**THE FOUR HORSEPOWER**

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**TITLE**

Car Audio Safety Alert System: Detecting External Sounds for Driver Awareness

**PROBLEM STATEMENT**

Driving on busy roads can be a challenging task, also with internal noise, loud music systems or any similar factors it becomes difficult to hear external sounds such as car horns or emergency sirens. Also, for those with hearing impairments this is even more challenging.

This can also result in delayed reaction times, missed cues, and increased risk of accidents. Therefore, there is a need for a reliable, affordable, and easy-to-use system that can accurately detect and alert drivers to external sounds, particularly emergency sirens, to improve road safety for all drivers, including those with hearing impairments.

**PROPOSED SOLUTION**

The aim is to design and implement a system that can record and detect external sounds around a car, such as horns and sirens, and alert the driver in real-time.

The system will consist of microphones mounted on the exterior of the car, which will capture sounds from the surrounding environment. These sounds will be processed in real-time by using machine learning algorithms to distinguish between different types of sounds, such as **car horns**, **emergency sirens**, and **other loud noises**.

When the system detects a sound that requires the driver's attention, such as an ambulance siren, it will activate an alert mechanism inside the car. This could be a visual alert on a **dashboard display**, a **haptic** **steering wheel feedback** or **change in ambient lighting**.

**FUTURE SCOPE**

1. System can be trained for identification and classification of various other external sounds such as fire engine, police van, ...etc.
2. Model can be trained and made compatible to road alert sounds of different countries.
3. For any high priority alert like emergency vehicles the volume of internal music system can be brought down to increase driver attention.
4. Improve accuracy and response time.