Why Emergency Vehicle Detection is Vital for the Autonomous Future

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SAE Level 3 conditional automated systems have arrived, requiring a driver to step in only when necessary and paving the way for Level 4 and 5 systems which, in most cases, do not need a driver at all. As autonomous systems advance, they bring with them the need for a new era of AI-powered co-pilots that help bridge the gap from how we drive today to a totally driver-free ecosystem. How? By quickly and reliably gathering information about the plethora of situations a driver may face in the cabin and on the road and seamlessly communicating it to the driver and car's systems.

Cerence Emergency Vehicle Detection (EVD) is one of the most critical examples of how the co-pilot can understand the world around it and make roads – and drivers and passengers – safer as a result. Cerence EVD identifies sirens from police cars, firetrucks, and ambulances from up to 600 meters away, pinpointing the direction the emergency vehicle is traveling. With the ability to recognize more than 1,500 sirens, which vary greatly from country to country, Cerence EVD provides the intel an autonomous vehicle needs to give way – whether that's advising a driver to step in and react in a Level 3 system or guiding action to pull to the side autonomously in Levels 4 and 5.

The power of the "mic"
One of the advantages of Cerence EVD is its ability to use the interior microphones already installed in the car. Leveraging the same technology used for in-car voice assistants, it deploys advanced acoustic echo cancellation to detect sirens regardless of what's happening in the cabin, including, for example, if a siren is playing in the background of a song. When a real siren is detected, the system can override songs being played or phone call audio to alert the driver. When linked to exterior microphones, which are set to be a common factory install in future car models, the system can provide information on the direction the emergency vehicle is approaching from as well. In future systems when the driver is not needed, that same technology can be used to alert the autonomous car that a siren is detected, and appropriate action is required.

Keeping eyes – and ears – on the road
Most geographies have laws that require emergency vehicles to have both lights and sirens or horns. Drivers are required to both look and listen for them. This is because, in many cases, drivers have obstructed vision and may not be able to see an emergency vehicle coming. The same holds true for autonomous vehicles. Sensors that detect incoming emergency vehicles using images and lights are limited in situations when they are blocked or impeded by other cars or bad weather. Using multiple sensors, Cerence EVD helps ensure early detection that can enable countermeasures to save critical seconds in an emergency.

Making roads safer and more enjoyable, for all
At Cerence, we pride ourselves on the work we do innovating for a better future. We believe that enabling autonomous cars to better understand situations around them, and communicating actions needed to drivers or passengers inside, will make roads safer and journeys more enjoyable. As part of our Audio AI Suite, Cerence EVD can flexibly integrate with any existing AI assistant and leverage microphones inside and out of the vehicle.

Want to learn more? Find out how our AI for a world in motion goes beyond voice here.