What is AI?
Artificial Intelligence, or AI, is a fascinating field of computer science that focuses on creating machines capable of intelligent behavior. AI systems are designed to learn from data, recognise patterns, and make decisions with minimal human intervention.

The steps involved in AI are,
1. Data Collection
2. Data Processing
3. Training a model
4. Decision Making
5. Feedback Loop
6. Automation

3 domains of AI
Artificial intelligence works based on 3 technologies. We call them as domains of AI.

- Natural Language Processing,
- Computer Vision
- Machine learning

Natural Language Processing (NLP):

- It is a technology that gives computers the ability to interpret, manipulate, and comprehend human language.
- It involves tasks such as language translation, speech recognition, and text generation.
- It is the ability of the machines to understand the human language and process the input given by us in our natural language.

Computer Vision:

- It focuses on enabling computers to identify and understand objects and people in images and videos.
- It includes tasks such as object recognition, image classification, image segmentation, and facial recognition.

Machine Learning (ML):

- Machine learning involves algorithms that enable computers to learn from the data and make decisions or predictions based on data.

- It includes Video suggestions, product recommendations, etc.

What is NLP?

Natural Language Processing (NLP) is a field of artificial intelligence (AI) that focuses on enabling computers to understand, interpret, and generate human language in a way that is both meaningful and useful.

Basic techniques in NLP:

1. Text Understanding: NLP algorithms analyze text to understand its meaning. This includes tasks like identifying keywords, sentences, and overall context.

2. Tokenization: Breaking down text into smaller units like words or sentences.

3. POS Tagging (Part-of-Speech Tagging): Identifying the grammatical parts of speech (e.g., noun, verb, adjective) in a sentence.

4. Named Entity Recognition (NER): Identifying and categorizing named entities intext, such as names of people, organizations, or locations.

Applications of NLP:
• **Language Translation:** NLP helps translate text from one language to another.
• **Sentiment Analysis:** NLP can analyze text to determine the sentiment or emotion behind it. For example, whether a review is positive or negative.
• **Chatbots and Virtual Assistants:** NLP powers chatbots and virtual assistants like Siri and Alexa, allowing them to understand and respond to human speech or text commands.
• **Search Engines:** NLP helps search engines like Google understand what you're searching for and retrieve relevant results.
• **Speech Recognition:** NLP enables systems to convert spoken language into text, such as voice-to-text applications.

Introduction to AI Ethics

AI ethics refers to the set of moral principles and techniques that are responsible for use of artificial intelligence technology. As AI systems become more advanced and integrated into our daily lives, it is crucial to address the ethical issues they raise.

Ethical Principles in AI

1. Fairness and Non-Discrimination
AI systems should be designed and operated in a manner that is fair and impartial.They must avoid discrimination based on race, gender, age, or any other characteristic.

2. Transparency and Explainability
The operations of AI systems should be transparent. Users should be able to understand how AI decisions are made.

3. Privacy and Data Protection
AI systems must ensure the privacy and security of user data. Users should have control over their personal data.

4. Accountability
There must be accountability for the outcomes of AI systems. Developers and operators should be responsible for the impacts of AI.

5. Safety and Security
AI systems should be safe and secure to use. They must be protected from malicious use.

Advantages of AI
- Less human intervention
- Automation of things
- Fast, efficient and easy to use
- Support in different industries

Disadvantages of AI
- Privacy and security risks are there.
- Dependency on technology
- Results are not always accurate

Practice questions

Choose the correct answer.

1. Which AI technology is crucial for understanding human language?
a) Computer Vision
b) Machine Learning
c) Natural Language Processing
d) Robotics

2. What is the role of sentiment analysis in AI?
a) To analyze data trends
b) To understand human emotions in text
c) To improve machine performance
d) To detect anomalies in systems

3. Which AI application helps in providing personalized recommendations?
a) online shopping
b) Face detection
c) Image recognition
d) Location services

4. Which of these is a benefit of AI in customer service?
a) Slower response times
b) Inconsistent interactions
c) 24/7 availability
d) Limited scalability

5. What is the purpose of chatbots in AI?
a) To perform physical tasks
b) To facilitate human-like conversations
c) To store large amounts of data
d) To design software interfaces

6. Which AI feature is essential for understanding spoken language?
a) Text mining
b) Speech recognition
c) Image processing
d) Data encryption

7. Machines that execute voice commands are able to understand which of the following?
a) Grammar
b) Commands
c) Machine Language
d) Natural Language

8. What is the primary purpose of AI in our daily lives?
a) Entertainment
b) Automation
c) Education
d) Communication

9. What does NLP stand for in AI?
a) Natural Learning Process
b) Neural Language Processing
c) Natural Language Processing
d) Neural Learning Protocol

10. Which AI technology is used by virtual assistants like Siri and Alexa?
a) Image recognition
b) Speech recognition
c) Data mining
d) Machine translation

State whether True (T) or False (F)
1. Computer's processing speed is higher than that of the human brain.
2. Just like human intelligence, AI is also of different types.
3. AI can only be used for entertainment purposes.
4. Virtual assistants like Siri use AI to understand and respond to user commands.
5. Machine learning does not require any data to function.
6. AI can help in predicting weather patterns and natural disasters.

Find the odd one.
a) Web search b) online shopping c) CCTV d)Video recommendations
a) Translator b) virtual assistant c) chatbots d) product recommendations

Answer the following questions.
1.What do you mean by Computer Vision?
2.What role does AI play in customer service?
3.Describe an example of AI in transportation.
4.Define NLP and list its real life applications.
5.What are the steps involved in making an AI project?
6.Write the techniques followed by NLP?