

Agent

Agents are systems or software programs capable of autonomous, purposeful and reasoning directed towards one or more goals. They are also called assistants, brokers, bots, droids, intelligent agents, and software agents.

Algorithm

A formula or set of rules for performing a task. In AI, the algorithm tells the machine how to go about finding answers to a question or solutions to a problem.

Analogical Reasoning

Solving problems by using analogies, by comparing to past experiences.

Artificial Intelligence (AI)

A field of computer science dedicated to the study of computer software making intelligent decisions, reasoning, and problem solving.

Artificial Neural Networks

Learning models based on the biological neural networks present in the brains of animals. Based on the activity of neurons, they are used to solve tasks that would be too difficult for traditional methods of programming.

Autonomous

Autonomy is the ability to act independently of a ruling body. In AI, a machine or vehicle is referred to as autonomous if it doesn't require input from a human operator to function properly.

Backpropagation

Short for "backward propagation of errors," backpropagation is a way of training neural networks based on a known, desired output for specific sample case.

Backward Chaining

A method in which machines work backward from the desired goal, or output, to determine if there is any data or evidence to support those goals or outputs.

Case-Based Reasoning (CBR)

An approach to knowledge-based problem solving that uses the solutions of a past, similar problem (case) to solve an existing problem.

Clustering

A method of unsupervised learning and common statistical data analysis technique. In this method, observations that show similarities to each other are organized into groups (called clusters).

Data

Any collection of information converted into a digital form.

Data mining

The process by which patterns are discovered within large sets of data with the goal of extracting useful information from it.

Decision Model

A model that uses prescriptive analytics to establish the best course of action for a given situation. The model assesses the relationships between the elements of a decision to recommend one or more actions. It may also predict what should happen if a certain action is taken.

Deep learning

A subset of Machine Learning in which Artificial Neural Networks are “layered”, combined with plenty of computing power, and given a large measure of training data to create extremely powerful learning models capable of processing data.

Environment

It is the part of real or computational world inhabited by the agent.

Forward chaining

A situation where an AI system must work "forward" from a problem to find a solution. Using a rule-based system, the AI would determine which "if" rules it would apply to the problem.

Heuristics

These are rules drawn from experience used to solve a problem more quickly than traditional problem-solving methods in AI. While faster, a heuristic approach typically is less optimal than the classic methods it replaces. It is the knowledge based on Trial-and-error, evaluations, and experimentation.

Inductive Reasoning

In AI, inductive reasoning uses evidence and data to create statements and rules. The ability to derive key generalized conclusions or theories by analyzing patterns in a large data set.

Machine Learning

A field of AI focused on getting machines to act without being programmed to do so. Machines "learn" from patterns they recognize and adjust their behavior accordingly.

Natural language processing (NLP)

The ability of computers to understand, or process natural human languages and derive meaning from them. NLP typically involves machine interpretation of text or speech recognition.

Overfitting

A machine learning problem whereby an algorithm is unable to discern information relevant to its assigned task from information which is irrelevant to its assigned task within training data. Overfitting therefore inhibits the algorithm's predictive performance when dealing with new data.

Parameter

Any characteristic that can be used to help define or classify a system such as an event, thing, person, project or situation. In AI, parameters are used to clarify exactly what an algorithm should be seeking to identify as important data when performing its target function.

Percepts

It is the format in which the agent obtains information about the environment.

Planning

A branch of AI dealing with planned sequences or strategies to be performed by an AI-powered machine. Things such as actions to take, variables to account for, and duration of performance are accounted for.

Predictive Analytics

The act of analyzing current and past data to look for patterns that can help make predictions about future events or performance.

Pruning

The use of a search algorithm to cut off undesirable solutions to a problem in an AI system. It reduces the number of decisions that can be made by the AI system.

Regression

A statistical measure used to determine the strength of the relationships between dependent and independent variables.

Rule

It is a format of representing knowledge base in Expert System. It is in the form of IF-THEN-ELSE.

Strong AI

An area of AI development that is working toward the goal of making AI systems that are as useful and skilled as the human mind.

Target Function

The specific task an AI or learning machine has been designed and programmed to complete.

Task

It is the goal the agent is tries to accomplish.

Test Data Set

In machine learning, the test data set is the data given to the machine after the training and validation phases have been completed. The test data set is used to check the performance characteristics of the algorithms produced after the completion of the first two phases when presented with unknown data. This will give a good indication of the accuracy, sensitivity and specificity of the algorithm's predictive powers.

Training Data Set

In machine learning, the training data set is the data given to the machine during the initial "learning" or "training" phase. From this data set the machine is meant to gain some insight into options for the efficient completion of its assigned task through identifying relationships between the data.

Turing test

A test developed by Alan Turing that tests the ability of a machine to mimic human behavior. The test is based on a process in which a series of judges attempt to discern interactions with a control (human) from interactions with the machine (computer) being tested.

Weak AI

Also known as narrow AI, weak AI refers to a non-sentient computer system that operates within a predetermined range of skills and usually focuses on a singular task or small set of tasks. Most AI in use today is weak AI.

Weights

The connection strength between units, or nodes, in a neural network. These weights can be adjusted in a process called learning.