INDIAN SCHOOL AL WADI AL KABIR

Class: IX	Department: Computer Science
Worksheet No: 1	ARTIFICIAL INTELLIGENCE

UNIT-1-AI REFLECTION, PROJECT CYCLE AND ETHICS

OBJECTIVE QUESTIONS

1. The AI Project Cycle mainly has _____.
a. 2 Stages
b. 6 Stages
c. 4 Stages
d. 5 Stages
Ans: b. 6 Stages

2. _____by collecting data from various reliable and authentic sources.
a. Data Acquisition
b. Database
c. Data Mining
d. None of the above
Ans: a. Data Acquisition

3. Once the _____is complete, you now need to test your model on some newly fetched data.
a. Data Acquisition
b. Modelling
c. Data Mining
d. None of the above
Ans: b. Modelling

4. _____are the people who face this problem and would be benefited with the solution.
a. Key Persons
b. Stakeholders
c. End user
d. None of the above
Ans: b. Stakeholders

5. _____helps in analyzing the people getting affected directly or indirectly due to it.
a. Who
b. What
c. Where
d. Why
Ans: a. Who

6. _____helps to determine the nature of the problem.
a. Who
b. What
c. Where
d. Why
Ans: b. What

7. “What” block helps to gather evidence from _____ to prove that the problem you have selected actually exists.
a. Media
b. Announcements
c. Newspaper & Articles
d. All of the above
Ans: d. All of the above

8. “Where” block will help you look into the situation in which the _____where it is prominent.
a. Problem arises
b. The context of it
c. The locations
d. All of the above
Ans: d. All of the above

9. In “Why” block canvas, Which of the following canvases is the base of problem solving.
a. Who the people that would be benefitted by the solution
b. What is to be solved
c. Where will the solution be deployed
d. All of the above
Ans: d. All of the above

10. After filling the 4Ws Problem canvas, you now need to summarize all the cards into one _____.
a. Template
b. Situation
c. Both a) and b)
d. None of the above
Ans: a. Template

11. Templates help us to summarize all the key points into one single Template so that in future, whenever there is a need to look back at the basis of the problem, we can take a look at the _____and understand the key elements of it.
a. Problem Solving Template
b. Problem Statement Template
c. Problem Arising Template
d. None of the above
Ans: b. Problem Statement Template

12. _____can be a piece of information or facts and statistics collected together for reference or analysis.
a. Database
b. Data
c. Data Type
d. None of the above
Ans: b. Data

13. Whenever we want an AI project to be able to predict an output, we need to _____it first using data.
a. Analyze
b. Train
c. Explore
d. All of the above
Ans: b. Train

14. You would feed the data into the machine. This is the data with which the machine can be trained. Now, once it is ready, it will predict his next data efficiently. This previous data is known as _____.
a. Testing Data
b. Training Data
c. Exploring Data
d. All of the above
Ans: b. Training Data

15. _____refer to the type of data you want to collect.
a. Data features
b. Exploring Data
c. Data Acquisition
d. All of the above
Ans: a. Data features

16. What are the different ways to collect data?
a. Web Scraping & API
b. Surveys & Sensors
c. Cameras & Observations
d. All of the above
Ans: d. All of the above

17. One of the most reliable and authentic sources of information where we can download the authentic data for our project are _____.
a. Private websites
b. Government websites
c. Personal websites
d. None of the above
Ans: b. Government websites

18. The _____ makes the data understandable for humans as we can discover trends and patterns out of it.
a. Random Data
b. Graphical Representation
c. Unstructured Data
d. None of the above
Ans: b. Graphical Representation

19. AI models can be classified as _____.
a. Learning Based
b. Rule Based
c. Both a) and b)
d. None of the above
Ans: c. Both a) and b)

20. Learning Based models can be classified as _____.
a. Machine Learning
b. Deep Learning
c. Both a) and b)
d. None of the above
Ans: c. Both a) and b)

