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Question 1

Question Type: MultipleChoice

Which AI task involves audio generation from text?

Options:

A- Text to speech

B- Audio recording

C- Speech recognition

D- Text summarization

Answer:

A

Explanation:

Text to speech (TTS) is an AI task that involves audio generation from text. TTS is a technology that converts text into spoken audio using natural sounding voices. TTS can read aloud any text data, such as PDFs, websites, books, emails, etc., and provide an auditory

format for accessing written content. TTS can be helpful for anyone who needs to listen to text data for various reasons, such as accessibility, convenience, multitasking, learning, entertainment, etc. TTS uses different techniques and models to generate speech from text data, such as:

Concatenative synthesis: Combining pre-recorded segments of human speech based on the phonetic units of the text.

Parametric synthesis: Generating speech signals from acoustic parameters derived from the text using statistical models.

Neural synthesis: Using deep neural networks to learn the mapping between text and speech features and produce high-quality speech signals.

Expressive synthesis: Adding emotions or styles to the speech output to make it more natural and engaging.Reference::Text-to-Speech AI: Lifelike Speech Synthesis | Google Cloud,Text-to-speech synthesis - Wikipedia

Question 2

Question Type: **MultipleChoice**

Which AI domain is associated with tasks such as recognizing forces in images and classifying objects?

Options:

A- Computer Vision

B- Anomaly Detection

C- Speech Processing

D- Natural Language Processing

Answer:

A

Explanation:

Computer Vision is an AI domain that is associated with tasks such as recognizing faces in images and classifying objects. Computer vision is a field of artificial intelligence that enables computers and systems to derive meaningful information from digital images, videos, and other visual inputs, and to take actions or make recommendations based on that information. Computer vision works by applying machine learning and deep learning models to visual data, such as pixels, colors, shapes, textures, etc., and extracting features and patterns that can be used for various purposes. Some of the common techniques and applications of computer vision are:

Face recognition: Identifying or verifying the identity of a person based on their facial features.

Object detection: Locating and labeling objects of interest in an image or a video.

Object recognition: Classifying objects into predefined categories, such as animals, vehicles, fruits, etc.

Scene understanding: Analyzing the context and semantics of a visual scene, such as the location, time, weather, activity, etc.

Image segmentation: Partitioning an image into multiple regions that share similar characteristics, such as color, texture, shape, etc.

Image enhancement: Improving the quality or appearance of an image by applying filters, transformations, or corrections.

Image generation: Creating realistic or stylized images from scratch or based on some input data, such as sketches, captions, or attributes.Reference::What is Computer Vision? | IBM,Computer vision - Wikipedia

Question 3

Question Type: **MultipleChoice**

Which AI domain is associated with tasks such as identifying the sentiment of text and translating text between languages?

Options:

A- Natural Language Processing

B- Speech Processing

C- Anomaly Detection

D- Computer Vision

Answer:

A

Explanation:

Natural Language Processing (NLP) is an AI domain that is associated with tasks such as identifying the sentiment of text and translating text between languages. NLP is an interdisciplinary field that combines computer science, linguistics, and artificial intelligence to enable computers to process and understand natural language data, such as text or speech. NLP involves various techniques and applications, such as:

Text analysis: Extracting meaningful information from text data, such as keywords, entities, topics, sentiments, emotions, etc.

Text generation: Producing natural language text from structured or unstructured data, such as summaries, captions, headlines, stories, etc.

Machine translation: Translating text or speech from one language to another automatically and accurately.

Question answering: Retrieving relevant answers to natural language questions from a knowledge base or a document collection.

Speech recognition: Converting speech signals into text or commands.

Speech synthesis: Converting text into speech signals with natural sounding voices.

Natural language understanding: Interpreting the meaning and intent of natural language inputs and generating appropriate responses.

Natural language generation: Creating natural language outputs that are coherent, fluent, and relevant to the context.Reference::What is Natural Language Processing? | IBM,Natural language processing - Wikipedia

Question 4

Question Type: MultipleChoice

What is the primary purpose of reinforcement learning?

Options:

A- Finding relationships within data sets

B- Identifying patterns in data

C- Making predictions from labeled data

D- Learning from outcomes to make decisions

Answer:

D

Explanation:

Reinforcement learning is a type of machine learning that is based on learning from outcomes to make decisions. Reinforcement learning algorithms learn from their own actions and experiences in an environment, rather than from labeled data or explicit feedback. The goal of reinforcement learning is to find an optimal policy that maximizes a cumulative reward over time. A policy is a rule that determines what action to take in each state of the environment. A reward is a feedback signal that indicates how good or bad an action was for achieving a desired objective. Reinforcement learning involves a trial-and-error process of exploring different actions and observing their consequences, and then updating the policy accordingly. Some of the challenges and components of reinforcement learning are:

Exploration vs exploitation: Balancing between trying new actions that might lead to higher rewards in the future (exploration) and choosing known actions that yield immediate rewards (exploitation).

Markov decision process (MDP): A mathematical framework for modeling sequential decision making problems under uncertainty, where the outcomes depend only on the current state and action, not on the previous ones.

Value function: A function that estimates the expected long-term return of each state or state-action pair, based on the current policy.

Q-learning: A popular reinforcement learning algorithm that learns a value function called Q-function, which represents the quality of taking a certain action in a certain state.

Deep reinforcement learning: A branch of reinforcement learning that combines deep neural networks with reinforcement learning algorithms to handle complex and high-dimensional problems, such as playing video games or controlling robots.Reference::Reinforcement learning - Wikipedia,What is Reinforcement Learning? -- Overview of How it Works - Synopsys

Question 5

Question Type: MultipleChoice

Which type of machine learning is used to understand relationships within data and is not focused on making predictions or classifications?

