

Project Design Phase-II Technology Stack (Architecture & Stack)

Date	17 November 2023
Team ID	Team-591780
Project Name	Car Purchase Prediction using ML
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2



Guidelines:

1. Include all the processes (As an application logic / Technology Block)
2. Provide infrastructural demarcation (Local / Cloud)
3. Indicate external interfaces (third party API's etc.)
4. Indicate Data Storage components / services
5. Indicate interface to machine learning models (if applicable)

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	Data Collection	Gathering relevant data for training and testing	Data Scraping, APIs, Databases
2.	Feature Engineering	Selecting and transforming features for the model	Python (NumPy, Pandas)
3.	Data Preprocessing	Cleaning and preparing data for ML algorithms	Scikit-Learn, Pandas
4.	Model Selection	Choosing the appropriate ML model for prediction	Scikit-Learn, TensorFlow, etc.
5.	Model Training	Training the selected model with the training data	Scikit-Learn, TensorFlow, etc.
6.	Model Evaluation	Assessing the model's performance	Metrics (accuracy, F1 score)
7.	Hyperparameter Tuning	Optimizing model parameters for better results	Grid Search, Random Search
8.	Deployment	Integrating the model into a usable system	Flask, Django, REST APIs
9.	Monitoring	Continuous monitoring for model performance	Custom scripts, Monitoring tools
10.	User Interface	Creating an interface for user interaction	Web development (HTML, CSS, JS)

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	User Interface	Design and layout of the application for users	HTML, CSS, JavaScript
2.	Integration with ML	Incorporating the ML model into the application	API integration, Model serving
3.	Security	Implementing measures to ensure data and model security	Encryption, Authentication

S.No	Characteristics	Description	Technology
4.	Feedback Mechanism	System for collecting user feedback	Feedback forms, Surveys
5.	Mobile Compatibility	Support for mobile devices and responsive design	Responsive web design, Mobile frameworks

References:

"Used Cars Price Prediction and Valuation using Data Mining Techniques" by RIT Scholar Works

"Machine Learning Techniques To Predict The Price Of Used Cars: Predictive Analytics in Retail Business" by IEEE Xplore

"Predicting the Price of Used Cars using Machine Learning Techniques" by Research India Publications