

Week 2 - AI Mentorship Program

# Introduction to Machine Learning (ML)



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# Outline

(1)

What is ML?

(2)

ML Algorithm

(3)

Code for ML algoritm

(4)

Next Step



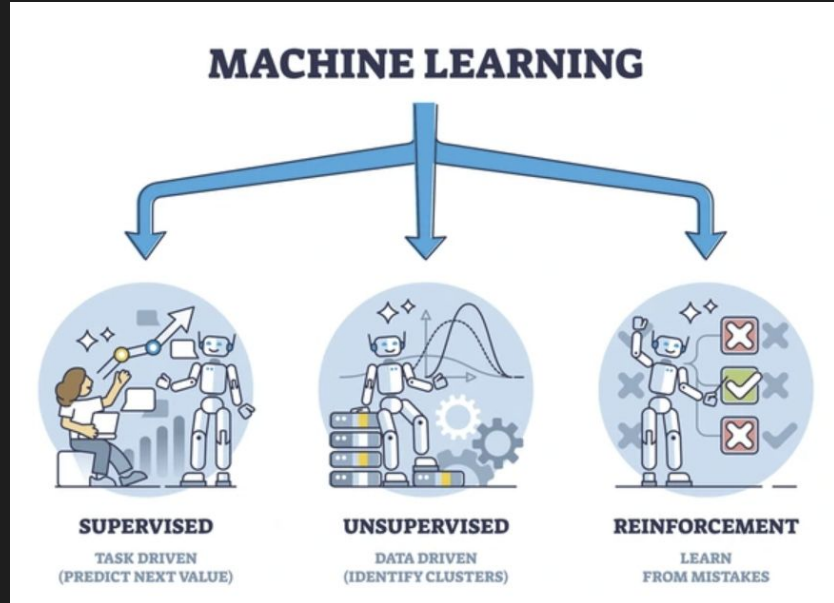
# Recap week 1



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# What is Machine Learning?

Machine Learning is a subset of AI that allows systems to learn and improve from experience without explicit programming.



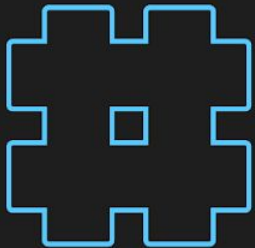
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# Supervised vs. Unsupervised Learning



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Feature	Supervised Learning	Unsupervised Learning
Input Data	Labeled (with output)	Unlabeled
Objective	Predict output for new data	Discover hidden patterns
Examples	Classification, Regression	Clustering, Dimensionality Reduction

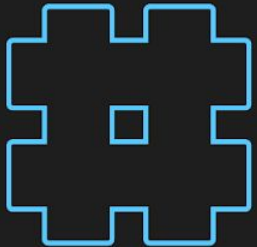


# Basic Algorithms in Machine Learning



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1. **Linear Regression:** Predicts continuous values.  
Example: Predicting house prices based on features like area and location.
2. **K-Nearest Neighbors (KNN):** Classifies data points based on their nearest neighbors.  
Example: Identifying spam emails.
3. **Decision Tree:** Creates a tree structure to make decisions based on input features.  
Example: Loan approval predictions.



# Code - Clustering



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**Dataset:** Iris dataset (features: sepal and petal dimensions).

**Objective:** Objective: A statistical method used for multi-class classification problems in this case.

**Steps:**

- Load the dataset.
- Preprocess data (e.g., normalization).
- Apply Logistic Regression Algorithm.
- Evaluate classification report.



# Code - Clustering



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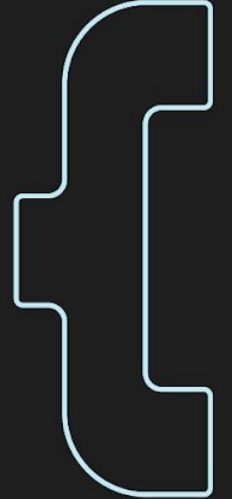


**Dataset:** Iris dataset (features: sepal and petal dimensions).

**Objective:** Group similar data points into clusters.

**Steps:**

- Load the dataset.
- Preprocess data (e.g., normalization).
- Apply K-Means algorithm.
- Visualize the clusters.





# Summary



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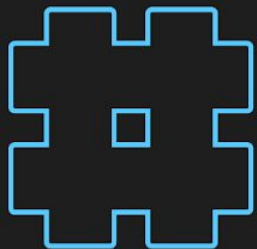
- Machine Learning enables systems to learn from data and make decisions.
- Supervised learning uses labeled data; unsupervised learning finds patterns in unlabeled data.
- Algorithms covered: Linear Regression, KNN, Decision Tree.
- Scikit-learn simplifies data preprocessing, training, and evaluation.
- Practices: Built a predictive model with Linear Regression and Grouped data using K-Means Clustering.



## Next Step :D

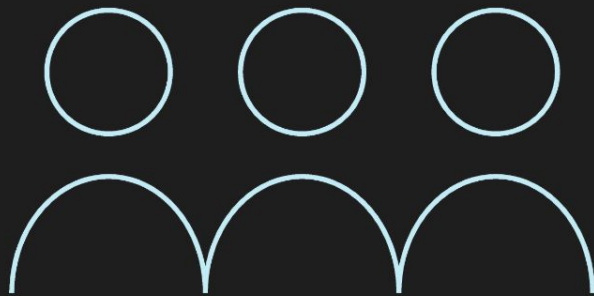
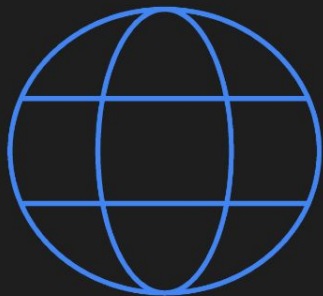


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- Review today's materials and complete the exercises.
- Explore the Scikit-learn documentation for more features.
- Start thinking about a mini-project idea to apply these techniques.





# Thank You

See You Next Week!



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