

# Career Mapping Report

## i) Introduction to AI

AI is a rapidly evolving field of computer science that focuses on creating machines capable of performing tasks that traditionally require human intelligence. These tasks include learning, problem solving, pattern recognition, perception & language understanding. From recommendation systems to self-driven cars. AI has become an essential component of technological innovation. As industries increasingly adopt automation & data-driven decision making, AI continues to create transformative changes across the world. This report explores core technologies powering AI, real-world applications in India & globally, & the career opportunities emerging in this dynamic domain.

## 2) Key Technologies in AI

### i) Machine Learning (ML)

ML enables to learn patterns from data & improve performance without explicit programming. Common ML techniques include supervised learning, unsupervised learning & reinforcement learning.

### iii) Deep Learning

A subfield of ML that uses artificial neural networks - especially useful for complex tasks such as image recognition, speech synthesis & autonomous navigation

### iii) Natural Language Processing (NLP)

NLP enables machines to understand, interpret & generate human language. It powers chatbots, translation system, sentiment analysis & virtual assistants.

### iv) Computer Vision

CV allows machines to process & interpret visual information such as images & videos. It's used in medical imaging, facial recognition, quality inspection & robotics.

### v) AI platforms & tools

- TensorFlow, pytorch

- OpenCV

- Hugging face transformers

### iii) Real World Use cases of AI

- Indian Example : AI in Healthcare at Apollo Hospitals

Apollo Hospitals in India uses AI driven systems for early disease detection, especially in radiology & oncology. AI systems analyze scans to identify cancer risks, cardiac issues & other medical issues faster with higher acc. This reduces diagnostic delays & support doctors in making data backed decisions. It demonstrates how AI is advancing India's healthcare.

- Global Example : Tesla Autopilot

Tesla Autopilot systems use AI to power autonomous vehicle. Neural networks process the camera feed in real time, enabling lane detection, obstacle recognition, breaking & navigation. Tesla's AI system continuously learns from millions of kilometers driven across the world.

### iv) Career Opportunities

- Major Job Roles

- a) AI Engineer
- b) ML Engineer
- c) Data Scientist

- Required Skills

- a) Strong foundation in Python
- b) Knowledge in statistics, probability.
- c) Experience in ML frameworks
- d) Understanding of Data Processing
- e) Problem Solving & Critical Thinking.

- Industry Demand

AI powered roles are amongst the most in-demand jobs globally. India's AI industry is rapidly expanding, supported by government initiatives & tech giants.

## 反思

AI aligns strongly with both my academic interests & long-time career goals. As someone passionate about technology, I am fascinated by how AI enables machines to learn, make decisions & solve complex problems. The field offers a blend of creativity & logic, allowing me to work on real-world challenges such as automation, healthcare improvement, smart devices. AI appeals to me because it is shaping the future.

I already possess some foundational skills that support my interest in AI, such as basic programming knowledge, logical reasoning & solving abilities. I am comfortable working with computers & enjoy experimenting with technologies, which gives me a good starting point for learning AI concepts. Additionally, I have a curiousity-driven mindset that helps me explore new tools.

To build a career in this field in this field, I aim to develop stronger skills in Python, Maths & ML algorithms. I also want to gain hands-on experience with tools like Tensorflow & Pytorch & work on small projects to apply what I learn.