Universal Analyst Report

Comprehensive Analysis of iris Dataset

Report Date: 2025-08-14 00:19:29
Dataset Name: iris
Analysis Type: Full EDA & Modeling
Report Version: 1.0

Universal Analyst Model Report

Date of Analysis: 2025-08-14 00:19:29

Dataset: iris

Step 1: Dataset Overview

- original_shape: (150, 5)
- final_shape: (150, 4)
- constant_columns_removed: []
- highly_correlated_columns_removed: ['petalwidth']
- columns_dropped_missing: []
- column_types: {'sepallength': 'numerical', 'sepalwidth': 'numerical', 'petallength': 'numerical', 'class': 'categorical'}
- pca_applied: False

Step 2: Exploratory Data Analysis (EDA)

Exploratory Data Analysis Report

Dataset Overview

- Number of rows: 150
- Number of columns: 4

Summary Statistics

Numerical Features

	count	mean	median	std	min	max	skew	kurtosis
sepallength	150	5.84333	5.8	0.828066	4.3	7.9	0.311753	-0.573568
sepalwidth	150	3.054	3	0.433594	2	4.4	0.330703	0.241443
petallength	150	3.75867	4.35	1.76442	1	6.9	-0.271712	-1.39536

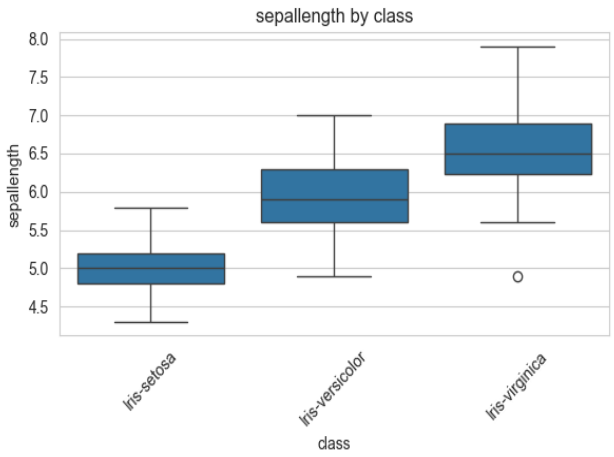
Categorical Features

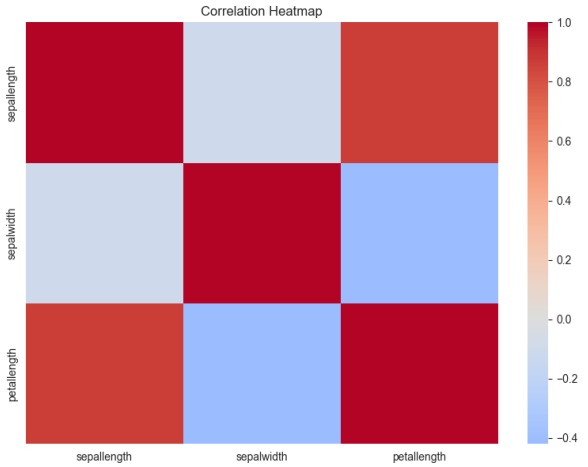
	unique_count	mode_freq	missing
class	3	50	0