21. AI modelling where the rules are defined by the developer is known as _____.
a. Rule Based Approach
b. Learning based Approach
c. Both a) and b)
d. None of the above
Ans: a. Rule Based Approach

22. _____which tells us about the conditions on the basis of which we can decide
a. Dataset
b. Rule Based
c. Learning based
d. None of the above
Ans: a. Dataset

QUESTIONS AND ANSWERS - 1 mark

1. Name all the stages of an AI Project cycle.
Problem Scoping, Data Acquisition, Data Exploration, Modeling, Evaluation, Deployment

2. Name the 4Ws of problem canvases under the problem scoping stage of the AI Project Cycle.
a. Who, b. what c. where d. why

3. What is Testing Dataset?
The dataset provided to the model ML. algorithm after training the algorithm

4. What is the objective of evaluation stage?
It is to evaluate whether the ML algorithm is able to predict with high accuracy or not before deployment.

5. Which of the following is not an authentic source for data acquisition?
a. **Sensors b. Surveys c. Web Scraping d. System Hacking**
System Hacking

6. Which type of graphical representation suits best for continuous type of data like monthly exam scores of a student?
Linear graph

QUESTIONS AND ANSWERS - 2 marks

1. What are the two different approaches for AI modelling? Define them.
There are two approaches for AI Modelling; Rule Based and Learning Based.
The Rule based approach generates pre-defined outputs based on certain rules programmed by humans. Whereas, learning based approach has its own rules based on the output and data used to train the models.

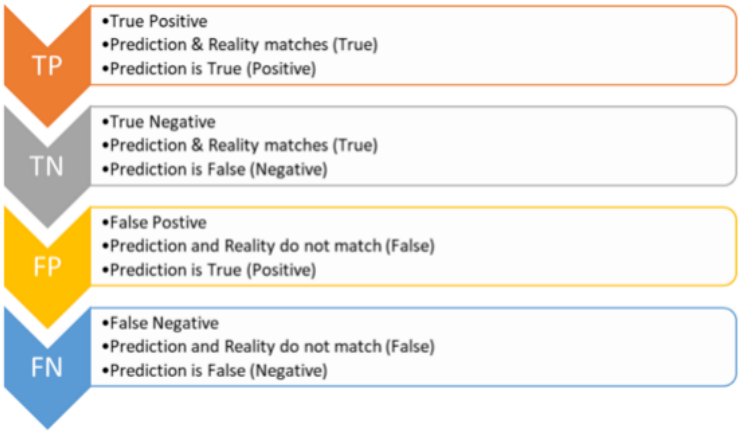
OR

Rule Based Approach Refers to the AI modelling where the relationship or patterns in data are defined by the developer. The machine follows the rules or instructions mentioned by the developer, and performs its task accordingly. Whereas in Learning based approach, the relationship or patterns in data are not defined by the developer. In this approach, random data is fed to the machine and it is left to the machine to figure out patterns and trends out of it.

2. What is a problem statement template and what is its significance?
The problem statement template gives a clear idea about the basic framework required to achieve the goal. It is the 4Ws canvas which segregates; what is the problem, where does it arise, who is affected, why is it a problem? It takes us straight to the goal.

3. What do you mean by Data Features?
The type of data to collect,It should be relevant data.

4. What are Model Evaluation Terminologies in evaluation?

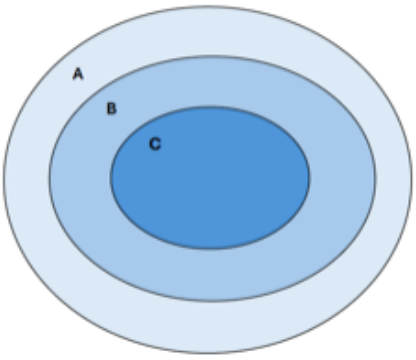


5. Explain Data Exploration stage.
In this stage of project cycle, we try to interpret some useful information out of the data we have acquired. For this purpose, we need to explore the data and try to put it uniformly for a better understanding. This stage deals with validating or verification of the collected data and to analyze that:

- The data is according to the specifications decided.
- The data is free from errors.
- The data is meeting our needs.

