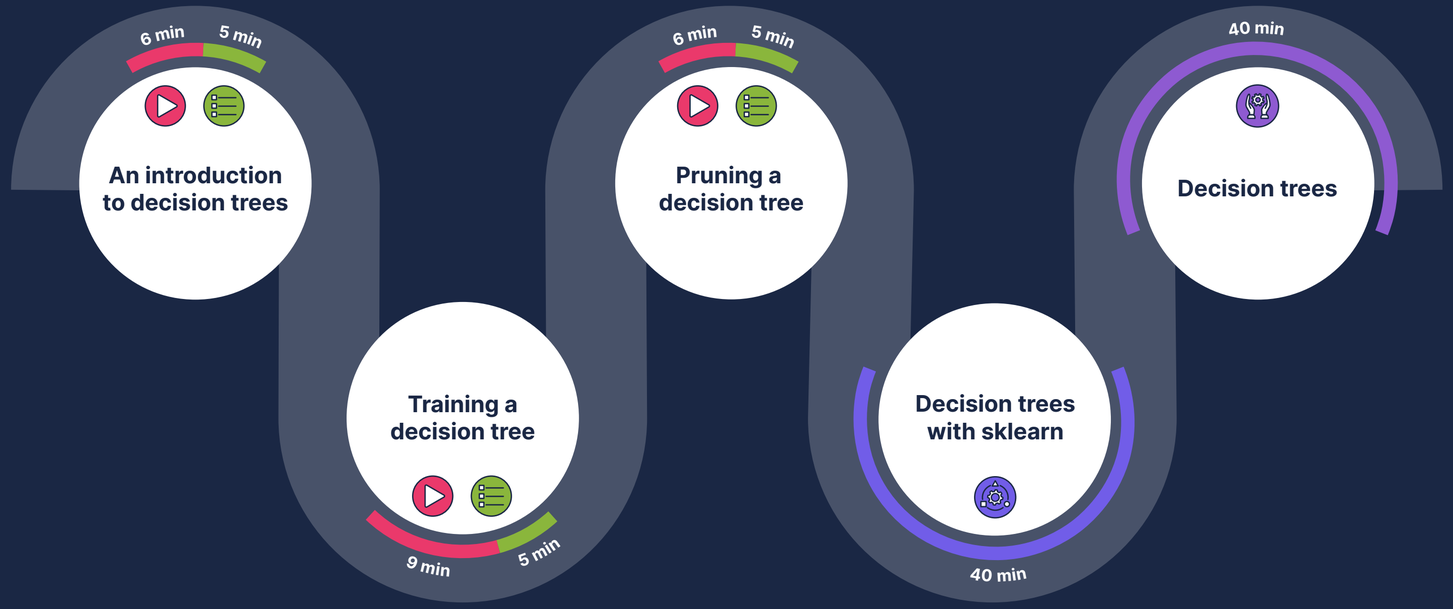
Decision trees – Lesson overview

Video
Knowledge questions
Example
Exercise

Understanding **decision trees** and their **implementation** is crucial for anyone interested in machine learning and data analysis. Decision trees provide a simple, yet powerful, tool for both **classification** and **regression** tasks, allowing us to interpret and visualise complex decision-making processes.

In this lesson, we will delve into the **fundamentals of decision trees**, exploring **how they work**, **how to train them** effectively, and how to **implement them** using Python libraries like sklearn. Through a combination of theoretical explanations, practical examples, and hands-on coding exercises, we will gain a comprehensive understanding of decision trees and their application in real-world scenarios.



Learning objectives

- Understand the conceptual structure and workings of decision trees.
- Explain the process of training a decision tree model, including partitioning and recursive binary splitting.
- Implement decision trees for both classification and regression tasks using sklearn.
- Evaluate the performance of decision tree models using appropriate metrics such as accuracy and mean squared error.
- Interpret and visualise decision tree models to gain insights into decision-making processes.
- Recognise the advantages and disadvantages of using decision trees in machine learning applications.
- Apply decision tree algorithms to real-world datasets and solve practical problems through data-driven decision-making.