

# A Study on an Impact of Artificial Intelligence in 2025

<sup>i</sup> Mr. Faheemul Hasan Belagali  
*Student of B. Com 5<sup>th</sup> Semester*

## INTRODUCTION

Artificial intelligence (AI) refers to the ability of a computer or machine to mimic human-like cognitive functions such as learning, problem-solving, and decision-making. Essentially, it's about creating systems that can perform tasks that typically require human intelligence. AI systems can perceive their environment, process information, and respond in ways that are often adaptive and goal-oriented.

AI skills are required across various industries, from healthcare and finance to retail and technology. These skills are essential for building intelligent systems that can analyze data, automate processes, and generate insights.

Key areas of AI's growing importance in 2025:

### Business:

AI is transforming competitive landscapes across industries, with companies leveraging it for marketing, supply chain management, financial operations, and customer service. Generative AI is also playing a key role in automating tasks like code generation and product prototyping, while AI-powered agents are reshaping software platforms and even providing financial advice.

### Healthcare:

AI is accelerating diagnostics, personalizing treatments, and assisting in surgeries and patient care, leading to more efficient and effective healthcare delivery. The potential for AI to revolutionize healthcare is immense, with advancements in medical imaging, drug discovery, and personalized medicine.

### Science and Research:

AI is becoming an indispensable tool for scientific discovery, with the ability to analyze massive datasets, accelerate research timelines, and even potentially simulate the work of scientists. For example, AI is

being used to discover new materials, analyze complex data sets, and accelerate drug development.

### Everyday Life:

AI is becoming more seamlessly integrated into daily routines, with AI-powered voice assistants, personalized recommendations, and automated tasks simplifying our lives. Conversational AI is also enabling more natural and intuitive interactions with technology, enhancing customer service and other applications.

### Addressing Global Challenges:

AI is being leveraged to tackle some of the world's most pressing issues, such as the climate crisis and healthcare access, by providing new insights and solutions. AI's ability to analyze vast amounts of data and identify patterns can be crucial in addressing complex problems.

## IN-DEMAND AI PROFESSIONS IN INDIA (2025)

### Machine Learning Engineer:

Focuses on building and deploying machine learning models, requiring expertise in algorithms, data structures, and various machine learning frameworks.

### Data Scientist:

Analyzes large datasets to extract meaningful insights, build predictive models, and provide data-driven recommendations.

**AI Research Scientist:** Conducts research on cutting-edge AI technologies, develops new algorithms, and explores the theoretical foundations of AI.

### AI Product Manager:

Leads the development and strategy of AI-powered products, requiring a blend of technical knowledge, business acumen, and product management skills.

### Robotics Engineer:

Designs, develops, and tests robots and robotic systems, often incorporating AI for tasks like navigation, perception, and manipulation.

**Natural Language Processing (NLP) Engineer:**  
Develops AI systems that can understand, interpret, and generate human language.

**AI Ethicist:**  
Focuses on the ethical implications of AI, ensuring that AI systems are developed and deployed responsibly and fairly.

**Computer Vision Engineer:**  
Develops AI systems that can "see" and interpret images and videos, with applications in areas like autonomous vehicles and facial recognition.

**AI Specialist/Consultant:**  
Provides expert advice and guidance to organizations on implementing AI solutions, requiring a broad understanding of AI technologies and their applications.

**Data Engineer:**  
Focuses on building and managing the infrastructure required to collect, store, and process large amounts of data, which is crucial for AI development

#### TECHNICAL SKILLS REQUIRED IN AI :-

**Programming Languages:** -Proficiency in languages like Python, R, Java, and C++ is crucial for building and implementing AI models. Python is particularly popular due to its extensive libraries and frameworks (like TensorFlow and PyTorch) specifically designed for AI.

**Data Science and Analysis:** AI relies heavily on data, so skills in data handling, cleaning, and analysis are essential. This includes understanding data modeling, warehousing, and processing, with familiarity with big data concepts being a plus.

**Machine Learning and Deep Learning:** Understanding various machine learning algorithms, including deep learning techniques and neural networks, is fundamental for developing AI systems.

**Mathematics and Statistics:** A strong foundation in mathematics (linear algebra, calculus) and statistics is crucial for understanding and developing AI algorithms.

**AI and ML Frameworks:** Familiarity with frameworks like TensorFlow, PyTorch, and scikit-learn is essential for building and training AI models.

**Natural Language Processing (NLP):** For tasks involving language understanding and generation, NLP skills are vital.

**AI Deployment and DevOps:** Understanding how to deploy and manage AI models in real-world scenarios is becoming increasingly important.

**AI Security:** Knowledge of AI security threats and mitigation strategies is necessary to protect AI systems

#### 10 HIGHLY RECOMMENDED AI COURSES FOR BEGINNERS IN INDIA

1. **AI for Everyone (Coursera):** This course, taught by Andrew Ng, provides a high-level overview of AI concepts without requiring extensive technical background. It's a great starting point for anyone curious about AI and its potential applications.

2. **Introduction to Artificial Intelligence (Coursera):** Offered by IBM, this course covers fundamental AI concepts, including machine learning, deep learning, and neural networks.

3. **IBM Applied AI Professional Certificate (Coursera):** This certificate program provides a more in-depth understanding of applied AI, including practical skills and real-world applications.