6. What is deployment?
Deployment as the final stage in the AI project cycle where the AI model or solution is implemented in a real-world scenario.

7. Identify A, B and C in the following diagram (Hint: How AI, ML &DL related to each other)



QUESTIONS AND ANSWERS - 4 marks

1. Explain the AI Project Cycle in detail.

The steps involved in AI project cycle are as given:

- The first step is Scope the Problem by which, you set the goal for your AI project by stating the problem which you wish to solve with it. Under problem scoping, we look at various parameters which affect the problem we wish to solve so that the picture becomes clearer
- Next step is to acquire data which will become the base of your project as it will help you in understanding what the parameters that are related to problem scoping.
- Next, you go for data acquisition by collecting data from various reliable and authentic sources. Since the data you collect would be in large quantities, you can try to give it a visual image of different types of representations like graphs, databases, flow charts, maps, etc. This makes it easier for you to interpret the patterns in which your acquired data follows.
- After exploring the patterns, you can decide upon the type of model you would build to achieve the goal. For this, you can research online and select various models which give a suitable output.
- You can test the selected models and figure out which is the most efficient one.
- The most efficient model is now the base of your AI project and you can develop your algorithm around it.
- Once the modelling is complete, you now need to test your model on some newly fetched data. The results will help you in evaluating your model and hence improving it.

Finally, after evaluation, the project cycle is now complete and what you get is your AI project.

2. Draw the 4Ws problem canvas and explain each one of them briefly.

The 4Ws problem canvas is the basic template while scoping a problem and using this canvas, the picture becomes clearer while we are working to solve it.

a) **Who:** The "Who" block helps you in analyzing the people getting affected directly or indirectly due to it? Under this, you find out who the 'stakeholders' to this problem are and what you know about them. Stakeholders are the people who face this problem and would be benefitted with the solution.

b) **What:** Under the "What" block, you need to look into what you have on hand. At this stage, you need to determine the nature of the problem. What is the problem and how do you know that it is a problem?

c) **Where:** In this block, you need to focus on the context/situation/location of the problem. It will help you look into the situation in which the problem arises, the context of it, and the locations where it is prominent.

d) **Why:** in the "Why" canvas, think about the benefits which the stakeholders would get from the solution and how would it benefit them as well as the society.

3. Write the difference between Ethical and Morals.

Morals	Ethics
▪ The beliefs dictated by our society.	▪ The guiding principles to decide what is good or bad.
▪ Morals are not fixed and can be different for different societies.	▪ These are values that a person themselves chooses for their life.
▪ Examples: ▪ Always speak the truth ▪ Always be loyal ▪ Always be generous	▪ Examples: ▪ Is it good to speak the truth in all situations? ▪ Is it good to be loyal under all circumstances? ▪ Is it necessary to always be generous?

4. What are the principles in AI Ethics that affect the quality of AI solutions

Ans:

- Human Rights
- Bias
- Privacy
- Inclusion

5. What are the Key Steps in Deployment Process?

The key steps involved in the deployment process:

a. Testing and validation of the AI model

b. Integration of the model with existing systems

c. Monitoring and maintenance of the deployed model.

Some examples of successful AI projects that have been deployed in various industries, such as self driving cars, medical diagnosis systems, and chatbots.

6. What is the difference between Training Data & Testing Data?

Answer – The datasets are divided into two groups in machine learning. The first subset, referred to as the training data, is a section of our actual dataset that is used to train a machine learning model. Second subset, referred to testing data, Once your machine learning model is built, you need unseen data to test your model. This data is called testing data.

7. What is data modelling?

Answer – Data modelling is the process of developing a visual representation of an entire information system or certain components of it. for example the development, training, and application of machine learning algorithms that simulate logical decision-making based on accessible facts are known as AI modelling