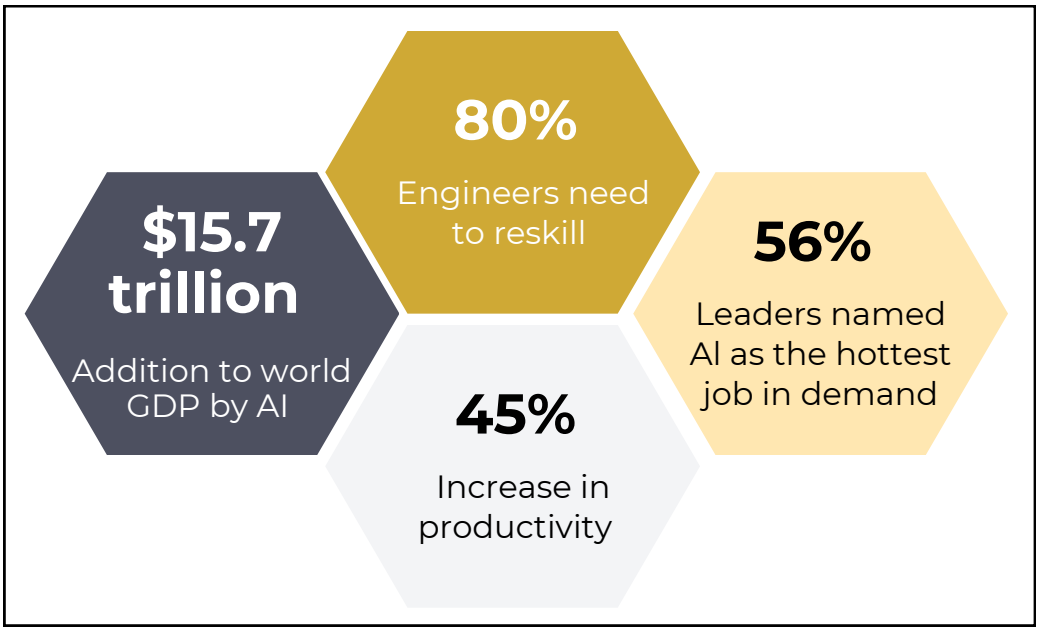
To take an example of IT industry, first manual testing was automated. Then it expanded the scope to automate even testing which was largely automatic with little human intervention. Now, in 2024, we have co-pilot which automates coding. We have co-bots which is a fine example of human robot interaction. A large number of auto plants across the world are fully automated without any human being in the entire factory.

1.2.2. Global trend in AI employment

There have been gradual shift in the employment scenarios across the world in terms of new skills required. These skills are all AI related. The reason is increasing integration of AI in operational processes and strategic initiatives.

Sectors across the business spectrum are seeking professionals in artificial intelligence which includes machine learning, data science, GenAI, neural language processing, robotics, and deep learning. The importance of AI in today's economy is vital. Companies not scaling up to AI are going to lose to the ones adopting AI technology in full measures. Similarly, professionals who upgrade their skills in AI are going to be more relevant in today's job scenario than the ones refusing to change. There is surge in demand for AI professionals and this is only going to increase in the coming days.

According to Gartner [2], through 2027, the GenAI will create new roles for engineers for which 80% of the existing engineers will have to reskill themselves. It did a survey among 300 US and UK based companies in the 4th quarter of 2023 on what jobs are going to be high in demand and 56% of leaders named AI/ML engineering jobs as the most in demand. This is when AI is still in its nascent stage. Imagine the requirements when the uses of AI rise and expand into multiple industries and various aspects of business and life.



As per a study by PWC [3], AI can add $15.7 trillion in global GDP by 2030. This is almost equivalent to China's GDP. PWC predicts that the productivity of people can improve by 45% by 2030 by using AI.

These figures point out the boom that is happening in the area of artificial intelligence and machine learning. This is the beginning of a new era in technology.

