Class X

Artificial Intelligence (417)

Chapter- Introduction to Artificial Intelligence
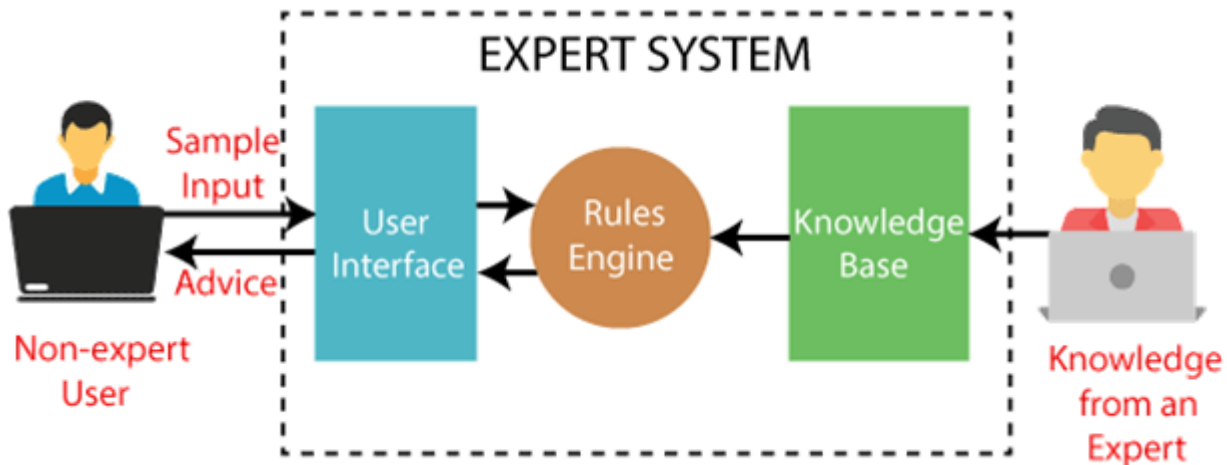
Solutions of Assignment

Q 1- Multiple Choice questions

1. The component of an Expert system is_____.

a.   Knowledge Base

b.   Inference Engine

c.   User Interface

d.   All of the above

Answer: d. All of the above

Explanation: Expert system is a part of AI and a computer program that is used to solve complex problems, and to give the decision-making ability like human. It does this with the help of **a Knowledge base, Inference engine, and User interface**, and all these are the components of an Expert System.
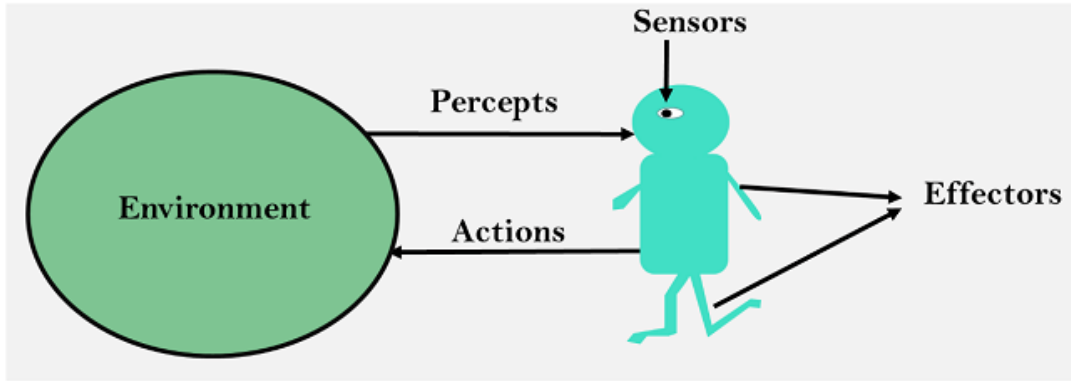

e.

2. An AI agent perceives and acts upon the environment using____.

a. Sensors

b. Perceiver

c. Actuators

d. Both a and c

Answer: d. Both a and c.

Explanation: An AI agent perceives and acts upon the environment using Sensors and Actuators. With Sensors, it senses the surrounding, and with Actuators, it acts on it.

3. The PEAS in the task environment is about_____.

    a.   Peer, Environment, Actuators, Sense

    b.   Performance, Environment, Actuators, Sensors

    c.   Perceiving, Environment, Actuators, Sensors

    d.   None of the above

Answer: b. Performance, Environment, Actuators, Sensors

Explanation: PEAS is a representation model on which an AI agent works. It is made up of four words:

    o   P: Performance

    o   E: Environment

    o   A: Actuators

    o   S: Sensors

4. Web Crawler is an example of_____.

    a.   Intelligent Agent

    b.   Problem-solving agent

    c.   Simple reflex agent

    d.   Model-based agent

Answer: Intelligent Agent

Explanation: The web crawler is an example of Intelligent agents, which is responsible for collecting resources from the Web, such as HTML documents, images, text files, etc.

