

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

Date	13 October 2022
Team ID	PNT2022TMID25555
Project Name	Trip Based Fuel Consumption Modeling of modern fleet vehicles using machine learning
Maximum Marks	4 Marks

**Technical Architecture:**

**Table-1 : Components & Technologies:**

S.No	Component	Description	Technology
1.	Website	User interacts with the prediction model through website to predict the fuel consumption.	HTML, CSS, JavaScript, Bootstrap
2.	Cloud Database	The model is provided with data from IBM cloud database1	IBM Cloud DB, ibm_db(python package)
3.	API	Used to extend the service to other applications	Flask Application
4.	JWT & Sessions11	It is used for Handling JSON web tokens	PyJWT, Flask-Sessions
5.	Machine learning model	This model is developed to predict the fuel consumption using ML algorithms	Sklearn, Algorithms - SVM & MLR
6.	Data Pre-processing	Data is pre-processed and used for training the model which is then used for prediction.	Pandas, Numpy, Matplotlib

**Table-2: Application Characteristics:**

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Backend Framework, CSS Styling framework, Relational Database	PyJWT, Flask, Bootstrap, IBM Cloud DB
2.	Security Implementations	Session Handling, Request authentication using JWT Tokens, Traffic Encryption	HS-256, Encryptions, SSL Certs
3.	Scalable Architecture	Support for Multiple Sample prediction using Excel File	Pandas, Numpy
4.	Availability	Availability is increased by Load Balancers in Cloud VPS	IBM Cloud Hosting
5.	Performance	The application is expected to handle up to 10000 predictions per second	Load Balancers, Distributed Servers