1.3 AI Job Scenario

1.3.1 AI Jobs: Brief introduction to AI evolution

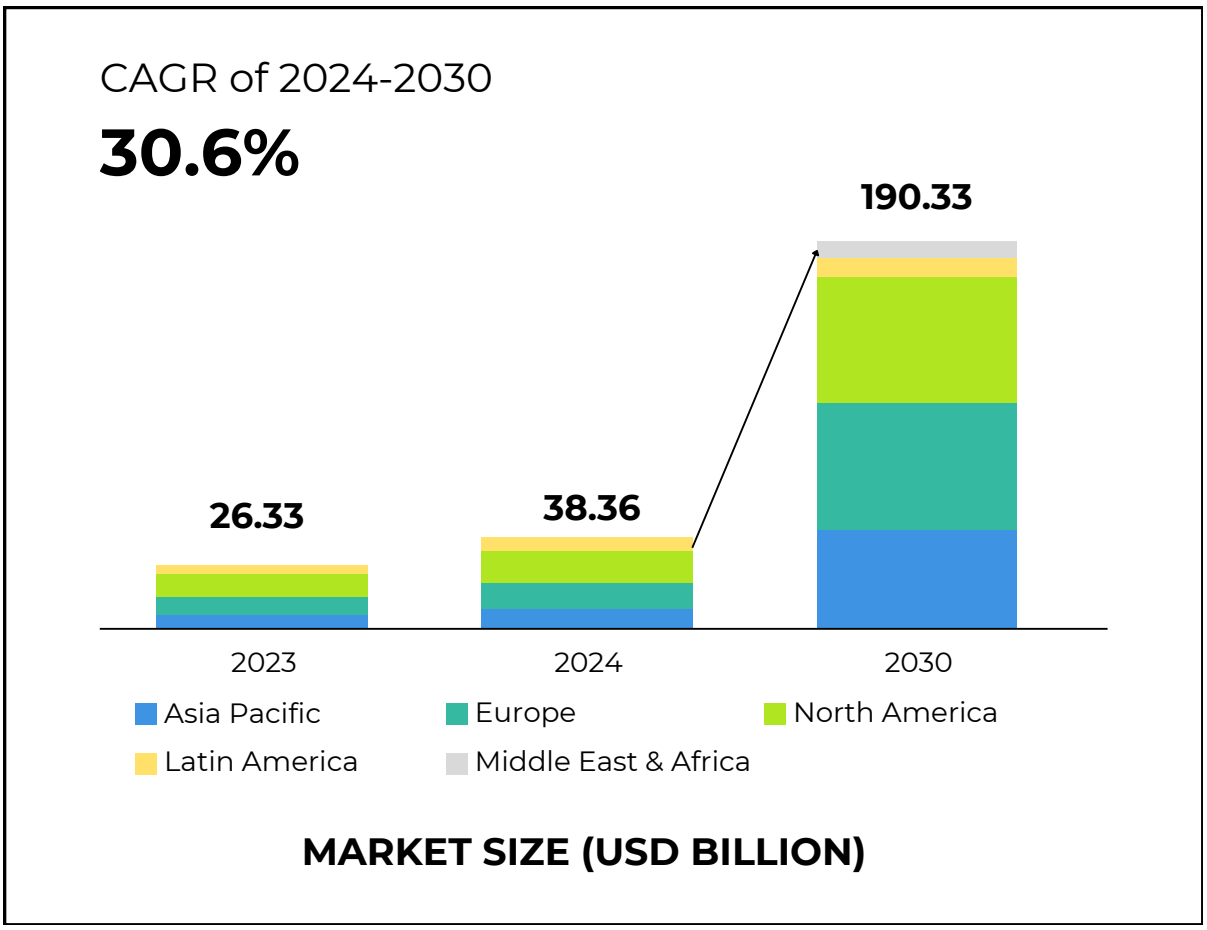
AI in business began in the 1950s with theoretical work on machine learning and problem-solving. By the 1980s, expert systems gained traction in industries like healthcare and finance for decision-making, although their capabilities were limited by computing power. The 2000s marked a turning point with advancements in computing and the explosion of big data, enabling machine learning to tackle real-world business problems such as fraud detection, customer recommendations, diseases diagnostic, and many more. Today, AI is a cornerstone of industries, from retail to healthcare, with companies driving innovation and recognizing its potential to enhance operational efficiency and gain a competitive edge.

1.3.2 AI Job Roles – Verticals

While AI is going to impact all sectors, its degree of impact will not be uniform. A few sectors are taking advantage of AI and will continue to find new use cases while others will take some time to discover the right use cases. The technology sector works in various domains and hence it is going to be the biggest employment generator in AI. Other sectors such as financial, healthcare, logistics, retail, and supply chain are going to add significant jobs in the AI space.

AI in Finance

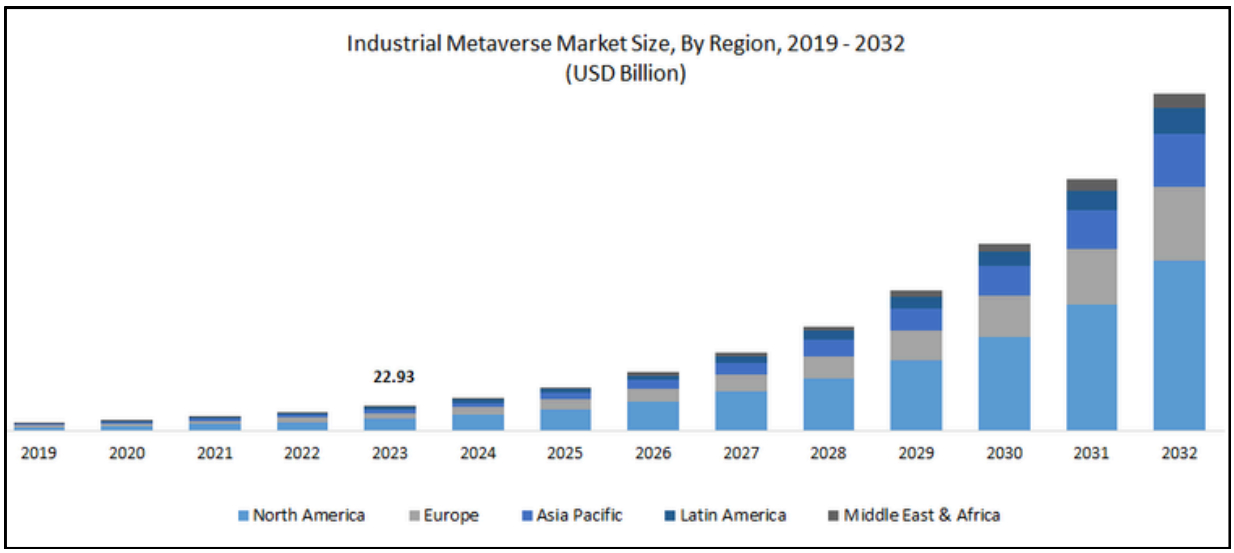
Financial industry has been at the forefront of AI adoption because of the sheer data it generates. Moreover, the importance of integrity and security compelled the industry to adopt AI in large measures. Here are some of the statistics of AI in finance.



