

Group No. 34

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Problem Statement

Analyzing the CO2 emissions for several categories of vehicles, analyzing different parameters to reduce CO2 emissions for the sustainability and producing an eco-friendly environment for our future generation.

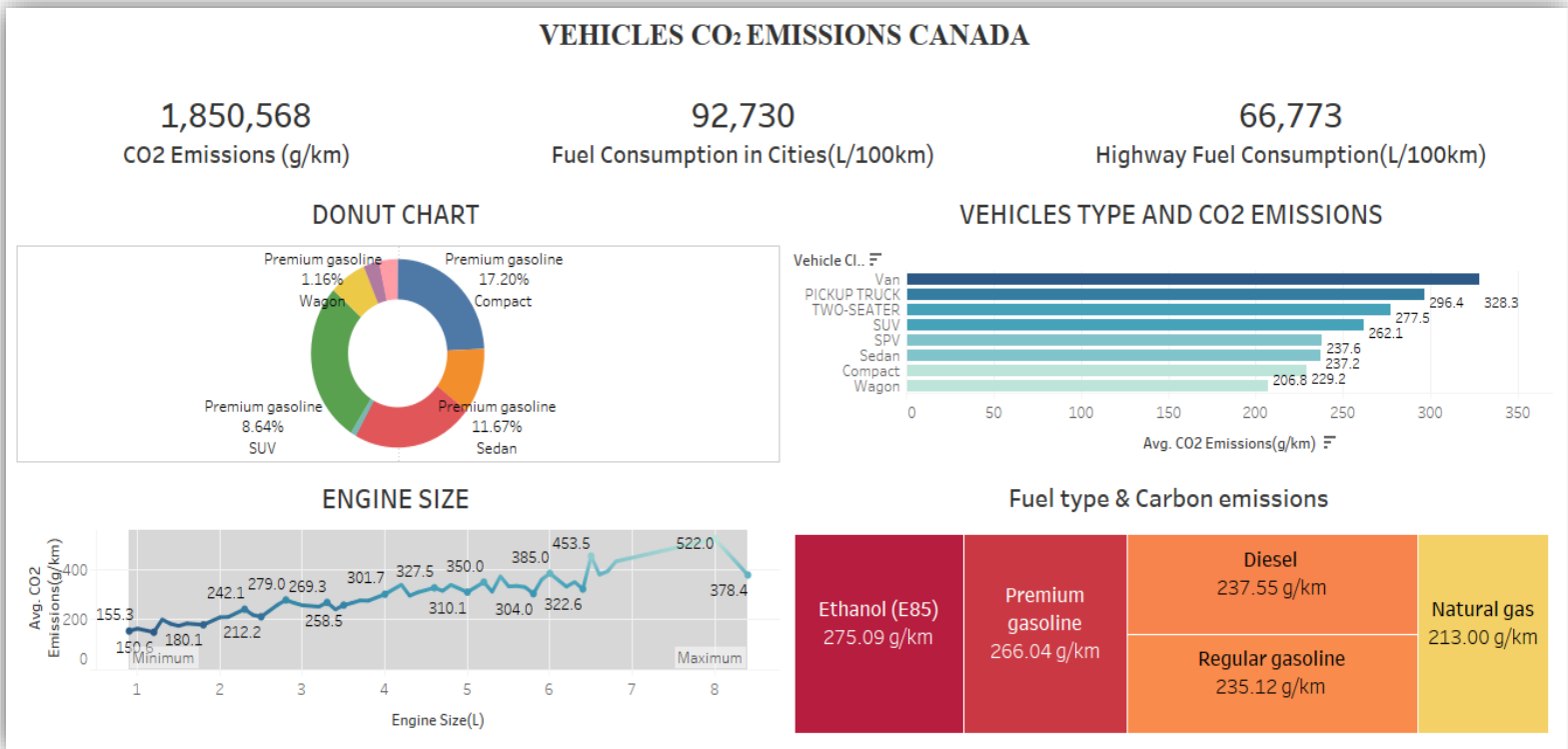
Descriptive Analysis

Global warming Factors: Classification of several factors that regulates the carbon emissions

Fuel type: On average per car, **Ethanol emits 275 grams/km per car.** The most CO2 emitting fuel.

Engine size: The higher the engine size lower is the carbon emission.

Types of Cars: Several brands like SUVs, Wagons, trucks etc, as per their fuel usage, emits varying CO2 emissions.



- Do you know Canadians mostly use **compact vehicles**.
- Do you know which fuel type has least carbon emissions? **Natural gas**.
- Eliminating **Vans** and **Pickup trucks** can reduce carbon emissions by **30%**.