4. **AI Programming with Python Nanodegree (Udacity):** This nanodegree program focuses on building AI applications using Python, covering topics like machine learning, deep learning, and natural language processing.

5. **Google AI Essentials (offered on edX):** This program provides a comprehensive introduction to AI,

covering the basics of machine learning, deep learning, and computer vision.

6. Machine Learning Specialization (Coursera): Taught by Andrew Ng, this specialization is a more advanced option, focusing on the core concepts and techniques of machine learning.

7. Deep Learning Specialization (Coursera):- This specialization dives deeper into deep learning, a subfield of AI that focuses on neural networks.

8. Microsoft AI Engineer Program (Simplilearn): This program is designed to equip individuals with the skills needed to become Microsoft AI Engineers, covering Azure AI services and other related technologies.

9. Professional Certificate in AI and Machine Learning (Simplilearn): This certificate program provides a comprehensive overview of AI and machine learning, including both theoretical concepts and practical applications.

10. IIT Madras's Artificial Intelligence Search Methods for Problem Solving (NPTEL): This course, offered through NPTEL, focuses on search methods in AI, which is a fundamental concept in problem-solving using AI techniques.

#### 08 AI Certification Courses that will boost your Resume

1. Deep Learning Specialization (Coursera):- Delve into the fundamentals of neural networks, deep learning, and their practical applications with the guidance of renowned AI expert Andrew Ng. This Coursera certification is perfect for those eager to grasp the inner workings of AI algorithms, offering a solid foundation for professionals aiming to contribute to cutting-edge AI projects.

2. AI for Everyone (Coursera): Designed by Andrew Ng on Coursera, the AI for Everyone course caters to individuals without a technical background. Gain valuable insights into the wide-reaching impacts of AI

across various industries, making it a fitting choice for business professionals, managers, and decision-makers keen on harnessing AI in their respective fields.

3. TensorFlow Developer Certificate (Google): Dive into mastering TensorFlow, a powerful open-source machine learning library, through the TensorFlow Developer Certificate offered by Google. Validate your expertise in building, training, and deploying machine learning models with TensorFlow, setting a solid groundwork for professionals aiming to specialize in machine learning development.

4. Professional Certificate in Machine Learning and Artificial Intelligence (edX – Microsoft): Microsoft's Professional Certificate in Machine Learning and Artificial Intelligence, available on edX, comprehensively covers essential machine learning concepts. From supervised and unsupervised learning to deep learning and reinforcement learning, this program is ideal for individuals seeking proficiency in both traditional and advanced AI techniques.

5. Natural Language Processing Specialization (Coursera): Focus on Natural Language Processing (NLP) with this specialization offered by the National Research University Higher School of Economics on Coursera. Gain expertise in language-related AI applications like chatbots, sentiment analysis, and language translation, essential for professionals aiming to specialize in this field.

6. AI Engineer Nanodegree (Udacity): Get hands-on experience across various AI domains, including computer vision, natural language processing, and reinforcement learning, with Udacity's AI Engineer Nanodegree program. Through real-world projects, participants build a tangible portfolio, showcasing their skills effectively to potential employers.

7. Artificial Intelligence: Business Strategies and Applications (Berkeley ExecEd – UC Berkeley): Tailored for leadership and strategic roles, UC Berkeley's Berkeley ExecEd offers insights into the business implications of AI. Covering AI adoption strategies and ethical considerations, this certification is invaluable for executives navigating AI integration within their organisations.

8. AI Product Manager Nanodegree (Udacity): Designed for aspiring AI product managers, Udacity's AI Product Manager Nanodegree equips individuals with skills in product lifecycle management, from ideation to deployment. This certification bridges the gap between technical and non-technical stakeholders, preparing professionals for roles in AI product development and management.

#### TOP 5 TRAINING PROGRAMS OF AI IN INDIA

1. DeepLearning.AI Specialization: This specialization, often found on Coursera, offers foundational courses in AI, machine learning, and deep learning, and is taught by Andrew Ng, a prominent figure in the field.

2. UpGrad × IIIT-B M.Sc.: This program provides a Master of Science degree in AI and Machine Learning from IIIT Bangalore, a highly regarded institution, with a focus on practical applications and industry relevance.

3. IIT-Hyderabad PGP: Indian Institute of Technology (IIT) Hyderabad offers a Post Graduate Program in AI and Machine Learning, providing a strong foundation in theoretical concepts and hands-on experience.

4. Great Learning Advanced Programs: Great Learning offers a variety of advanced AI and ML programs, including specialized tracks in Generative AI, NLP, and Agentic AI, often with mentorship from industry experts.

5. Simplilearn × Purdue: This program, in collaboration with Purdue University, provides a professional certificate in AI and ML, covering various aspects of the field with a strong emphasis on practical skills

#### CONCLUSION

Artificial Intelligence (AI) is a powerful technology with transformative potential, impacting various aspects of life from healthcare and finance to education and research. While it offers immense opportunities for innovation and problem-solving, it also presents challenges related to ethics, job displacement, and the need for responsible development and regulation

India to need 1 million AI professionals by 2026, says report amid tech education overhaul - Times of India, People Need to Update themselves with AI or they won't be able to compete in this Rapidly Changing World.

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<sup>i</sup> B.Com 5<sup>th</sup> Sem. Student, K.L.E. Society's J G College of Commerce, Hubballi.