



COMPUTER SCIENCE FUNDAMENTAL ASSIGNMENT - 3

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ARTIFICIAL INTELLIGENCE (AI)

- Artificial Intelligence (AI) basically means making machines capable of doing tasks that normally need human thinking. These tasks include learning from data, understanding language, recognizing images, or making decisions.
- AI has developed a lot over the years. In the beginning, systems only followed fixed rules. Later, machine learning and deep learning came, which helped computers learn on their own from data. Today, AI is used in almost every field and is becoming a major part of our daily lives because it helps in doing work faster and more accurately.

CORE TECHNOLOGIES IN AI

- 1. Machine Learning (ML):
Algorithms that learn patterns from data to make predictions.
- 2. Deep Learning:
Advanced ML using neural networks inspired by the human brain.
- 3. Neural Networks:
Layers of interconnected nodes that learn complex patterns.
- 4. Natural Language Processing (NLP):
Allows machines to understand and generate human language.
- 5. Computer Vision:
Enables machines to “see” and interpret images and videos.
- 6. Reinforcement Learning:
Models learn through reward-based actions (used in robotics and gaming).

INDIAN USE CASE OF AI

- Qure.ai is an Indian company that uses AI to read medical scans like X-rays and CT scans.
- Problem it solves:
India does not have enough radiologists, especially in rural areas, which causes delays in diagnosis.
- How AI helps:
Qure.ai uses deep learning models to quickly detect problems such as tuberculosis or lung infections.
- Impact:
It helps doctors make faster decisions, reduces errors, and supports healthcare in places where expert doctors are not available.

GLOBAL USE CASE OF AI

- Digital assistants: the application used by most people would be the digital assistants on our various pieces of technology. If you have a smartphone or laptop, you probably have and use digital assistant software to some degree.
- Search engines : Search engine algorithms utilize AI to refine and show better results without the intervention of programmers.
- Social media : All major social media platforms run off AI-powered algorithms which are designed to serve specific purposes.
- Transportation and Navigation: Most major map software uses some kind of AI to interpret real-time traffic data and provide routes and ETAs.

CAREER OPPORTUNITIES IN AI

- Some common career roles in the AI field include:
- AI Engineer
- Machine Learning Engineer
- Data Scientist
- NLP Engineer
- Computer Vision Engineer
- Robotics Engineer
- AI professionals are needed in many industries like healthcare, banking, education, e-commerce, transport, and manufacturing. As companies are becoming more data-driven, job opportunities in AI are increasing every year.

SKILLS REQUIRED FOR AI

- Technical skills needed:
- Python programming
- Basic maths like statistics and linear algebra
- Machine learning algorithms
- Deep learning concepts
- Working with data (Pandas, NumPy)
- Knowledge of tools like TensorFlow or PyTorch
- Soft skills:
- Problem-solving
- Logical thinking
- Patience and curiosity (because AI models take time to learn and improve)

TRENDS IN AI

1. AI Agents & Autonomous Systems

- AI systems act like “digital workers”
- Can plan and perform multi-step tasks
- Need minimal human involvement

2. Democratization of AI

- AI tools becoming easier for everyone
- Low-code/no-code platforms growing
- Small businesses can build/use AI easily

3. AI in Scientific Research

- Analyzes large and complex data
- Speeds up discoveries in medicine & science
- Helps in drug discovery and personalized treatments

4. Human–AI Collaboration

- AI supports humans instead of replacing them
- Improves decision-making and productivity
- Enhances human skills and capabilities

5. Regulation & Ethical Governance

- More rules around safe AI use
- Focus on privacy, bias, and misinformation
- Ensures responsible development

THANK YOU