- The global market for AI in finance has already reached US$ 38.36 Billion in 2024. It is expected to grow at CAGR of 30.6% till 2030 reaching to $190.33 billion [4].
- The typical use cases in financial industry are Risk management, Portfolio optimization, Fraud detection (transactions/payments), Algorithmic trading, Document management, and Customer experience [5].
- The proportion of financial companies having full scale AI deployment is 49%.

AI in Healthcare

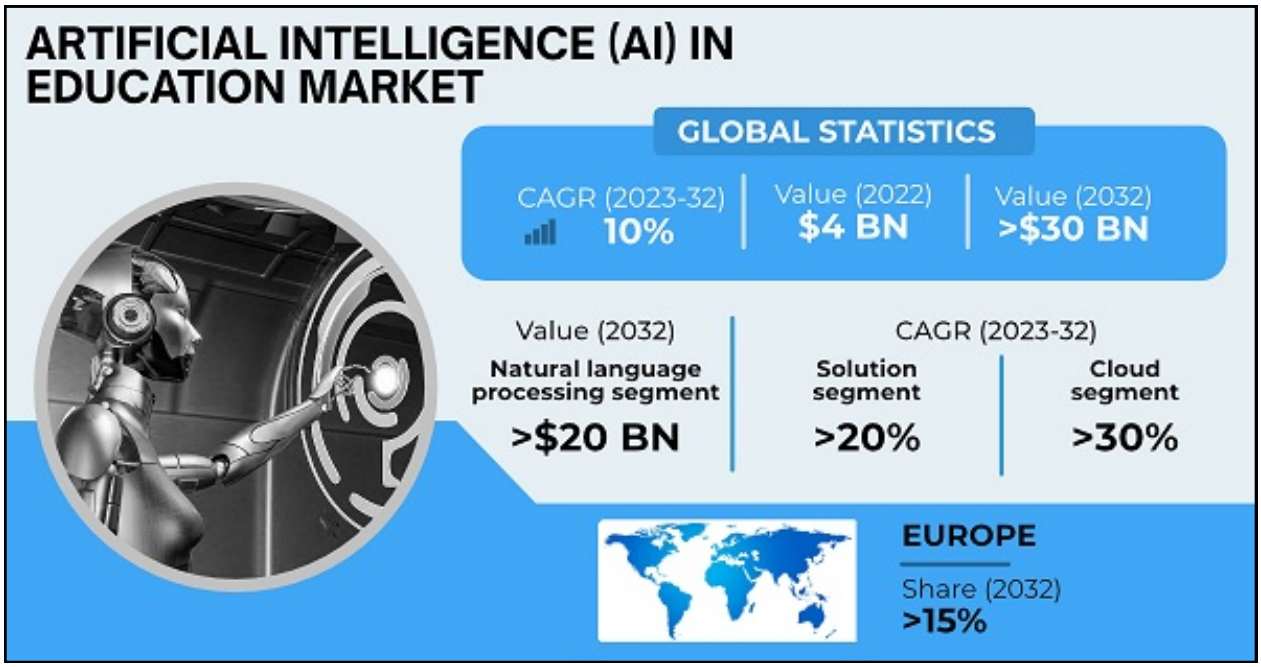
Healthcare is an ideal case for the use of AI. Its uses will further the cause of research, help in discovering new molecules, and carry out effective diagnosis and prescription among other things. Here are some of the statistics of AI in healthcare.



- In 2023, the AI in healthcare market was estimated at $22.45 billion and is expected to grow at CAGR of 36.4% till 2030 [6].
- As per Polaris market research data, the AI in healthcare is projected to be $431.05 billion by 2032 [6].
- Some of the use cases are discovery of medicine, diagnostic science, virus detection and handling, personalized treatment, and public healthcare among other things.