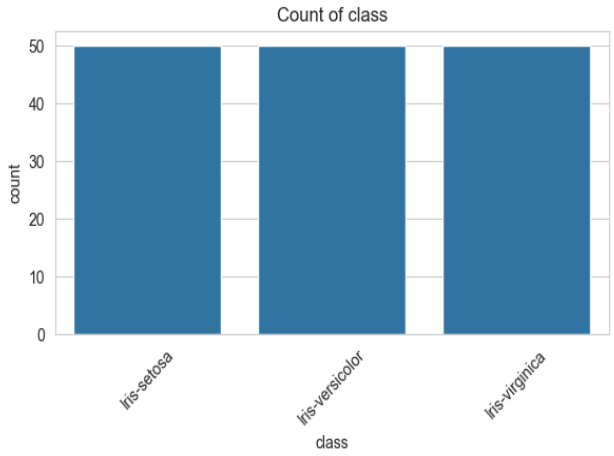
Key Insights

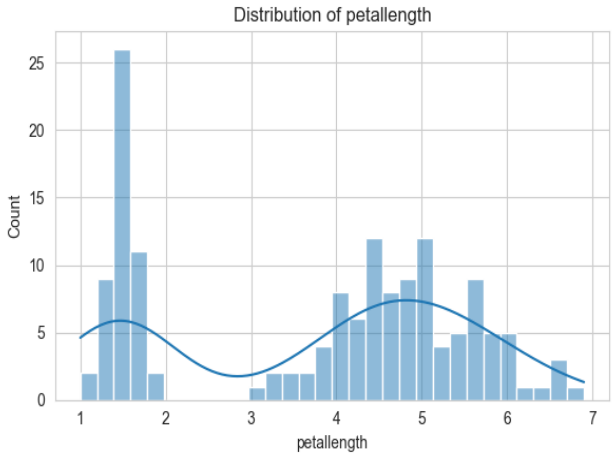
- Feature 'sepalwidth' has 4 potential outliers.
- Features 'sepallength' and 'petallength' have strong correlation: 0.87
- Features with high variance: petallength

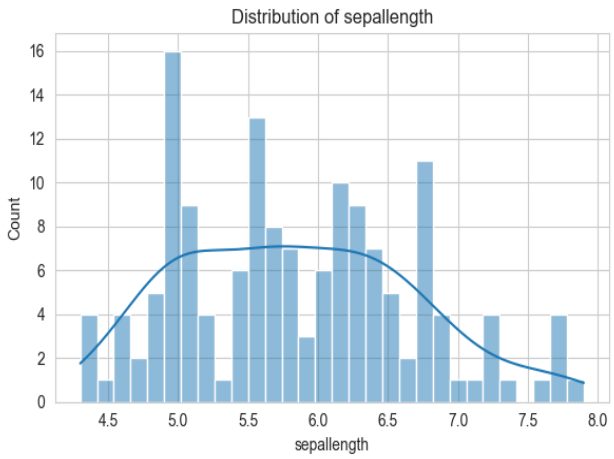
Visualizations

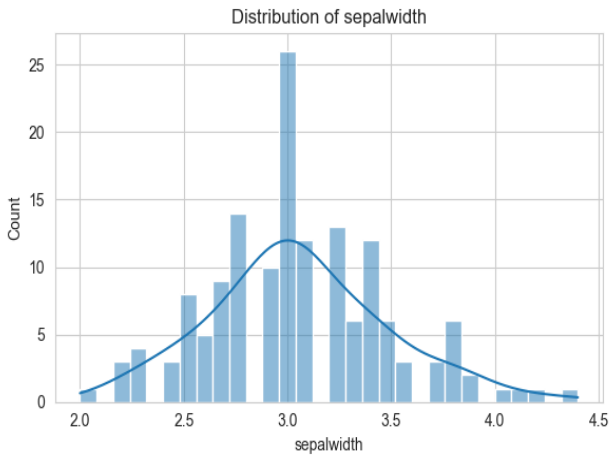


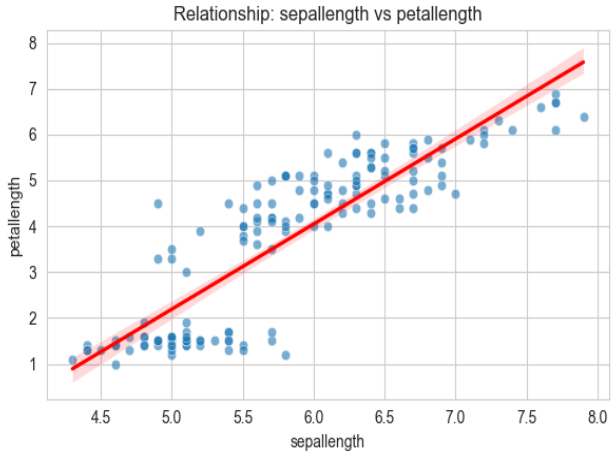












Step 3: Insight Extraction

Data Insight Report

Dataset Summary

- Number of rows: 150
- Number of columns: 4
- Target column: class
- Problem type: classification

Top Influential Features

- petallength: Mutual Information Score = 0.9909
- sepallength: Mutual Information Score = 0.4636
- sepalwidth: Mutual Information Score = 0.2262

Summary Statistics of Top Features

- petallength: Mean = 3.7587, Median = 4.3500, Std = 1.7644
- sepallength: Mean = 5.8433, Median = 5.8000, Std = 0.8281
- sepalwidth: Mean = 3.0540, Median = 3.0000, Std = 0.4336

Outlier Counts per Numeric Feature

- sepallength: 0 outliers detected
- sepalwidth: 4 outliers detected
- petallength: 0 outliers detected

Next Steps

- Consider building predictive models using the identified influential features.

