6 Introduction to AI

Exercises

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A. Fill in the blanks.

1. **Intelligence** is important because it has an impact on many human behaviours and it has the ability to change the future situations.
2. The creation of the Binet-Simon scale in the early 1900s, intelligence tests, now referred to as **Intelligence Quotient (IQ) Test**.
3. **Decision Making** is the procedure of making selections by recognising a situation, collecting information, and evaluating alternative purposes or solutions.
4. AI is a part of **Computer Science** in which we try to get some result (Output) after giving some program instructions (Input) to a machine so that the machine can act or mimic like a human being.
5. Machines also become intelligent once they are trained with the **Data** and **Information** which helps them achieve their tasks.
6. **Deep Learning** is a subset of Machine Learning, and a function of Artificial Intelligence.
7. **AI Projects** depends on the data, which means that without the data, it can not specify its task and objectives to perform.
8. The primary role in **Computer Vision** or **Machine Vision** is to assess whether or not data in a picture comprises some particular object or operation.
9. **Radar** helps the car see things up to 100 meters away even in darkness or rain.
10. A **Driverless Car** can see the road better than individuals with the help of radar, cameras, and lasers.

B. State whether these statements are True or False.

1. Intelligence has been defined in many ways: higher level abilities such as abstract reasoning, mental representation, problem solving, and decision making. **True**
2. Psychologists contend that intelligence is genetic, or inherited, and others claim that it is largely influenced by the surrounding environment. **True**
3. AI ethics, depends upon the availability of information and how we experience and understand it. **False**
4. Information includes our past experience, knowledge, and self-awareness. **True**

5. Deep Learning is a subset of AI which enables machines to improve at tasks with data, information and past experiences. **False**

6. 41% of children aged 8-17 have public profiles open for all which is an open invitation for predators and risk for these young ones. **True**

7. Automated vehicles use human intelligence to find the best way from one place to another. **False**

8. Dataset also refers to the basic principles of AI system design that use the good code of conduct and produces the results. **False**

9. Deep Learning and Machine Learning, allows machines to understand and read human language. **False**

10. A robot taxi can find you and take you to your destination without a taxi driver. **True**

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C. Multiple Choice Questions (MCQs).

1. Using a step-by-step _____ process can help you make more watchful, thoughtful decisions by forming relevant information and defining substitutions.

   a. Coding ☐ b. Input-Output ☐
   c. Learning ☐ d. Decision-making ✓

2. _____ drives many Artificial Intelligence (AI) applications and services that improve automation, performing analytical and physical tasks without human intervention.

   a. Deep Learning ✓ b. Machine Learning ☐
   c. Smart Machine ☐ d. Human Intelligence ☐

3. Which one of the following is not considered as AI?

   a. Washing Machine ☐ b. Smart TV ☐
   c. Smartphone ☐ d. All of the above ✓

4. Artificial Intelligence is about _____.

   a. playing a game on a Computer ☐
   b. making a machine Intelligent ✓
   c. programming on machine with your own Intelligence ☐
   d. putting your intelligence in Machines ☐

5. Among the following, who all are part of the group of the 'founding fathers' of AI?

   a. Fisher Ada ☐ b. Alan Turing ☐
   c. John McCarthy ✓ d. Allen Newell ☐

6. A technique that was developed to determine whether a machine could or could not demonstrate Artificial Intelligence is known as the _____.

a. Boolean Algebra ☐ b. Turing Test ☑

c. Logarithm ☐ d. Algorithm ☐

7. Understanding the basics of _____ and _____ is becoming progressively important, especially for kids.

a. Artificial Intelligence, Machine Learning ☑

b. Programming, Designing ☐

c. Input, Output ☐

d. AI Games, Decision ☐

8. _____ do exactly what they have been designed for; they cannot take their own decisions.

a. Smart Machines ☐ b. AI Systems ☑

c. Humans ☐ d. Machine Learning ☐

9. When a car is slipping on an icy road, the _____ can tap the brakes quickly.

a. NLP ☐ b. DL ☐ c. ABS ☑ d. ML ☐

10. _____ represents how an AI system observes images with pixels. Different machineries use filters and pre-processors to perform the tasks like edge detection, corner detection and face detection.

a. Face Lock ☐ b. AI Algorithm ☐

c. Natural Language Processing ☐ d. Computer Vision ☑

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D. Answer the following questions.

