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Final Project

**Identify a problem**: The contribution vehicles have to greenhouse gas emissions that affect the environment.

**Explore existing solutions:** According to the automaker Cummins, a vehicle software called “ADEPT '' plays a crucial role in reducing gas emissions in the transportation industry. Where it optimizes fuel efficiency, improves combustion, and also manages the exhaust systems to lower harmful emissions. Additionally in electric and hybrid vehicles the software increases battery performance and energy efficiency. There’s also fleet management software that takes the vehicles idle times and fuel consumption and reduces them. All these examples of existing softwares contribute to trying to prevent gas emissions that are released from vehicles.

**Propose a software solution:**

1. **Real-Time Emission Monitoring**
   * Monitoring vehicle emissions constantly in real time
   * Gives drivers feedback when it comes to bad driving habits
2. **Advanced smart fuel management**
   * Takes data to adjust fuel use and change engine settings
   * Helps the engine run better with minimum fuel consumption
3. **Smart GPS**
   * Uses most fuel efficient routes
   * Looks at traffics and certain roads to save fuel
4. **Car Maintenance alerts**
   * Gives drivers heads up before vehicle needs maintenance
   * Allows drivers to fix issues before it increases emissions
5. **Support for different vehicle types**
   * Reduces emissions for gas, hybrid, and even electric vehicles
   * Helps with battery health and energy consumption

**Pseudocode:**

1. **Real-Time Emission Monitoring**

WHILE driving

emissions = checkEmissions()

showEmissions(emissions)

IF the emissions are too high

tellDriver("Drive better to lower emissions")

ENDIF

ENDWHILE

1. **Advanced smart fuel management**

WHILE driving

data = driverData()

settings = FuelEfficiencySettings(data)

useSettings(settings)

IF using too much fuel

tellDriver("Use less fuel")

ENDIF

ENDWHILE

1. **Smart GPS**

destination = Destination()

route = BestRoute(destination)

startGPS(route)

WHILE driving

traffic = checkTraffic()

IF traffic is bad

newRoute = AnotherRoute()

startGPS(newRoute)

ENDIF

ENDWHILE

1. **Car Maintenance Alerts**

WHILE driving

health = CarHealth()

IF health is bad

tellDriver("Car needs maintenance soon")

ENDIF

ENDWHILE

1. **Support for different vehicle types**

type = VehicleType()

IF type is "gas"

EmissionMonitoring()

FuelManagement()

ELSE IF type is "hybrid"

EmissionMonitoring()

FuelManagement()

BatteryManagement()

ELSE IF type is "electric"

BatteryManagement()

EnergyManagement()

ENDIF

**User Interaction:**

This software will display options to a menu and each section will have its different functionality. For example at the top there’s going to be an emissions gauge that changes and fluctuates according to real-time. Users will get feedback on their driving skills through pop up notifications that give them tips and warnings. Below there can be a fuel consumption sort of graph that visualizes the usage. There could be an interactive map that gives the recommended route that pops in and out when needed. Maintenance alerts could be stored near the bottom to give the user more clarity and prompt them to schedule maintenance when necessary. Overall I'm going for a simplistic, apple visual, type of design. That’s where the popups and so on so forth come from, It would be clean and easy to understand.

Works Cited

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