Brief Summary

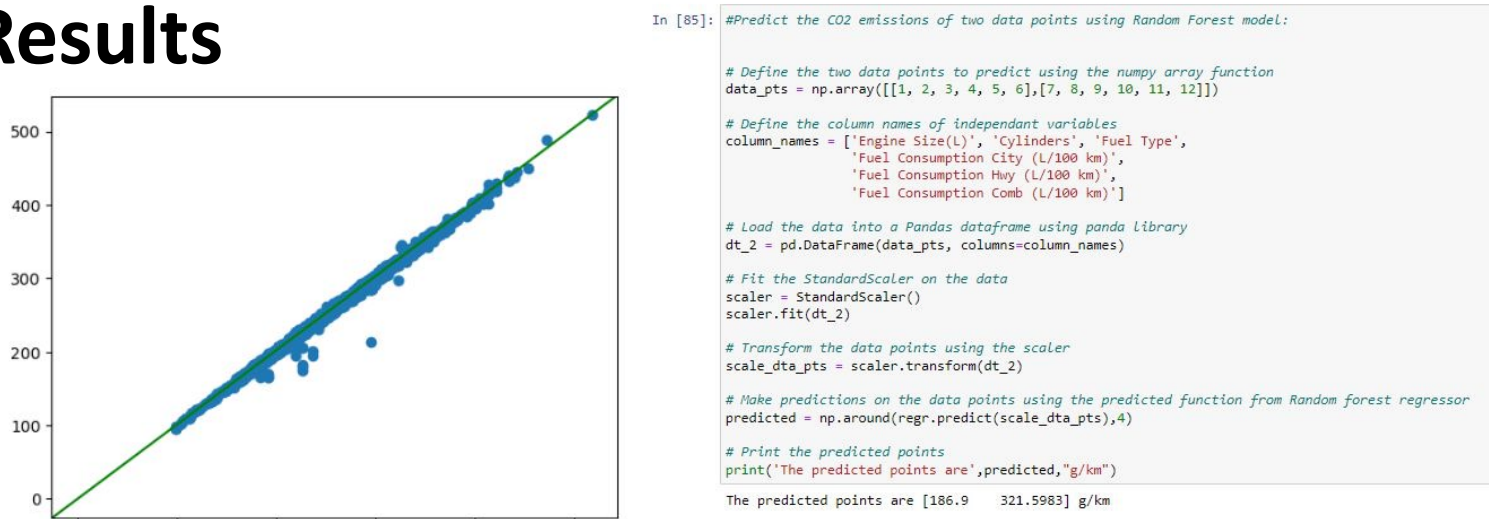
From raw data, transforming it into useful insights, making relations between parameters, we found out the causes of CO2 emissions in vehicles for the future prevention of earth from global warming.

Predictive Analysis

Steps And Procedure

- 1) Importing Data
- 2) Cleaning Data
- 3) Dividing into “X” and “Y”
- 4) Applying different model on “X” and “Y”
- 5) Predicting through the model at different values

Results



- Random forest model has accuracy of **99.62%**.
- Car manufacturing companies can predict CO₂ emissions according to their design.

Sustainable Development Goals And AI

UN SDG No. 11 - AI-powered systems can be used to design an engine with least amount of carbon emissions so as to make cities and human settlements safe, resilient, and sustainable.

UN SDG No. 13 - AI powered systems can generate data of carbon emissions of vehicles from different cities of world so urgent actions can be taken to reduce the overall carbon footprint of the world.

