

Machine Learning for Wine Typing: Classifying Italian Wines by Chemical Profiles

Abstract:

This project aims to apply and evaluate machine learning classifiers on the Wine Dataset, a collection of chemical analysis results from wines grown in the same region in Italy but derived from three different cultivars. The dataset encompasses 13 distinct chemical attributes, such as Alcohol, Malic Acid, Ash and so on, which serve as input features. The goal is to accurately classify these wines into their respective cultivars, which are represented by three classes (1, 2, and 3), based on their chemical properties. For this purpose, three different approaches are utilized: K-Nearest Neighbors (KNN), Support Vector Machine (SVM), and Softmax, while using a random prediction model as the baseline model.