

Wine Quality Prediction Using Orange Data Mining

A Case Study on Red Wine Quality

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Abstract:

This project explores the application of Orange Data Mining tools for predicting the quality of red wines based on physicochemical properties. The red wine quality dataset from the UCI Machine Learning Repository serves as the foundation for the analysis. The primary objective is to use Orange's data visualization, machine learning algorithms, and predictive modeling capabilities to analyze the data and classify wines based on their quality. This project demonstrates the simplicity and effectiveness of Orange for implementing machine learning models, providing insights into wine classification and quality prediction.

Introduction:

Wine quality is influenced by various physicochemical properties such as acidity, sugar content, pH levels, and alcohol concentration. The ability to predict wine quality accurately can help winemakers and distributors ensure consistent product standards. In this project, we utilize the Red Wine Quality dataset, which contains 11 input variables and a quality score ranging from 0 to 10.

This project leverages Orange Data Mining, a visual programming tool for data analysis and machine learning. Using Orange, we aim to visualize the dataset, clean the data, and implement machine learning models to predict the quality of wine. The models will be evaluated based on accuracy and interpretability, with an emphasis on understanding the impact of each feature on wine quality.

The simplicity of Orange allows for an intuitive approach to exploring machine learning without requiring advanced coding skills, making it an ideal tool for rapid prototyping and testing machine learning workflows. Through this study, we aim to demonstrate the potential of Orange in real-world applications like wine quality prediction.