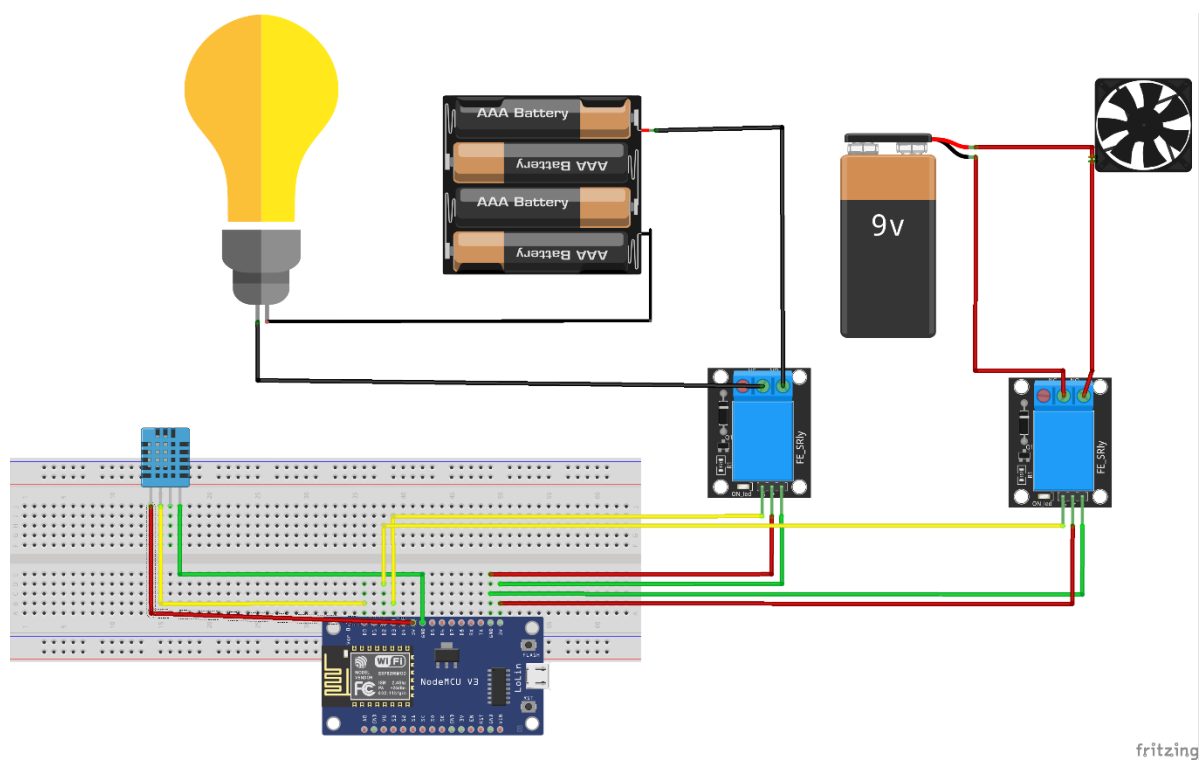
Problem Statement

Designing of an energy management system that attains specified humidity and temperature level without any human interference.

Brief Summary

At temperature greater than **25°C** fan will be switched on for cooling automatically. Similarly at temperature below than 25°C light will be switched on automatically.

Schematic Diagram



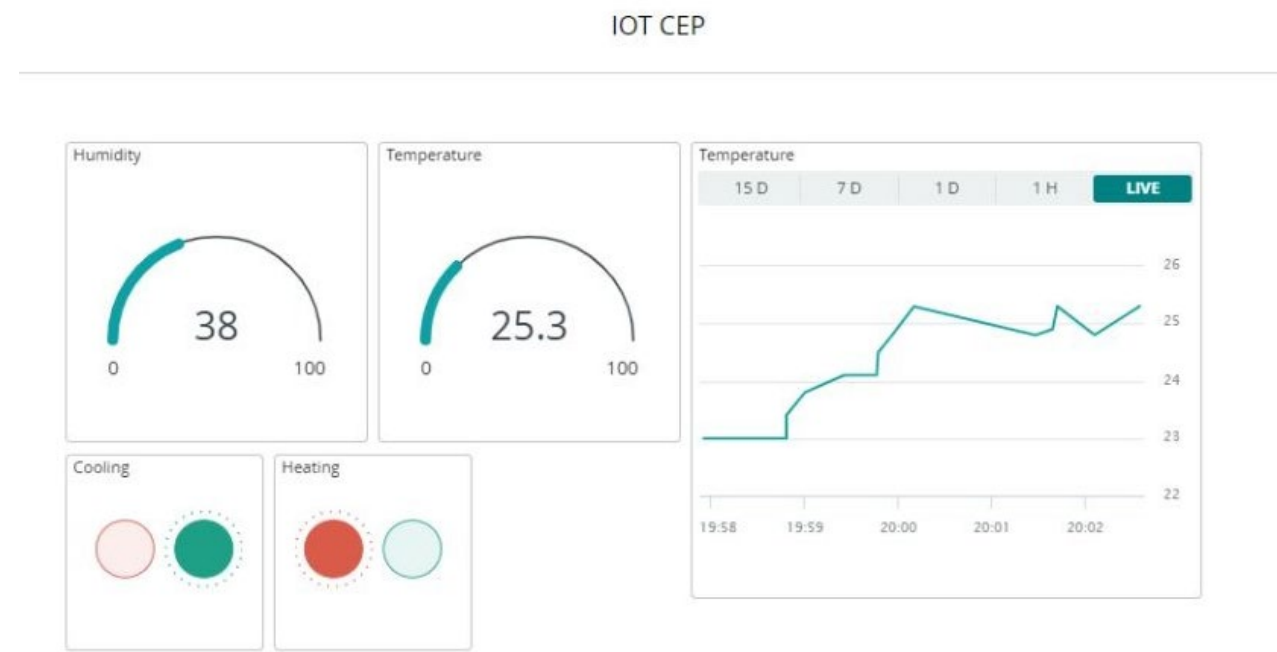
Connections:

- NodeMCU** is connected with two relays and **DHT 11**
- Two relays** have been connected with a **bulb** and **fan** respectively with power sources for each.

How was the problem approached and solved?

1. For reading temperature, a DHT 11 sensor is used.
2. For cooling a fan is used
3. For heading and lighting a bulb is used.
4. Controlling and monitoring being achieved without human intervention.

IoT Dashboard



1. Two gauges represent **Humidity** and **Temperature**.
2. Heating and cooling indicators are at the bottom.
3. A real time temperature graph is at right.

Future Recommendations & Impact of Project

- The medical facilities require specific range of temperature and humidity for there product manufacturing
- It can be highly beneficial and cost effective at large scale.
- It can be used to minimize energy waste without affecting production & quality.