Options:

A- Active learning

B- Unsupervised learning

C- Reinforcement learning

D- Supervised learning

Answer:

B

Explanation:

Unsupervised learning is a type of machine learning that is used to understand relationships within data and is not focused on making predictions or classifications. Unsupervised learning algorithms work with unlabeled data, which means the data does not have predefined categories or outcomes. The goal of unsupervised learning is to discover hidden patterns, structures, or features in the data that can provide valuable insights or reduce complexity. Some of the common techniques and applications of unsupervised learning are:

Clustering: Grouping similar data points together based on their attributes or distances. For example, clustering can be used to segment customers based on their preferences, behavior, or demographics.

Dimensionality reduction: Reducing the number of variables or features in a dataset while preserving the essential information. For example, dimensionality reduction can be used to compress images, remove noise, or visualize high-dimensional data in lower dimensions.

Anomaly detection: Identifying outliers or abnormal data points that deviate from the normal distribution or behavior of the data. For example, anomaly detection can be used to detect fraud, network intrusion, or system failure.

Association rule mining: Finding rules that describe how variables or items are related or co-occur in a dataset. For example, association rule mining can be used to discover frequent itemsets in market basket analysis or recommend products based on purchase history.Reference::Unsupervised learning - Wikipedia,What is Unsupervised Learning? | IBM

Question 6

Question Type: MultipleChoice

What is the difference between classification and regression in Supervised Machine Learning?

Options:

A- Classification assigns data points to categories, whereas regression predicts continuous values.

B- Classification and regression both predict continuous values.

C- Classification predicts continuous values, whereas regression assigns data points to categories.

D- Classification and regression both assign data points to categories.

Answer:

A

Explanation:

Classification and regression are two subtypes of supervised learning in machine learning. The main difference between them is the type of output variable they deal with. Classification assigns data points to discrete categories based on some criteria or rules. For example, classifying emails into spam or not spam based on their content is a classification problem because the output variable is binary (spam or not spam). Regression predicts continuous values for data points based on their input features. For example, predicting house prices based on their size, location, amenities, etc., is a regression problem because the output variable is continuous (house price). Classification and regression use different types of algorithms and metrics to evaluate their performance.Reference::Oracle Cloud Infrastructure AI - Machine Learning Concepts,Classification vs Regression in Machine Learning | by ...

Question 7

Question Type: MultipleChoice

You are working on a project for a healthcare organization that wants to develop a system to predict the severity of patients' illnesses upon admission to a hospital. The goal is to classify patients into three categories - Low Risk, Moderate Risk, and High Risk - based on their medical history and vital signs.

Which type of supervised learning algorithm is required in this scenario?

Options:

A- Clustering

B- Regression

C- Binary Classification

D- Multi-Class Classification

Answer:

D

Explanation:

Multi-class classification is a type of supervised learning algorithm that is required in this scenario because the output variable has more than two classes. Multi-class classification is the problem of classifying instances into one of three or more classes. For example,

classifying patients into low risk, moderate risk, or high risk based on their medical history and vital signs is a multi-class classification problem because each patient can only belong to one of these three classes. Multi-class classification can be solved by using various algorithms, such as decision trees, random forests, support vector machines (SVMs), k-nearest neighbors (k-NN), naive Bayes, logistic regression, neural networks, etc. Some of these algorithms can naturally handle multi-class problems, while others need to be adapted by using strategies such as one-vs-one or one-vs-rest.Reference::Multiclass classification - Wikipedia,Multiclass Classification-Explained in Machine Learning

Question 8

Question Type: MultipleChoice

Which type of machine learning is used for already labeled data sets?

Options:

A- Supervised learning

B- Active learning

C- Unsupervised earning

D- Reinforcement learning

Answer:

A

Explanation:

Supervised learning is a type of machine learning that uses labeled data sets to train algorithms that can classify data or predict outcomes. Labeled data sets are data sets that have both input features and output labels for each instance. For example, a labeled data set for image classification would have images as input features and the corresponding categories (such as dog, cat, bird, etc.) as output labels. Supervised learning algorithms learn the relationship between the input features and the output labels from the training data set and then use that relationship to make predictions on new or unseen data. Supervised learning can be divided into two subtypes: classification and regression. Classification is the task of assigning discrete categories to data instances, such as spam or not spam for emails. Regression is the task of predicting continuous values for data instances, such as house prices or stock prices.Reference::Oracle Cloud Infrastructure AI - Machine Learning Concepts,What is Supervised Learning? | IBM

Question 9

Question Type: MultipleChoice

How is Generative AI different from other AI approaches?

Options:

A- Generative AI understands underlying data and creates new examples.

B- Generative AI focuses on decision-making and optimization.

C- Generative AI generates labeled outputs for training.

D- Generative AI is used exclusively for text-based applications.

Answer:

A

Explanation:

Generative AI is a branch of artificial intelligence that focuses on creating new content or data based on the patterns and structure of existing data. Unlike other AI approaches that aim to recognize, classify, or predict data, generative AI aims to generate data that is realistic, diverse, and novel. Generative AI can produce various types of content, such as images, text, audio, video, software code, product designs, and more. Generative AI uses different techniques and models to learn from data and generate new examples, such as generative adversarial networks (GANs), variational autoencoders (VAEs), diffusion models, and foundation models. Generative AI has many applications across different domains and industries, such as art, entertainment, education, healthcare, engineering, marketing, and more.Reference::Oracle Cloud Infrastructure AI - Generative AI,Generative artificial intelligence - Wikipedia