AI in Education

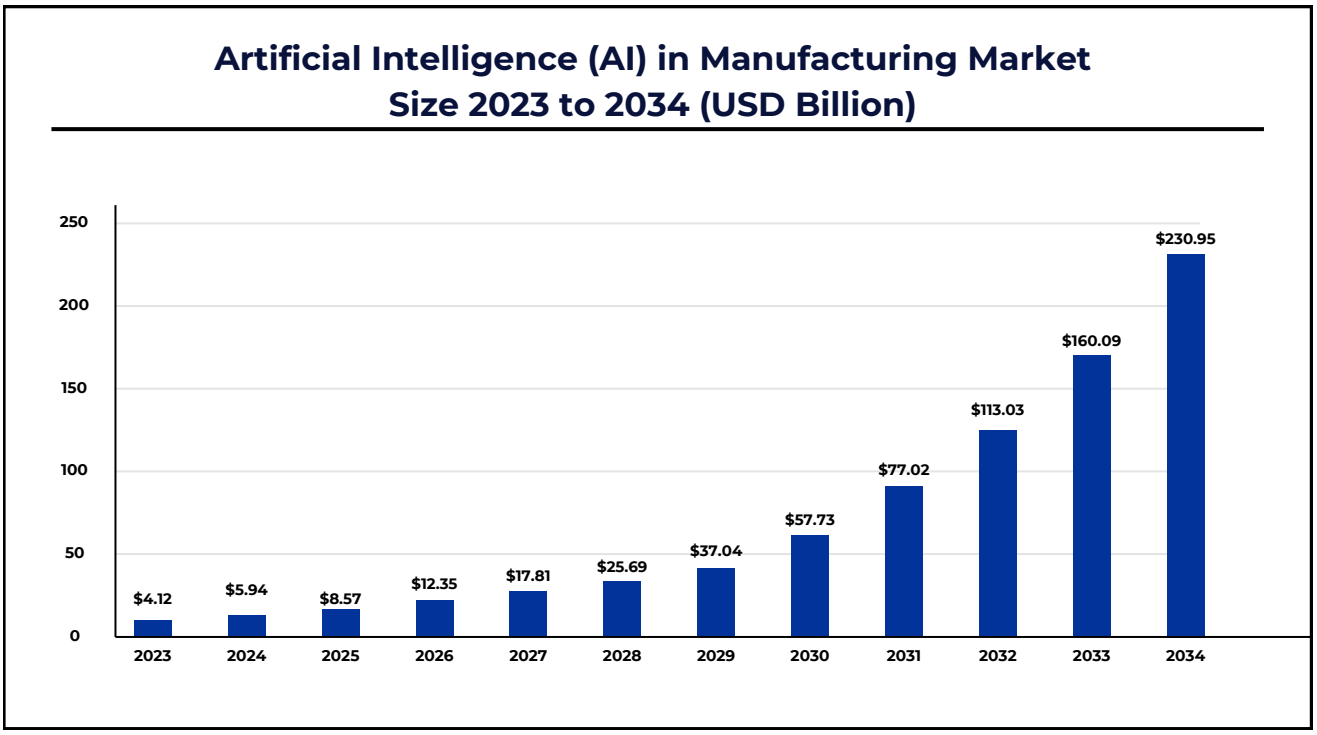
Education is an area where AI can make a big difference in learning and teaching. Its uses experienced immense adoption due to pandemic.



- About 20% to 40% of teachers' work can be automated by AI in coming years leaving teachers do what is best suited for them – Teaching.
- In 2021, the AI in education was over $2 billion and is expected to grow at CAGR of 45% till 2030 [7].
- The use cases are adaptive assessment, personalized learning path, dynamic mind map, item response theory implementation, self-faced learning, social learning, dynamic labs and experiments, and Co-learning among other things.

AI in Manufacturing / industrial processing

Manufacturing has gone through immense automation starting with assembly line, time & motion study to complete robotized plants. Now the focus is changing to process efficiency in manufacturing. AI has expedited the 4th industrial revolution in manufacturing to an inflection point where it must innovate and accelerate [8].



- The AI in manufacturing market size is $5.94 billion in 2024 and is estimated to reach $230.95 billion in 2034 cloaking CAGR of 44.20% [9].
- The use cases are chatbots for user interaction, digital twins, supply chain optimization, predictive maintenance, AI powered design, and data driven quality control among others.

AI in Retail

Retail encompasses our lives like no other domain. This industry is known to be an ideal candidate for AI. The sheer volume and velocity of data makes it a grand playground for AI models.

- The AI in retail market is currently at $11.6 billion in 2024 and is expected to grow to $40.2 billion by 2030 compounding at a CAGR of 23% [10].
- McKinsey estimates the value unlocking by retail because of AI is between $240 billion to $390 billion in by 2030 [11].
- The use cases in retail are association mining, targeted marketing, supply chain and logistics management, user preferences tracking, recommendation system and upselling and cross-selling among other things.

AI in Space Exploration

Space is the new frontier in AI technology. It is playing an increasing role in space exploration, especially navigating space smoothly.

As per Bureau of Labor Statistics (BLS) USA, the overall employment in space exploration (especially physicists and astronomers) is expected to grow 7% from 2023 to 2033 [12].

