

LESSON 2: INTRODUCTION TO MACHINE LEARNING

Keywords about: "Machine Learning –Fundamentals":

Machine Learning:

A subfield of artificial intelligence that uses algorithms trained on data sets to enable machines to perform tasks, such as predicting outcomes or classifying information, without human intervention.

Algorithm:

A set of rules or procedures that instruct a machine on how to process data and perform specific tasks.

Supervised Machine Learning:

A type of machine learning where algorithms are trained on labeled data sets, including tags describing each piece of data, to create models used for prediction and classification purposes.

Unsupervised Machine Learning: Meaning: A type of machine learning that uses unlabeled data sets to train algorithms, requiring the algorithm to uncover patterns on its own without outside guidance.

Semi-Supervised Machine Learning: A type of machine learning that uses both unlabeled and labeled data sets, with algorithms first fed a small amount of labeled data to direct their development and then larger quantities of unlabeled data to complete the model.

Reinforcement Learning: A type of machine learning that uses trial and error to train algorithms, with the algorithms operating in specific environments and receiving feedback following each outcome to optimize actions.

Deep Learning: A subset of machine learning that involves the use of artificial neural networks to model and solve complex problems, often used for tasks like image and speech recognition.

Prediction: The act of using machine learning models to forecast or estimate future outcomes based on past data.

Classification: The process of categorizing data into predefined classes or groups based on specific characteristics.

Data Set: A collection of data used to train machine learning algorithms, often consisting of examples with known outcomes or labels.

Keywords about: "Machine Learning –Fundamentals":

Machine Learning: The field of artificial intelligence that involves the development of algorithms allowing machines to learn from data.

Representation: Describes how data is structured or viewed, such as representing data as individuals or in graph form.

Evaluation: In the context of supervised learning, it involves assessing or scoring the performance of a learner using an evaluation function.

Optimization: The process of finding the best parameters for a learner using an optimization technique, often based on an evaluation function.

Generalization: The ability of a machine learning model to apply its findings to new, unseen data, avoiding overfitting to the training data.

Test Data Set: A separate dataset used to assess the generalizability of a learner, not used in training to prevent bias.

Cross-Validation: A technique where the training data is split into subsets, and the learner is trained on one subset while tested on another, repeated to assess performance.

Overfitting: Occurs when a learning algorithm fits the training set too closely, leading to high variance and low error on the training set but poor generalization.

Polynomial Degree: The degree of the polynomial used in the hypothesis function, crucial in avoiding overfitting.

Training Set: The portion of the data set used to train the machine learning model, typically a majority of the data.