

Ensemble methods and bootstrapping - Lesson overview

In the ever-evolving field of data science, ensemble methods stand out as a powerful strategy to **improve the predictive performance of machine learning models**. These techniques involve **combining multiple models** to form a stronger, more accurate prediction model. The rationale behind this approach is grounded in the wisdom of **crowds theory**, which suggests that **the aggregation of multiple predictions will often be more accurate than individual predictions**.

This lesson delves into ensemble methods and bootstrapping, crucial techniques for anyone looking to enhance their machine-learning skills. By mastering these methods, data scientists can significantly improve the **robustness, accuracy, and generalisability** of their predictive models, addressing some of the most challenging problems in data science today.

Learning objectives

- Comprehend the foundational principles and applications of ensemble methods and bootstrapping in data science.
- Analyse the effectiveness of various ensemble strategies, such as bagging, boosting, and stacking, in enhancing model performance.
- Apply bootstrapping techniques to estimate model accuracy and stability.
- Integrate ensemble methods and bootstrapping into data science projects to address complex predictive modelling challenges.

 **Video**

 **Knowledge questions**

 **Examples**

 **Exercise**

