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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.

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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 tooptimize 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.

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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.

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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.