AI in Energy

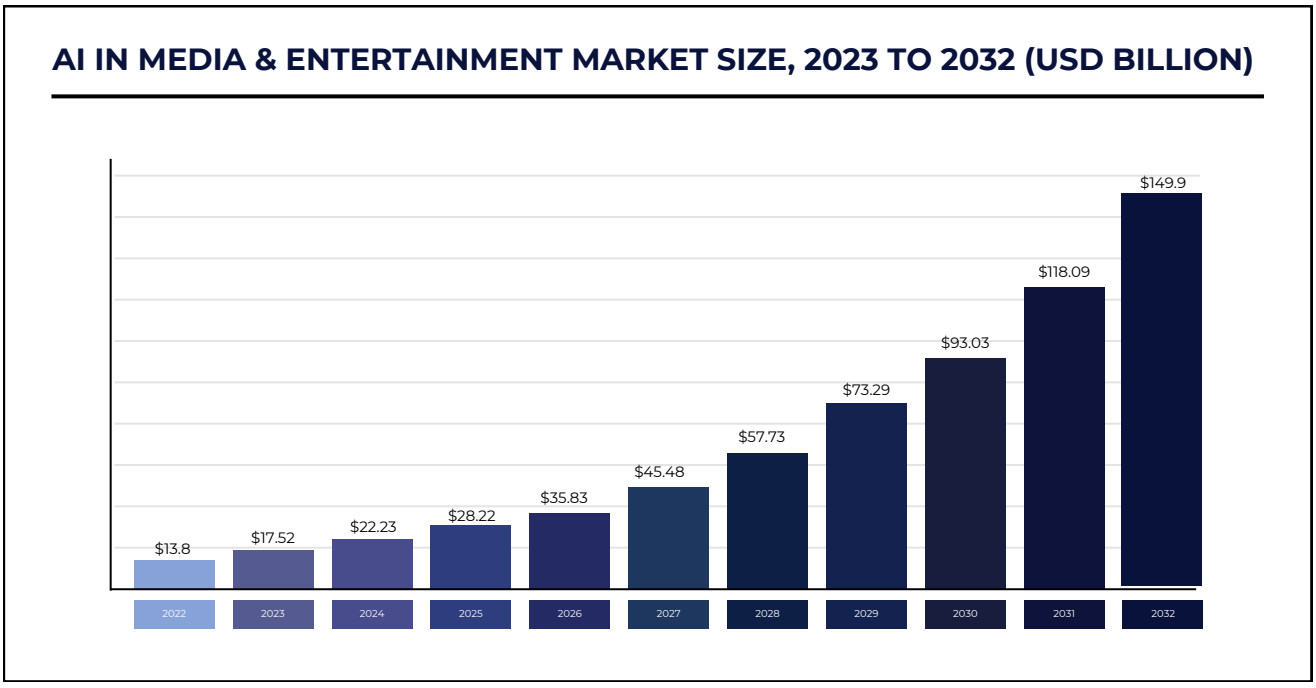
Energy is going to see transformation in coming years because of increasing awareness of pollution caused by fossil fuels. The emphasis is on using green energy, solar, hydrogen, and other cleaner energy has forced companies and Governments to innovate.

- As per an estimate by McKinsey, an additional $390 billion to $550 billion can be created in the years to come. This includes energy, chemical, materials, and agriculture sector [13].
- Each year, 85 TW to 134 TW is expected to be consumed by AI in energy by 2027 [13].
- The global AI market for energy is close to $7.78 billion in 2024.

AI in Entertainment

Entertainment is another area where the potential is limitless. AI is transforming the media and entertainment industry by boosting creativity in content, providing personalized entertainment and experience, and driving decisions through data driven insights.

As the following chart shows, the market size of AI in entertainment is expected to reach $149.9 billion in 2032 [14].



1.3.3 AI Roles and Salaries

The growth in AI has resulted in many new roles for professionals. The salaries have also seen a premium. Here are some statistics.

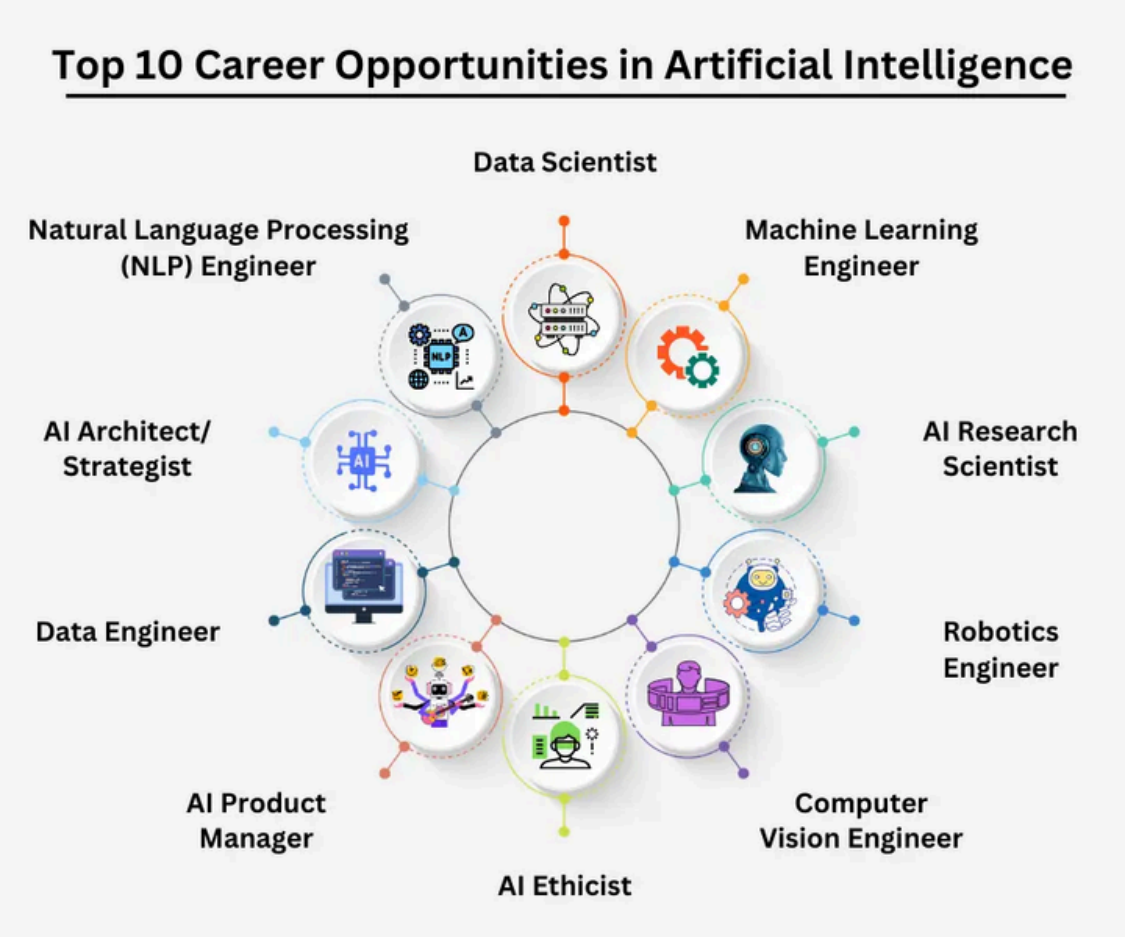
- The market of AI is expected to explode to $407 billion by 2027.
- AI will add an extra 21% value to USA GDP by 2030.
- As per the World Economic Forum, AI is expected to create a net 58 million jobs by 2025. It will displace 75 million jobs but would create 133 million roles [15].
- AI engineers earn at least 20% higher salary than a normal software engineer and this trend will continue.

