UK government has a special concern regarding to the climate change. The goverment is commited to tackle this issue by limiting the emmisions of greenhouse gasses (GHG). One of the biggest gas emmisions in the world comes from transport area, mainly road transport. The internal combustion engine uses fuels, such as petrol, diesel, or any other alternatives; to be burned becoming energy. The combustion process produces gases and particulate matter (also called PM), which can be harmful to health. PM is also produced by tyre, brake and road wear. Moreover, there is either immediate or long term effects from poor roadside quality. The gas emissions, such as CO, NOx, or un-burnt HCs might not visible in the environment, as the modern car also should not emit any visible PM. The visible PM (i.e smoke) happens on the deffected engine or filter faulty.

It leads to a new official testing, Worldwide harmonised Light vehicles Test Procedure (WLTP), which is used to provide a broad information about fuel economy and air pollutant emissions. The emissions regulations in UK is called Euro 6. It requires to utilise a vehicle that has been altered with in a way that prevents it from meeting the air pollution emissions limitation. There is a potential penalty whenever breaking this rule.

Until now, the action to reduce gas pollutant is still been developed in car manufacturers to meet the European Commission targets. This mission is to encourage moving on to ULEVS or more fuel-efficient conventional vehicles. UK government always gains data about this because of their concern of gas emmisions. The newest data can be accessed via [Vehicle Certification Agency / UK](https://carfueldata.vehicle-certification-agency.gov.uk/) which is released on September 2022.

Carbon Monoxide (CO) is one of the most dangerous and poisoning gas emissions. It can bind with the red blood to reduce the oxygen level on the body. All of the vehicles testing also has concern to limit this gas. Therefore, we would like to analyse this data to predict about it.

In this project, we use several methods of analysis such as Neural Network, Support Vector Machine(SVM), and Naive Bayes. We will do regression in Neural Network and classification on SVM and Naive Bayes. This report consists of data preprocessing, detailed methods analysis, and comparison between each of the methods. The type validation test is specifically done in each method (see the details in each section).