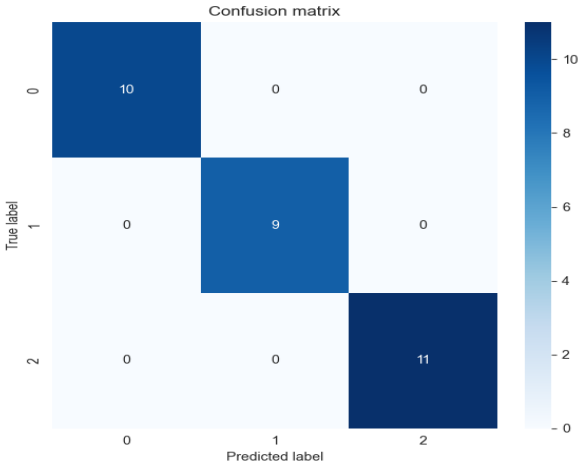
Step 4: Modeling and Prediction

Model Evaluation Report

Problem type: classification

LogisticRegression

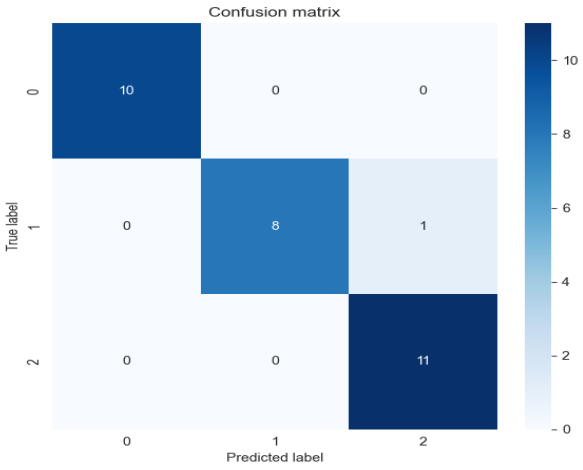
- accuracy: 1.0000
- precision: 1.0000
- recall: 1.0000



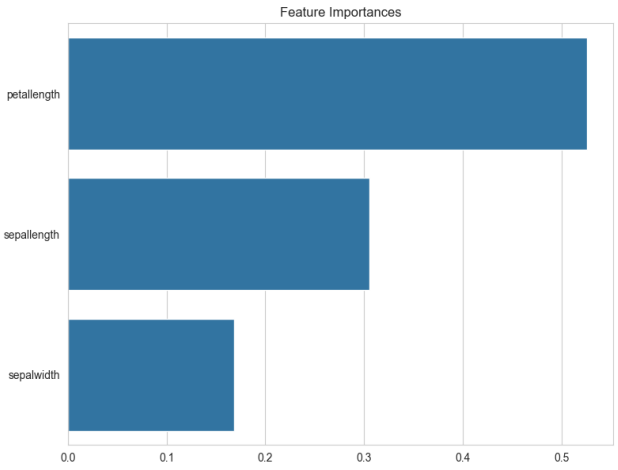
- f1_score: 1.0000

RandomForestClassifier

- accuracy: 0.9667
- precision: 0.9694
- recall: 0.9667



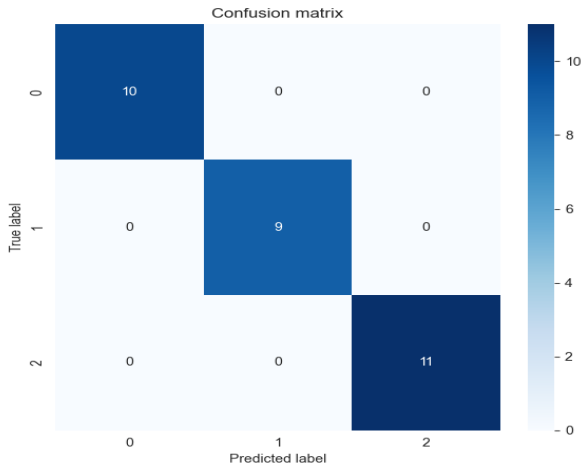
- f1_score: 0.9664



SVC

- accuracy: 1.0000
- precision: 1.0000

- recall: 1.0000



- f1_score: 1.0000

Conclusion

This report summarizes the data ingestion, preprocessing, exploratory analysis, insights, and modeling results. Further analysis and model tuning may be required based on business needs.
