ProjectInitializationandPlanningPhase

Date	26 May 2025
StudentName	Pooja Rajendra Chougule
ProjectTitle	Restaurant Recommendation System
MaximumMarks	3 Marks

ProjectProposal(ProposedSolution):

Thisprojectproposesthe developmentofa recommendationenginethatutilizesuserbehaviordata, location,andcuisinepreferencestosuggestsuitablerestaurants.Itintegratescollaborativefilteringand content-based methods, enhanced with user sentiment analysis from reviews.This solution is aimed at improving dining experiences and helping businesses better target customer needs.

ProjectOverview	
Objective	Tobuildanintelligentrestaurantrecommendation systemthatdelivers personalizedsuggestionsbyanalyzinguserratings,preferences,andreview sentiments using machine learning techniques.

Scope	Theprojectincludesdatacollectionfrompublicdatasets(e.g.,Yelp, Zomato), preprocessing, feature engineering, and model training using collaborative and content-based filtering. Sentiment analysis will be applied to enhance prediction quality.Abasic web interface will allow users to input preferences and view suggestions. The systemislimitedtoEnglish-languagereviewsand urbanrestaurants.
ProblemStatement	
Description	With an overwhelming number of dining options, users often struggle to find restaurants that match their taste and expectations. Current recommendation systems are either too generic or ignore key factors like sentiment or contextual cues.
Impact	A personalized recommendation engine can improve user satisfaction, increasecustomerretentionforrestaurants,andminimizedecisionfatigue by offering tailored choices.

ResourceType	**Description**	**Specification/Allocation**
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	1xNVIDIARTX3060 GPUs

Memory	RAM specifications	16 GB RAM
Storage	Disk space for data, models, and logs	500 GB SSD

ProposedSolution	
Approach	Thisprojectusescollaborativefiltering,content-basedfiltering,and sentimentanalysisofreviewtexts.TF-IDFandNLPtechniqueswill be employed to extract sentiment and context from user reviews. Modelperformancewillbeevaluatedusingprecision,recall,and RMSE.
Key Features	Personalizedrecommendationsbasedonpreferences,Sentiment-enhanced filtering, Web-based interface using Flask and visual insights using Matplotlib and Seaborn

ResourceRequirements

Software		
Frameworks	Python frameworks	Python
Libraries	Additionallibraries	scikit-learn,pandas,numpy, nltk, Flask, matplotlib, seaborn, plotly
DevelopmentEnvironment	IDE,version control	JupyterNotebook,Git

Data		
Data	Source,size, format	Yelp,Zomatoopendatasets