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

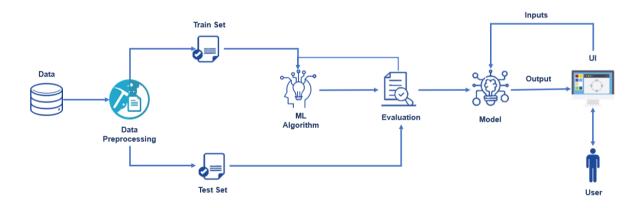| Date	03 October 2022
Team ID	PNT2022TMID34993
Project Name	Project - Trip Based Modelling of Fuel Consumption in Modern Fleet Vehicles Using Machine Learning
Maximum Marks	4 Marks

Technical Architecture:

Table-1 : Components & Technologies:

Sl.No	Component	Description	Technology
1.	Website	To predict fuel use, user interacts with prediction model via website.	HTML, CSS, JavaScript, Bootstrap
2.	Cloud Database	The model receives information from an IBM cloud database.	IBM Cloud DB, ibm_db(python package)

3.	API	Used to expand service to additional applications	Flask Application
4.	JWT & Sessions	It is employed to manage JSON web tokens (signing, verifying, decoding)	PyJWT, Flask-Sessions
5.	Machine Learning Model	This model was created using ML algorithms to forecast fuel use	Sklearn, Algorithms - SVM & MLR
6.	Data processing	Data is pre-processed and used for training the model which is subsequently used for prediction.	Pandas, NumPy, Matplotlib

Table-2: Application Characteristics:

Sl.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 management, JWT token request authentication, and traffic encryption	HS-256, Encryptions, SSL Certs
3.	Scalable Architecture	Excel file support for multiple sample prediction	Pandas, Numpy
4.	Availability	Load balancers improve availability in Cloud VPS.	IBM Cloud Hosting
5.	Performance	Up to 10,000 predictions per second are anticipated to be handled by the application.	Load Balancers, Distributed Servers