AI Roles

AI has evolved significantly in the last 10 years. It has now integrated with businesses and sectors such as finance, healthcare, manufacturing, education, and many more. The integration of AI has also changed the roles of employees from traditional to data oriented. Some of the most important roles have been the following:

- ML Engineers
- Data scientist
- AI research scientist
- AI ethics consultant
- Robotics engineer
- AI product manager
- AI solution architect
- AI QA manager
- AI research scientist
- AI prompt engineer

These roles require employees to be conversant in AIML technologies, algorithms, models, and use cases of different industries.



AI Salaries in 2023-24 [16]

- AI Engineer - $120,298
- AI researcher - $110,094
- ML Engineer - $154,358
- Robotics engineer - $101,616
- Software engineer - $109,901
- Data scientist - $117,665
- AI prompt engineer – $115,000
- Computer scientist – $103,719
- Cloud engineer - $123,667
- Computer vision engineer – $124,373
- Big data engineer – $133,279

These salaries are average, and they may vary based on regions, expertise, requirements and many factors. These salaries are for professionals with experience of 1-5 years. It increases as per the number of years of experience and can touch up to $250,000 [17]

1.3.4 AI Leadership roles

The growth of AI brings new challenges to organizations. These challenges require a new paradigm to respond to. Integration of AI with the existing organization is a big challenge requiring strategic thinking, effective execution, and clear communication. Leaders need vision, ethics, and agility to tide over the challenges posed by AI Integration.

Strategic vision – Strategic vision is a critical skill for any leader to succeed in integrating AI into the current operations and future goals. A forward-thinking mindset will equip leaders to plan for long term objectives.

Technical expertise – This is an important skill that leaders must have to understand the possibilities that AI can bring to the organization. Knowledge about machine learning models, data analytics methods & tools, and AI technologies is vital for communication with technical team working on high impact AI projects and making informed decisions.

Ethical considerations – Leaders must ensure that fairness, openness, and accountability are built into the organizational culture to better facilitate AI integration. Leaders should consider ethical implications of their decision and act accordingly.

Some of the recent salary figures of leadership roles are as follows:

- Chief AI officer – $450,000
- Head of AIML – $380,000
- AI strategy officer – $320,000

The leadership role in AI usually pays above $250,000 depending on the organization and scope of work & responsibility. The following leadership roles were prominent in 2023.

- Chief AI officer
- Chief AI strategy officer
- Chief AI transformation officer
- Chief digital officer
- Chief transformation officer
- Chief data officer

1.4 AI Skills in demand

1.4.1 AI skills

The technological landscape is evolving continuously with AI leading the change. It is leading to increased productivity, rapid innovation, increased efficiency, and new ways to think about the possibilities. While change is happening rapidly, companies are facing shortage of manpower skilled in AI technology. Here are some of the skills that are in demand.

- Exploratory data analysis: It involves studying data and their characteristics to summarize key findings using statistics and visual charts.
- Machine learning algorithms and models: This involves building machine learning models and deploying them for business use.
- Data engineering & security: Data engineering & security involve collection, validation, storage, access control, authentication, security, and integration.
- Business analytics: Business analytics is about analyzing the data for specific business use cases and extracting insights.
- Big data analytics & data mining: This involves analyzing big amounts of data, extracting meaningful data for specific business objectives.
- Statistics and mathematics: AI works on mathematics and statistics. Skills in statistical concepts and mathematical branches are essential in making sense of data manipulations and operations.
- Programming language expertise: Proficiency in R and Python are necessary to build models in AI. Knowledge about libraries, pre-built functions, APIs, and platforms are skills needed to be able to build complex AI models.
- Neural network: Neural networks work on the architecture of the human brain. For AI to truly mimic human intelligence, neural network is the right tool.
- Signal processing techniques: Signal processing includes analysis, modification, and synthetization of signals such as video, audio, images, and scientific calculations.
- Generative AI: Generative Artificial Intelligence (GenAI) is a subset of AI that can create content and ideas the same way humans do. It uses machine learning models such as GAN (Generative adversarial network)
- Prompt engineering: Prompt engineering is about designing and refining prompts that is used by GenAI to deliver the right response.

