



Into Machine Learning

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LEARNING OUTCOMES

At the end of the chapter, students will be able to:

- ▶ Explain about machine learning
- ▶ Identify different types of machine learning
- ▶ Outline the key concepts of machine learning
- ▶ Classify the steps in a typical machine learning workflow
- ▶ Make use of different applications of machine learning
- ▶ Identify the challenges and considerations in machine learning
- ▶ Explain about deep learning
- ▶ Outline about neural networks
- ▶ Examine deep neural networks
- ▶ Explain about key concepts of deep learning
- ▶ Make use of different applications of deep learning
- ▶ Identify the challenges and considerations - DL
- ▶ Differentiate between machine learning and deep learning

CHAPTER NOTES

- ▶ Machine learning is an application of AI that enables systems to learn and improve from experience without being explicitly programmed
- ▶ Machine learning is a subset of artificial intelligence.
- ▶ There are 3 types of machine learning: Supervised learning, Unsupervised learning and Reinforcement learning.
- ▶ The seven steps in machine learning: problem definition, data collection, data pre-processing, feature engineering, model selection, model training, model evaluation and deployment.
- ▶ Applications of machine learning in real life are: recommendation systems, image recognition, natural language processing, autonomous vehicles, healthcare diagnostics, fraud detection, virtual assistants.
- ▶ Deep learning is a subfield of machine learning that focuses on training artificial neural networks to learn and make decisions from data.
- ▶ Application of deep learning are: image and video analysis, speech recognition and generation, autonomous vehicles, healthcare, gaming, artificial intelligence in general.
- ▶ Machine learning involves training models to make predictions or decisions based on data, while deep learning is a subset of machine learning that specifically utilizes deep neural networks to automatically learn patterns from data.