

■ README — Wine Classifier Dashboard

■ Project Overview

The Wine Classifier Dashboard is an interactive machine learning application developed using Streamlit and scikit-learn. It leverages the UCI Wine dataset to classify wines into three categories based on their chemical properties. The dashboard provides a simple, intuitive interface where users can: - Train ML models (Random Forest & SVC) - Adjust hyperparameters interactively - Input wine feature values for instant predictions - View performance metrics and model interpretability results

■ Features

- Model Selection: Choose between Random Forest and Support Vector Classifier
- Interactive Controls: Adjust test size, random state, estimators, depth, C, and gamma
- Dataset Insights: Number of samples, features, and classes displayed
- Prediction Interface: Custom sliders for feature inputs or random test examples
- Evaluation Metrics: Accuracy, confusion matrix, classification report
- Feature Importance: Rankings available when using Random Forest

■ Project Structure

Wine-Classifier-Dashboard/

■■■ wine_streamlit_app.project.py # Main Streamlit app

■■■ README.md # Project documentation

■■■ Wine_Classifier_Project_Report.pdf # Internship project report

■■■ requirements.txt # Python dependencies

■■ Installation & Setup

- 1 Clone the repository: `git clone https://github.com/your-username/Wine-Classifier-Dashboard.git`
- 2 Navigate to the project folder: `cd Wine-Classifier-Dashboard`
- 3 Create and activate a virtual environment (recommended): Linux/Mac: `python3 -m venv venv && source venv/bin/activate` Windows: `python -m venv venv && venv\Scripts\activate`

- 4 Install dependencies: `pip install -r requirements.txt`
- 5 Run the app: `python -m streamlit run wine_streamlit_app.project.py`
- 6 6 Open your browser at `http://localhost:8501`

■ Dataset Information

- Source: UCI Machine Learning Repository - Samples: 178 - Features: 13 (alcohol, magnesium, phenols, flavanoids, etc.) - Classes: 3 wine types

■ Report

A detailed report is included: `Wine_Classifier_Project_Report.pdf`

■ Contributing

Contributions and suggestions are welcome. You can fork the repository, make improvements, and create a pull request.

■ License

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