1.4.2 AI Tech stack

Technology is central to AI development. Here are various technical stacks that fuel AI models.

Programing languages

- **Python**: Python is an interpreted programming language which is used widely for AI model development. It offers a rich set of libraries to handle large data, work with statistical, mathematical and scientific functions, produce meaningful charts, and easy integration with other systems.
- **R:** R is a programing language that supports statistical computing and charts. It is used to develop various models of machine learning as well as scientific computing.
- **PERL:** it is an interpreted dynamic programming language known for its features.

Framework

- **TensorFlow:** Based on tensors (multidimensional arrays), it is a machine learning framework that provide APIs, dashboards, platforms, and pre-built models to enable AI and ML development.
- **PyTorch:** PyTorch is based on torch library. PyTorch is used extensively for computer vision, NLP, and research & development of various AI models.
- **Scikit-learn (sklearn):** It is a library for various functions used in machine learning models. Scikit-learn provides an effective Launchpad for AI model development.

Cloud based platform

- **AWS (Amazon web services):** It is a cloud computing platform offering various services. It offers a rich variety of tools and technologies for AI application development and maintenance.
- **GCP (Google cloud platform):** GCP is a cloud computing platform offered by Google. It has a variety of enabling services for AI application development.

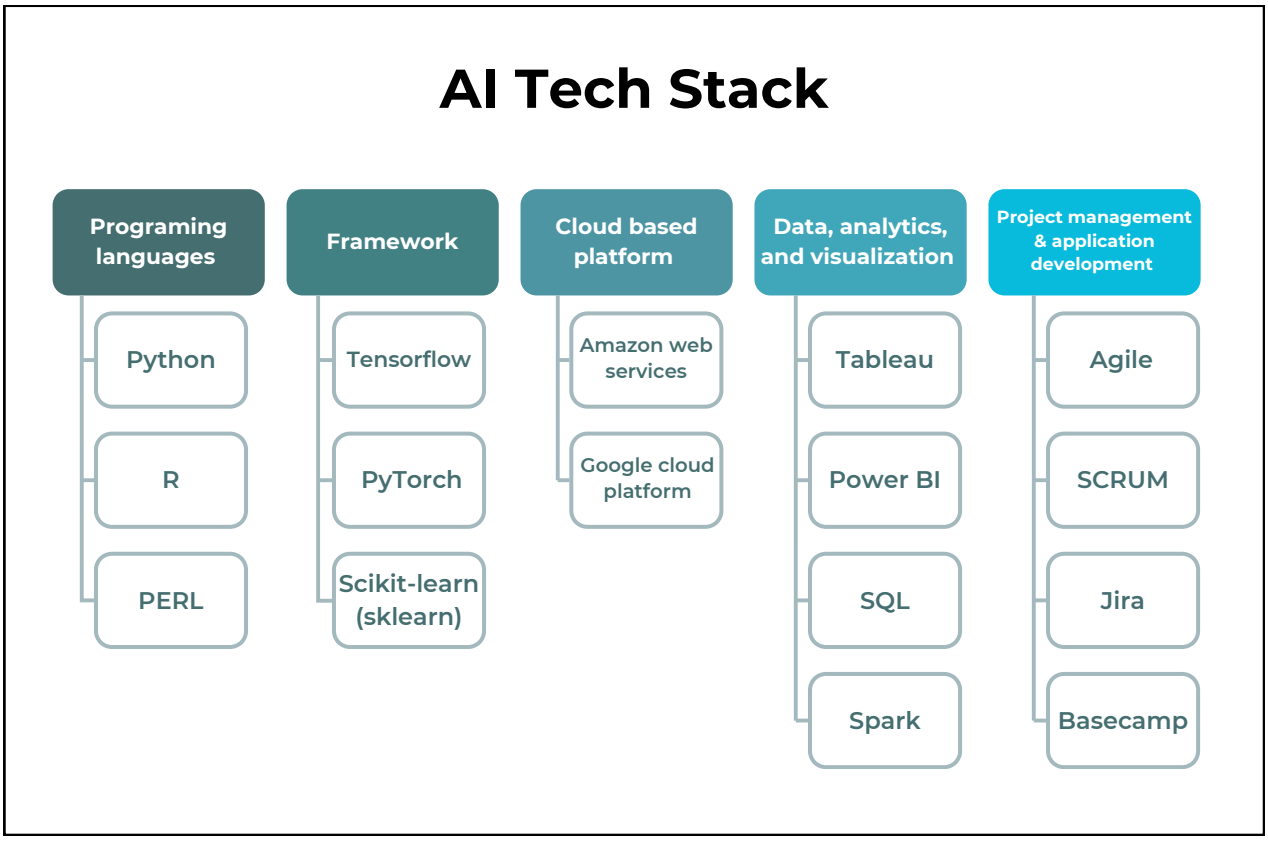
Data, analytics, and visualization

- **Tableau:** It is a powerful data visualization tool, rich in features and graphics, used for business intelligence.
- **Power BI:** Power BI is technologically advanced analytics as well as visualization tool to display data in a meaningful way. It provides an easy way to create impactful dashboards and insightful reports.

- **SQL:** Structured query language has been the backbone of data interaction since long. It is extremely rich in application and offers learners a logical, almost English language like syntax.
- **Spark:** It is an open source, distributed computing system used for big data processing, analytics and manipulation.

