MLOPS Assignment PART-M3(GROUP-120)

Report on hyperparameter tuning results

1.Introduction :-

The tuning was carried out using GridSearchCV, a method that exhaustively searches through a predefined hyperparameter grid to find the optimal configuration. This process helps in enhancing the model's predictive performance by preventing overfitting or underfitting.

2.Result Obtained:-

The hyperparameter search was conducted using 2-fold cross-validation (cv=2), which divides the dataset into two parts for training and validation, ensuring fair evaluation while considering potential class imbalances.

2.1.Evaluation Metric:-

The model performance was evaluated using the accuracy score, which measures the proportion of correctly classified instances out of the total instances.

2.2.Model Performance Analysis:-

The results show that the optimal max_depth and criterion parameters significantly affect the model's ability to generalize well. A smaller depth tends to simplify the model, reducing overfitting, while the choice between gini and entropy depends on whether a simpler or more information-theoretic approach is preferable.

The model performed better with optimized max depth preventing excessive complexity.

The "entropy" criterion provided better results compared to "gini", suggesting that information gain is more suitable for this dataset.

Using 2-fold cross-validation helped reduce variance in the accuracy results but may be improved by increasing the number of folds for a more robust evaluation.