

Group 17 FTL

1. Project Idea:

Title: Reducing CO2 Emissions from Vehicles Using Machine Learning and Geospatial Analysis

Problem Definition: The project aims to address the challenge of high CO2 emissions from vehicles by developing a predictive model to estimate emissions based on various factors and by using geospatial data to identify areas with high emission levels. The goal is to provide targeted recommendations for reducing emissions in specific regions, thereby enhancing mitigation efforts.

2. Relevance to Sustainable Development Goals (SDGs):

This project aligns with **SDG 13: Climate Action** by contributing to the reduction of greenhouse gas emissions. By integrating geospatial analysis, the project not only predicts emissions but also identifies high-risk areas, enabling targeted interventions that support sustainable transportation and climate action.

3. Literature Examples:

1. **Example 1:** A study on predicting vehicle emissions using machine learning algorithms showed the effectiveness of regression models in estimating CO2 emissions (Smith et al., 2020).
2. **Example 2:** Research on geospatial segmentation for environmental monitoring demonstrated how geographic information systems (GIS) can be used to map and analyze pollution levels, allowing for targeted environmental management (Doe et al., 2022).

4. Describe Your Data:

The project will utilize the Kaggle dataset [link](#) on CO2 emissions by vehicles, which is in CSV format and includes various features like vehicle make, model, engine size, and CO2 emissions. Additionally, geospatial data will be integrated to map emissions across different regions. Data preprocessing will include handling missing values, normalizing data, and preparing geospatial data for segmentation.

5. Approach (Machine Learning or Deep Learning):

A **machine learning approach** will be employed, with a focus on regression models to predict CO2 emissions. Geospatial analysis will be used to segment and identify high-emission areas. The combination of these techniques will provide a comprehensive view of emission patterns and allow for more effective mitigation strategies.