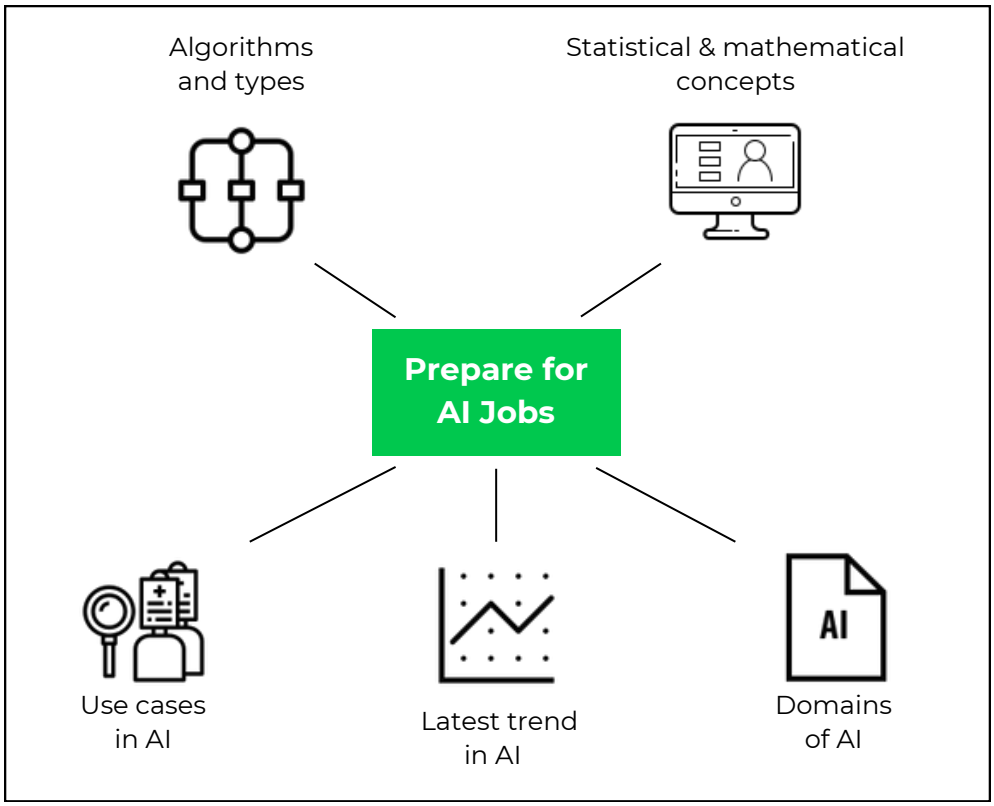
Project management & application development

- **Agile:** It is an iterative application development methodology. Agile has developed a complete project management process for application development where demand and solution evolve through collaboration among different teams working for common objectives.
- **SCRUM:** It facilitates agile development. SCRUM is an agile framework for software and application development.
- **Jira:** Jira is an issue tracking product. It facilitates bug tracking and project management using agile methodology.
- **Basecamp:** It is a web-based project management tool.



1.5 Preparing for AI Jobs

While AI offers immense opportunities for businesses and professionals, the glaring skill gap has turned out to be a bottleneck. Most businesses cite lack of skills as the cause for their lack of or slow pace of AI integration in the organization.



Professionals need to step up their skills if they want to prepare for the impending AI revolution in industry. To effectively prepare for AI Jobs, professionals and fresh graduates should:

- Understand the machine learning algorithms and types
- Get trained in statistical concepts and mathematical applications
- Generate insight about the use cases of AI in various domains
- Work on multiple streams
- Keep updated with the latest trend in AI development

1.6 Why AI CERTs

The integration of artificial intelligence (AI) with existing businesses is reshaping industries with major changes in business models, operational processes, and support functions. These changes are what lies at the foundation of AI CERTs offerings.
AI Certs offers role-based certifications in blockchain and AI. We understand the need for a smarter workforce that can adapt to change and drive growth. The certification programs serve a broad range of technical and professional series to build the required competencies for AI based development. These qualifications include:

Business professionals: They bridge the gap between technical implementation and business objectives. They understand the AI's potential influence on the enterprise and facilitate its effective adoption.

IT professionals: They possess the know-how of technical implementation of AI technologies in the enterprises. Their competence in design, development, deployment, and support is crucial to the success of AI integration to the existing businesses.

By showcasing your expertise with our certificates, you convey to your potential employer that you are ready to hit the ground running and make a significant impact on the rapidly evolving field of Artificial Intelligence.

1.7 Conclusion

While the advent of AI is making many jobs redundant, it is also creating another set of jobs which is much higher in number. There is a net addition of jobs, and this will continue in the foreseeable future. The labor market is evolving with rearrangement and replacement of opportunities for professionals.

To thrive in this dynamic environment, professionals need to acquire the latest knowledge and skills through certifications that are customized to these evolving trends. Analytics, cloud computing, and Artificial Intelligence are the most sought-after skills across industries. These certifications will help you showcase your knowledge, demonstrate your skills, and communicate effectively in job interviews.

A certification by well-known authority in AI will help advance careers of aspirants and professionals greatly. It builds a strong theoretical foundation, equips learners with practical application, and shows the path forward after the training.

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