

Model Development Phase Template

Date	July 2024
Team ID	740772
Project Title	Predictive Modeling for H1-B Visa Approval Using Machine Learning
Maximum Marks	5 Marks

Model Selection Report for H1-B Visa Approval

In this report, we evaluate various deep learning architectures for the task of H1-B visa approval prediction. We will assess Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs) based on performance, complexity, and computational requirements. The goal is to determine the most suitable model that provides high accuracy and efficiency.

Model Selection Report:

Model	Description
Logistic Regression Classifier	The logistic regression classifier is often selected for predicting H1-B visa approval due to its simplicity, interpretability, and effectiveness in handling binary classification problems. It provides probabilistic predictions, making it easy to understand and implement, while performing well with large datasets and requiring less computational power compared to more complex models.
Decision Tree Classifier	The Decision Tree Classifier is chosen due to its ability to handle non-linear relationships, interpretability in decision-making processes, and robustness in handling diverse types of data relevant to H1-B visa approval scenarios.
Random Forest Classifier	The Random Forest Classifier is ideal because it combines the strength of multiple decision trees, offering high accuracy, robust performance against overfitting, and the ability to handle large and complex datasets, ensuring reliable predictions in varied H1-B visa approval scenarios.
Support Vector Machine (SVM) Classifier	The SVM is chosen for its effectiveness in handling high-dimensional data, ability to capture complex relationships between variables, and robustness in achieving high accuracy even with smaller datasets, making it suitable for precise H1-B visa approval predictions.

K-Nearest Neighbors (K-NN) Classifier	The K-NN is valued for its simplicity in implementation, flexibility in handling various types of data, and effectiveness in capturing local patterns in visa approval data, making it suitable for real-time prediction and adaptability to changing conditions.
XGBoost Classifier	The XGBoost is selected for its superior performance in handling large datasets, capability to capture complex relationships in data, robustness against overfitting, and ability to optimize predictive accuracy through boosting techniques, ensuring reliable and efficient H1-B visa approval predictions.
Ridge Classifier	The Ridge Classifier is chosen for its ability to handle multicollinearity in feature variables, regularization to prevent overfitting, and suitability for datasets where predictors are correlated, ensuring stable and reliable predictions in H1-B visa approval scenarios.