

1. AI Project Lifecycle



- A.** 1. c) 2. b) 3. b) 4. b) 5. b)
- B.** 1. Computer 2. Relationships 3. Secondary
4. Test 5. Monitored
- C.** 1. T 2. T 3. F 4. T 5. T
- D.** 1. Primary 2. Secondary 3. Surveys 4. Model Evaluation
5. Data Cleaning
- E.** 1. Artificial Intelligence systems are designed to mimic human cognitive processes. Just as humans observe, learn and make decisions, AI systems follow similar steps using data and algorithms.
2. AI in education helps personalise learning by adapting lessons to suit each student's needs. It can assist teachers with tasks like grading and provide instant feedback to students, making learning more efficient and engaging.
3. The following figure shows the six stages of the AI project cycle:
- Defining the Problem
 - Data Collection and Preparation
 - Model Development and Training
 - Model Evaluation and Refinement
 - Model Deployment
 - Monitoring and Maintenance
4. The 4W's approach: Who, What, Where and Why. This method helps define all important aspects of the problem and ensures alignment among stakeholders and team members.

5. Primary data is collected directly from the original source for a specific purpose. This type of data is fresh, raw, and highly accurate because it has not been processed or modified by anyone else. Common methods of primary data collection include: Surveys and interviews, Experiments and observations, IoT Sensors and smart devices, Marketing campaigns and feedback forms.

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2. Deeper Dive into AI Applications



CODE



DECODE



- A.** 1. a) 2. b) 3. d) 4. b) 5. a)
- B.** 1. decompose 2. analyse 3. degradation
4. assistants 5. Navigation
- C.** 1. T 2. F 3. T 4. T 5. F
- D.** 1. AI 2. Forecasting 3. Sorting 4. Imaging 5. Ayushman Bharat
- E.** 1. AI helps in smart homes by automating everyday tasks, improving comfort, increasing security and saving energy.
2. Predictive healthcare uses data from various sources, such as medical records, lab reports, wearable devices, lifestyle habits and even family history, to forecast potential health issues and risks.
3. AI helps in environmental protection by tracking pollution, monitoring deforestation, studying animal movements, and predicting weather changes. It aids in taking timely actions to address environmental issues such as plastic pollution and air quality problems.
4. AI has improved agriculture by automating tasks like irrigation, sowing and fertilisation. It helps farmers monitor crops, predict weather patterns and optimise resource use, leading to better yields and more sustainable farming practices.
5. AI helps in air quality management by analysing data from sensors and weather conditions to predict pollution levels. It helps authorities take actions like adjusting traffic signals, restricting vehicles in polluted areas, and advising schools on outdoor activities.

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3. Data and Fairness in AI



- A.** 1. b) 2. a) 3. b) 4. a) 5. c)
- B.** 1. balanced 2. biased 3. historical 4. review 5. decisions
- C.** 1. T 2. F 3. F 4. T 5. T
- D.** 1. Bias 2. Supervised 3. Patterns 4. Examples 5. Accuracy
- E.** 1. The importance of ensuring diversity in training data avoid errors and ensure fairness in AI systems.
2. It is important because unbalanced data can cause AI systems to make biased or incorrect decisions, favouring certain groups over others.
3. The AI system was biased because it was trained mostly on images of light-skinned men, which caused it to make more errors when identifying women and people with darker skin tones.
4. Some datasets do not represent everyone equally and this is called bias. Bias means the data is unbalanced or unfair, leading to unequal performance across different groups.
5. AI systems can be tested for fairness by checking if the system treats all groups or categories equally, without favouring one over another. Two methods to check for bias in AI are:
- Bias check: It's important to test AI programs to ensure they do not treat different groups or categories unfairly. AI should be evaluated to see if it favours certain groups over others.
 - Human supervision: Human beings should review AI decisions rather than trusting the system blindly. This ensures that any errors or biases in AI can be caught and corrected.

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4. Ethics and Responsible AI



- A.** 1. b) 2. b) 3. b) 4. b) 5. c)
- B.** 1. Reliable 2. Ethics 3. Complete 4. Permission 5. Deployment
- C.** 1. T 2. F 3. T 4. T 5. T
- D.** 1. Misinformation 2. Privacy 3. Fairness
4. Monitoring 5. Misinformation
- E.** 1. Artificial Intelligence systems learn from data. The quality and nature of this data play a very important role in how AI systems behave. If the data used for training is incomplete, unbalanced, or reflects existing inequalities, the AI system may also learn these unfair patterns. This problem is known as bias in AI.
2. The idea of protecting such personal information is called privacy. Privacy means keeping your personal information safe and having control over who can see or use it. There are different types of personal data, such as:
- Your name
 - Your location
 - Your photographs
 - Health information
 - Browsing history
 - Contact details
3. Responsible Artificial Intelligence refers to designing, developing, and using AI systems in a manner that is fair, safe, reliable, transparent, and beneficial for society. It ensures that AI technologies are used to support human well-being and promote positive outcomes.

4. Ethics is important in Artificial Intelligence because AI systems ensures that AI systems:
 - Are fair and do not discriminate against individuals or groups.
 - Respect privacy and protect personal information.
 - Help society and contribute positively to human well-being.
 - Remain accountable, meaning someone is responsible for their actions and decisions.
5. The benefits of ethical AI for society:
 - Ensures equal treatment for all individuals, regardless of gender, age, region, or background.
 - Reduces discrimination and prevents biased decision-making.
 - Builds trust and confidence in AI systems among users.
 - Promotes inclusivity by considering diverse groups and communities.
 - Improves accuracy and reliability of AI system decisions.



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