**Model Development Phase**

**Project Name :** Amazon Instrument Reviews

### **Model Selection Report**

In this project, multiple machine learning models were evaluated for sentiment classification of Amazon Musical Instrument Reviews. Factors such as accuracy, confusion matrix, classification report were considered to select the most suitable model.

| Model | Description |
| --- | --- |
| Model - 1 : Logistic Regression | ⠂A simple linear model applied to TF-IDF features.  ⠂Served as a baseline for sentiment classification. |
| Model - 2 : Random Forest | ⠂An ensemble learning method with multiple decision trees.  ⠂Achieved higher accuracy and robustness compared to Logistic Regression. Selected as the final model. |

| Model | Description |
| --- | --- |
| Model 1 – Training Setup & Visualizations |  |
| Model 2 – Dataset Loading & Balancing |  |
| Model 3 – Feature Extraction (TF-IDF) |  |
| Model 4 – Training the Models |  |
| Model 5 – Evaluation on Test Set |  |
| Model 6 – Individual Review Predictions |  |