Model Optimization and Tuning Phase Template

Date	Nov 2024
Team ID	Team-739663
Project Title	AI-Enabled Candidate Resume Screening using NLP
Maximum Marks	10 Marks

Model Optimization and Tuning Phase

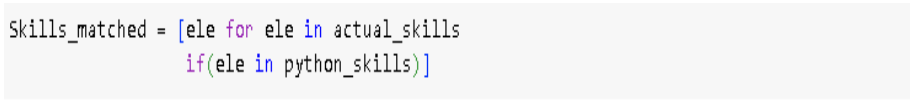
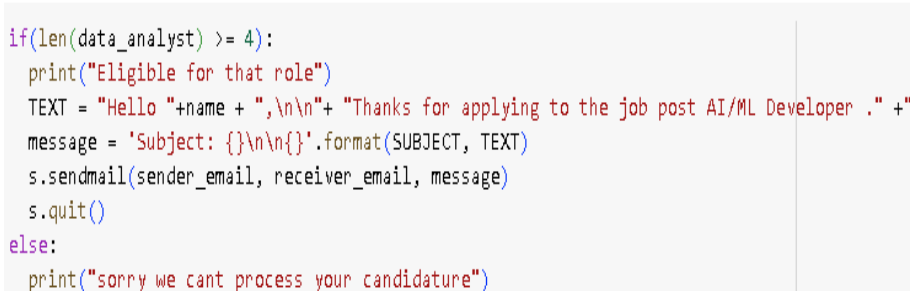
The Model Optimization and Tuning Phase focuses on enhancing the accuracy and efficiency of the resume screening system. It includes refining machine learning algorithms, fine-tuning hyperparameters (e.g., learning rate, max depth, number of estimators), evaluating multiple models using performance metrics such as precision, recall, and F1-score, and selecting the best-performing model based on its ability to accurately match candidate resumes to job descriptions. This phase ensures a robust and reliable AI-driven screening process.

Hyperparameter Tuning Documentation (8 Marks):

Model	Tuned Hyperparameters
Logistic Regression	C = 1.0, penalty = 'l2', solver = 'liblinear'
Random Forest	n_estimators = 200, max_depth = 20, min_samples_split = 5

Support Vector Machine (SVM)	C = 0.5, kernel = 'linear', gamma = 'scale'
Naive Bayes	alpha = 0.1, fit_prior = True
TF-IDF Vectorizer	max_features = 5000, ngram_range = (1, 2), stop_words = 'english'
Grid Search CV	Used for selecting best model by testing combinations of hyperparameters across models.

Final Model Selection Justification (2 Marks):

Final Model	Reasoning
The final AI-enabled resume screening model can be deployed to a production environment or integrated into an HR management system or recruitment platform. It automates the evaluation of resumes by comparing them with job descriptions using NLP techniques and machine learning algorithms, providing recruiters with a ranked list of suitable candidates. This integration ensures faster, more consistent, and unbiased screening processes in real-time recruitment workflows.	  In this aquamarine model is the best model.