**Project Development Phase**
**Model Performance Test**

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| Date | 10 November 2022 |
| Team ID | PNT2022TMIDxxxxxx |
| Project Name | Project - Falcon |
| Maximum Marks | 10 Marks |

**Model Performance Testing:**

Project team shall fill the following information in model performance testing template.

| S.No. | Parameter | Values | Screenshot |
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| 1. | Model Summary | **- This project aims to classify data into categories using the KNearest Neighbors (KNN) algorithm. The dataset is first analyzed through Exploratory Data Analysis (EDA) to uncover patterns and relationships among features. Key preprocessing steps include scaling features, handling missing data, and selecting the most relevant features to enhance the model's performance. The KNN classifier is then trained with various values of k (number of neighbors) and different distance metrics (e.g., Euclidean, Manhattan) to find the optimal configuration. Model performance is** | In [94]:<br>`parameters = {'n_neighbors': [1, 2, 3, 4, 5, 6, 7, 8, 9, 10],`<br>`'algorithm': ['auto', 'ball_tree', 'kd_tree', 'brute'],`<br>`'p': [1,2]}`<br><br>`KNN = KNeighborsClassifier()`<br><br>`grid_search = GridSearchCV(KNN, parameters, cv=10)`<br>`knn_cv = grid_search.fit(X_train, y_train)` |

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| | | **evaluated using metrics such as accuracy, precision, and recall on a test dataset. The final model achieves high classification accuracy, demonstrating KNN's effectiveness for this particular task.** | |
| 2. | Accuracy | Training Accuracy - 0.8482142857142858 | In [95]:<br>`print("KNN Tuned Hyperparameters (best parameters):",knn_cv.best_params_)`<br>`print("KNN Train Accuracy:",knn_cv.best_score_)`<br>KNN Tuned Hyperparameters (best parameters): {'algorithm': 'auto', 'n_neighbors': 10, 'p': 1}<br>KNN Train Accuracy: 0.8482142857142858 |
| | | Validation Accuracy - 0.8333333333333334 | Calculate the Accuracy on the Test Data<br>In [96]:<br>`knn_accuracy = knn_cv.score(X_test, y_test)`<br>`print("KNN Test Accuracy:",knn_accuracy)`<br>KNN Test Accuracy: 0.8333333333333334 |
| 3. | Confidence Score (Only Yolo Projects) | Class Detected - 1<br><br>Confidence Score – 80% | |