5. The best AI agent is one which_____

    a.   Needs user inputs for solving any problem

    b.   Can solve a problem on its own without any human intervention

c. Need a similar exemplary problem in its knowledge base

d. All of the above

Q2:- Short Question-Answers

Q 2:- Short Ques/Ans

a. **Write some popular AI apps and tools.**

Ans.: The following are some powerful AI apps and tools.

1. **Google**: Google uses AI for responding to our queries through keywords. Gmail spam filter is also using AI technology. Google maps help through navigation in travelling.
2. **Virtual Assistants:** Apple Siri, Amazon Alexa, Google Assistant, and MS Cortana are some examples of Virtual Assistants. These assistants are used to accept the command in terms of voice and provide assistance.
3. **Gaming:** AI is used to enhance the gaming experience for gamers. Along with this AI can help in enhancing graphics, come up with new difficulty levels, encourage gamers etc.
4. **Recommendations:** As you have seen some recommendations on amazon, Netflix, Amazon, Spotify, YouTube etc. These are all recommendations based on your interests and engagements likes, dislikes and comments. Some recommendations are based on preferences on social media like Facebook and Instagram. Sometimes AI also sends some notifications about online shopping details, and auto-create playlists according to requests.
5. **Chatbots:** Chatbots are generally available on many websites. Chatbots are software applications integrated with AI technology used for online chat support. Sophia was the first humanoid bot.
6. **Health Apps**: Health apps are also created and integrated with AI which helps users to monitor physical and mental health aspects.
7. **Others**: Moreover, there are some other AI applications like face locks in smartphones, language translators, weather forecasts, and many more.

b. How does learning and adapting help an AI machine in improvising itself?

An artificially intelligent machine collects real time data and tries to figure out new patterns in it. Machines learn in a similar way human being; by supervision or by observation and respond according to past experiences in similar scenarios. A machine learns from its mistakes. The more the machine gets trained on data, the more accurate result it gives.

For example: Any virtual assistant initially trained with few basic instructions, but with time, the machine captures the data fed by the user, may be the wake-up time of the user, sleeping time, dinner time and so on. Later in time, the machine gives reminders of similar things on the basis of data and adapts these new commands.

c. How can AI be integrated with non-AI technologies? Explain with the help of an example.

Today's world is changing with the adoption of IOT (Internet of Things). IOT is helping in prominently capturing a tremendous amount of data from multiple sources. The convergence of AI (Artificial Intelligence) and IOT can redefine the way industries, business, and economies function. AI enabled IoT creates intelligent machines that simulate smart behavior and supports decision making with little or no human interference.

While IOT provides data, artificial intelligence acquires the power to unlock responses, offering both creativity and context to drive smart actions. Here are some examples:

Ex. 1: Self-driving Cars: Tesla's self-driving cars are the best example of IoT and AI working together. With the power of AI, self-driving cars predict the behavior of pedestrians and cards in various circumstances. For example, they can determine road conditions, optimal speed, weather and getting smarter with each trip.

Ex. 2: Robots in Manufacturing: Manufacturing is one of the industries that already embraced new technologies like IoT, artificial intelligence, facial recognition, deep learning, Robots and many more. Robots employed in factories are turning smarter with the support of implanted sensors, which facilitates data transmission. Moreover, as the robots are provisioned with artificial intelligence algorithms, they can learn from newer data. This approach not only saves time and cost but also makes the manufacturing process better over time.

d. How intelligent robots are helping us in accomplishing dangerous jobs?

Robots let humans avoid some hurtful work:

(i) Lifting up heavy material at the construction site.

(ii) Stirring and mixing metals or liquids at a high temperature.

(iii) Collecting and packaging of radioactive waste.

(iv) Working in contaminated and dusty environments.

e. How AI helps in giving you personalized experience online?

AI based recommendations: AI uses advanced machine learning algorithms to analyze browser history, page clicks, social interactions (likes, shares), past purchases, the duration for which a page was viewed, location, etc. to gauge customer interests and preferences. AI can help deliver product recommendations based on frequently bought items, or related products. It can even help customize web pages and elements to suit a customer's needs. For instance, Netflix does intense behavior analysis based on behavior and demographic data to determine the content that will resonate with their customers.

Chatbots and Automated Messaging: AI-powered chatbots and messaging agents can enhance the customer experience across channels. They can answer simple queries, engage customers, efficiently handle multiple interactions,

Automated Service Interactions: AI-driven programs can send automated messages to customers regarding a pending service, a part replacement, or a regular order.

Curating Select Products: Amazon has come up with the concept of the Amazon 4-star retail store. Products that have received a multitude of 4-star ratings will be offered in this physical store. Amazon will use its product recommendation engine to identify trending products and customers' favorites and bring them to a brick and mortar setting.