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A Study on Driving Safety Funtions and Field Data Usage Method

Suho Lee **Seongho Song** **Seungwan Cho** **Jinho Kim**

1) Hyundai Motors R&D Center
150, HyundaiYeonguso-ro, Namyang-eup, Hwaseong-si, Gyeonggi-do,18280, korea (E-mail: suholee@hyundai.com)

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The purpose of this study is to protect the safety of customers when driving a vehicle by developing a function that monitors vehicle da ta and provides a warning in advance when an abnormal situation occurs. Data collection devices and diagnostic logic were developed for older vehicles that cannot collect data. For example, a lack of coolant in a vehicle and a vehicle accident diagnosis logic have been developed and evaluated, and this function can be applied to older vehicles to upgrade their safety functions. Then I propose logics for calculating safe driving scores and the failure of the coolant temperature control apparatus that using the data stored in the cloud. When a customer diagnoses an abnormality in the vehicle early and provides notifications and services before experiencing inconvenience, It is believed that it will contribute to accident prevention by providing a safer mobility environment and service.

① HW (Bluetooth communication terminal)
- Vehicle data (OBDII): The basic data of the vehicle are collected and the items are vehicle speed, RPM, torque, coolant temperature, fuel consumption, ambient temperature
- Acceleration/gyro sensor: Determines accident or driving habit by detecting vehicle movement and impact while driving
- GPS signal : Provide vehicle location information and use it to track the route and identify the accident location

② SW(Mobile application)
- SOS : Request automatic rescue in case of an accident
- Safe driving score : Identify and calculate driver habits
- Mileage : Vehicle mileage monitoring

③ Cloud (server for big data processing)
- Vehicle diagnosis : Determination of cooling system failure.
- Used car class : Evaluate the value of used car based on driving habits and vehicle condition data

Fig.1 System Configuration

In this study, the implementation of fail safety functions and effective field data collection methods to ensure the safety of older vehicles were presented. Even with the introduction of a bill on the provision of vehicle data and the development of connected car technology, a large number of older vehicles are still registered, and the safety problem of these vehicles remains an urgent task to be solved. Hyundai Motor Company uses vehicle data from connected cars to provide important services. In the future, if data from electric vehicles are collected and utilized as shown in Figure 20, it will be helpful to improve the quality of vehicles and create a safe mobility environment for customers.

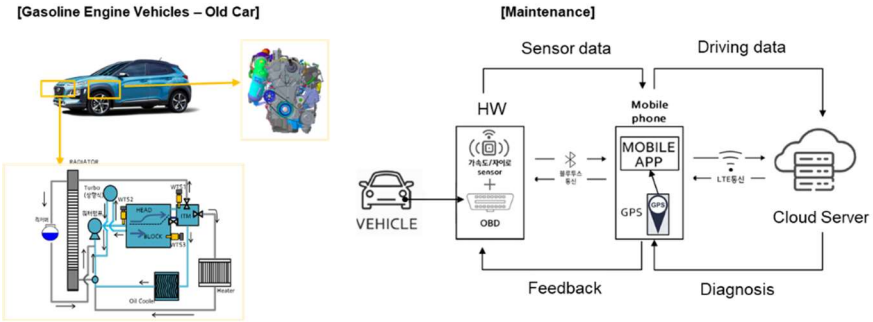

Fig.2 Method of safety functinos