📙 4. machine-learning-intro.pdf

Title: Introduction to Machine Learning

1. What is Machine Learning?

Machine Learning is a branch of AI where systems **learn from data without being explicitly programmed**.

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2. Types of Machine Learning

a) Supervised Learning

- Uses labeled data

- Example: Linear Regression, Decision Trees

b) Unsupervised Learning

- Uses unlabeled data

- Example: Clustering (K-Means)

c) Reinforcement Learning

- Learning using rewards and punishment

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3. Machine Learning Process

1. Data collection

2. Data preprocessing

3. Model training

4. Model testing

5. Prediction

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4. Common Algorithms

- Linear Regression

- Logistic Regression

- Decision Tree

- K-Means

- Support Vector Machine

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5. Applications

- Recommendation systems (Netflix, Amazon)

- Fraud detection

- Image recognition

- Chatbots

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6. Tools & Libraries

- Python

- Scikit-learn

- TensorFlow

- PyTorch

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7. Advantages

- Automation

- Accuracy

- Handles large data

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8. Conclusion

Machine learning is the **core technology behind modern AI systems**.