1. **Define Artificial Intelligence.**

Ans. Artificial Intelligence is a concept used in the field of computer science to make machines artificially intelligent with some data and program codes. AI is a branch of computer science in which we try to get some result (Output) after giving some program instructions (Input) to a machine so that the machine can act or mimic like a human being.

2. **Mention two types of machines which have evolved with time.**

Ans. **Note-** Students should write this answer in their own words. Following points are given for reference.

1. Television 1970 to Smart TV.
2. Telephone in 1950 to Smartphone.

3. **Mention four examples of artificially intelligent applications in our smartphones.**

Ans. **Note-** Students should write this answer in their own words. Following examples are given for reference.

Following are some examples of artificially intelligent applications in our smartphones:

- Voice Assistant – Google Assistant and Siri
- Live Map– Google Map
- Face Unlock.
- AI Camera application.

4. How does a machine become artificially intelligent?

Ans. machines also become intelligent once they are trained with the Data and Information which helps them achieve their tasks. AI machines also keep updating their knowledge to optimise their output.

The given figure shows how a machine learns from the data. We need to feed data into the system, and on the basis of the previous fed data, the system builds up its logic to get the desired result or output. In this process, the system is developed to learn without any human intervention or guidance. That's the way machine becomes artificial intelligent.

5. Mention four examples of machines that are smart but not AI.

Ans. Following are four examples of machines that are smart but not AI:

- A fully automatic washing machine can work on its own, but it requires human intervention to select the parameters of washing and to do the necessary preparation for it to function correctly before each wash, which makes it an example of automation, not AI.
- An air conditioner can be turned on and off remotely with the help of Internet but still needs a human touch. This is an example of Internet of Things, not AI.

Note- Students should write the other two examples in their own words.

6. Why training with information/Data is important in artificially intelligent devices?

Ans. Any machine that has been trained with data or information and can make decisions, give predictions on its own can be labelled as an Artificial Intelligent Machine. Here, the training of a machine is very important.

7. How does Deep Learning help an AI machine in improvising itself?

Ans. It enables application software to train itself and to perform tasks with large amounts of data. In Deep Learning, the machine is trained with huge amounts of data which helps it in training a system.

8. What is intelligence? Differentiate between human intelligence and machine intelligence.

Ans. Intelligence has been defined in many ways: higher level abilities such as abstract reasoning, mental representation, problem solving, and decision making, the ability to learn, emotional knowledge, creativity, and adaptation to meet the demands of the environment effectively.

In simple words:

Intelligence is the technique to think, learn, take decisions and getting the best solution for the problems and to work on the upcoming situations from the past experiences. Intelligence is important because it has an impact on many human behaviours and it has the ability to change future situations.

Note- Students should write the difference between human and machine intelligence in their own words.

9. **What do you think about Data and its Privacy? Is Privacy important or not?**

Ans. Whenever we talk about the DATA, we start thinking upon the information stored in some devices like our smartphone or laptops. And the data like: Name, Date of Birth, Phone Number, Account Number, ID Proofs, etc. We are educated that we should not share the data over the internet or even where we feel not be shared. That means the data is most important for us as we know it can be misused in many ways. So, to make our data secure we think about various data privacy policies.

10. **How does the Natural Language Processing (NLP) works?**

Ans. Natural Language Processing allows machines to understand and read human language. It's at the core of tools we use every day like translation software, chatbots, spam filters, and search engines, grammar correction software, voice assistants, and social media monitoring tools. Every day, humans exchange uncountable words with other humans to get all kinds of things accomplished. But communication is much more than words: there's context, body language, intonation, and more that help us understand the intent of the words when we communicate with each other. That's what makes Natural Language Processing, the ability for a machine to understand human speech, such an incredible feat and one that has huge potential to impact so much in our modern existence. Today, there is a wide array of applications Natural Language Processing is responsible for.

Natural Language Processing is behind the scenes for several things you may take for granted every day. When you ask Siri for directions or to send a text, Natural Language Processing enables that functionality.

For Example: Email filters are one of the most elementary and opening applications of NLP. It started out with spam filters, uncovering certain words or phrases that signal a spam message.

11. **What do you understand by Linguistic Intelligence?**

Ans. Linguistic intelligence allows us to recognise the order and meaning of words and to apply meta-linguistic skills to reflect the use of language. It is the ability to think in words and to use language to express and appreciate complex meanings.

12. **What do you understand by Interpersonal Intelligence?**

Ans. Intra-personal intelligence comprises not only an appreciation of the self, but also of the human condition. It is the capacity to understand oneself, thoughts, feelings and to use such knowledge in planning life.