
Professional Certificate in AI-Powered Business Analysis

AI-Powered Decision Making

Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions. The term may also be applied to any machine that exhibits traits associated with a human mind such as learning and problem-solving.

Machine Learning (ML) is a subset of AI that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. It focuses on the development of computer programs that can access data and use it to learn for themselves.

Deep Learning (DL) is a subset of ML that makes the computation of multi-layer neural networks feasible. It is responsible for advances in image and speech recognition. DL is a network of algorithms, designed to simulate the way a human brain analyzes and processes information.

Supervised Learning is a type of ML where the AI is trained using labeled data. In this method, the algorithm is provided with example inputs and their desired outputs, which it then uses to learn how to map inputs to outputs.

Unsupervised Learning is a type of ML where the AI is given unlabeled data and must find patterns and relationships within the data on its own. This method is often used for clustering and association.

Reinforcement Learning is a type of ML where an agent learns to behave in an environment, by performing certain actions and observing the results/rewards.

Natural Language Processing (NLP) is the ability of a computer program to understand human language as it is spoken. NLP is a component of AI that deals with the interaction between computers and humans.

Computer Vision is the field of study surrounding how computers can gain high-level understanding from digital images or videos. It seeks to automate tasks that the human visual system can do.

Predictive Analytics is the use of data, statistical algorithms and machine learning techniques to identify the likelihood of future outcomes based on historical data. It involves applying statistical analysis techniques, analytical queries, and automated machine learning algorithms to data sets to create predictive models that place a numerical value, or score, on the likelihood of a particular event happening.

Prescriptive Analytics is the area of business analytics that uses optimization algorithms to suggest decision options for the best possible outcomes. It is the final phase of the decision-making process in the hierarchy: descriptive, predictive, and prescriptive.

Chatbot is a software application used to conduct an online chat conversation via text or text-to-speech, in

lieu of providing direct contact with a live human agent.

Robotic Process Automation (RPA) is the use of software with artificial intelligence (AI) and machine learning capabilities to handle high-volume, repetitive tasks that previously required humans to perform. These tasks might include queries, calculations and maintenance of records and transactions.

Decision Trees are a type of Supervised Learning algorithm that is mostly used in Classification problems. It works for both categorical and continuous input and output variables.

Random Forest is a type of ensemble machine learning method, where a group of weak models combine to form a powerful model. It is a type of ensemble learning method, where a group of weak models combine to form a powerful model.

Neural Networks are a set of algorithms, modeled loosely after the human brain, that are designed to recognize patterns. They interpret sensory data through a kind of machine perception, labeling or clustering raw input.

Applications of AI-Powered Decision Making:

- * AI can analyze vast amounts of data to uncover hidden patterns, correlations, and other insights. By using AI, businesses can make better decisions, improve customer experience, and reduce costs.
- * AI can be used to personalize the customer experience. For example, AI can analyze a customer's browsing and purchasing history to recommend products and services that the customer is likely to be interested in.
- * AI can be used to automate routine tasks, such as data entry and customer service. This can free up human employees to focus on more complex tasks.
- * AI can be used to predict future trends and behaviors. For example, AI can analyze social media data to predict which products and services are likely to be popular in the future.
- * AI can be used to make real-time decisions. For example, AI can be used to analyze data from sensors in a manufacturing plant to make decisions about maintenance and repair.

Challenges of AI-Powered Decision Making:

- * Data quality and availability is a major challenge in AI-powered decision making. AI algorithms require large amounts of high-quality data to make accurate predictions.
- * Interpretability of AI models is another challenge. AI models, particularly deep learning models, can be difficult to interpret, making it challenging to understand why the model is making a particular prediction.
- * AI models can also be biased, leading to unfair and discriminatory outcomes. It is important to carefully validate and test AI models to ensure that they are fair and unbiased.
- * Data privacy and security is another challenge in AI-powered decision making. AI models often require access to sensitive data, making it important to ensure that this data is protected.
- * Ethical considerations is another challenge, as AI models can have significant impacts on individuals and society. It is important to consider the ethical implications of AI models and to ensure that they are aligned

with societal values.

In conclusion, AI-Powered Decision Making is a powerful tool that can be used to analyze vast amounts of data and make better decisions. However, it is important to be aware of the challenges associated with AI-Powered Decision Making, including data quality and availability, interpretability, bias, privacy and security, and ethical considerations. By addressing these challenges, businesses can unlock the full potential of AI-Powered Decision Making.