

## Ethical Considerations

1. **Bias and Fairness**

The Iris dataset is balanced, but in real-world scenarios, unequal class representation may cause biased models. Ethical model development involves ensuring fairness, especially when data impacts people's lives.

2. **Data Source Transparency**

It is important to use datasets that are openly available or collected with proper consent. Ethical use of data includes respecting privacy and being transparent about how the data was sourced and used.

3. **Misuse of Predictions**

Even though this model is used for flower classification, in real-life applications (e.g., health or finance), predictions should support—not replace—human decision-making to prevent harm from incorrect outputs.

4. **Model Explainability**

Logistic Regression is interpretable, which is good practice. Models should be explainable, especially when decisions affect individuals directly, to ensure accountability and trust.

## Troubleshooting Challenges

1. **Convergence Warnings**

Logistic Regression may not converge with default iterations. Solved by increasing `max_iter=1000`.

2. **Unstable Results in Data Splitting**

Random splits may cause inconsistent results. This is fixed using `random state=42` in `train_test_split()` for reproducibility.

3. **Import or Typing Errors**

Errors may occur from forgetting imports or misspelling. For example, forgetting to import `classification report` or typing `np.arr` instead of `np.array`.

4. **Incorrect Data Shape**

Passing 1D instead of 2D arrays to model functions like `fit()` or `predict()` causes shape-related errors. Use `.data` and `.target` correctly.

5. **Overfitting Risk**

Scoring 100% may look perfect, but it can indicate overfitting in larger or more complex datasets. Always test on unseen data and consider adding cross-validation.