Part 1:

Using Imbalanced dataset

Accuracy: 0.9666666666666667

Confusion matrix:

[[40 0 0]

 [0 26 4]

 [0 0 50]]

Class Balanced Accuracy: 0.9308641975308642

Balanced Accuracy: 0.9805621224060941

Skikit-learn's balanced_accuracy_score 0.9555555555555556

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Part 2: Over Sampling

Using Random Oversampling:

Accuracy: 0.9666666666666667

Confusion matrix:

[[50 0 0]

 [0 47 3]

 [0 2 48]]

Using SMOTE:

Accuracy: 0.98

Confusion matrix:

[[50 0 0]

 [0 47 3]

 [0 0 50]]

Using ADASYN:

Not any neigbours belong to the majority class. This case will induce a NaN case with a division by zero. ADASYN is not suited for this specific dataset. Use SMOTE instead.

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Part 3: Under Sampling

C:\Users\winra\anaconda3\lib\site-packages\sklearn\neural_network_multilayer_perceptron.py:582: ConvergenceWarning: Stochastic Optimizer: Maximum iterations (800) reached and the optimization hasn't converged yet.

  warnings.warn(

Using Random undersampling:

Accuracy: 0.9555555555555556

Confusion matrix:

[[30 0 0]

 [0 27 3]

 [0 1 29]]

Using Cluster undersampling:

Accuracy: 0.9777777777777777

Confusion matrix:

[[30 0 0]

 [0 28 2]

 [0 0 30]]

Using Tomek Links undersampling:

Accuracy: 0.9663865546218487

Confusion matrix:

[[40 0 0]

 [0 26 4]

 [0 0 49]]