



Ford tests footsteps, bicycle bells as smart driver alerts

- Ford is trialling the use of specific speakers to indicate the direction from which people and objects are approaching
- Engineers are also testing intuitive sounds – bicycle bells, footsteps and vehicle noises – to warn drivers when other road users or pedestrians are nearby
- Researchers found that by using Directional Audio Alerts drivers more frequently correctly identified the nature and location of other road users and pedestrians

AACHEN, Germany, Feb. 17, 2022 – Driver alerts – in the form of visual displays and warning tones – help us to negotiate our daily drives. But what if such sounds simulated those made by potential hazards – and enabled drivers to know exactly where they were coming from? ¹

Ford is trialling smart driver alert technology that could do exactly that. Engineers are exploring a clever use of in-car audio to clearly convey the location of other road users or pedestrians. In addition, they are testing the use of intuitive sounds – such as footsteps, bicycle bells and the sound of passing cars – rather than a single tone.

Initial tests revealed that drivers using Directional Audio Alerts were significantly more accurate when it came to identifying potential hazards and their position.

“Today’s warning tones already inform drivers when they need to take care and be vigilant. Tomorrow’s technology could alert us to both exactly what the hazard is and where it is coming from,” said Oliver Kirstein, SYNC software engineer, Enterprise Connectivity, Ford of Europe.

How it could work

Ford vehicles currently feature driver assistance technologies that use a suite of sensors to identify when pedestrians, cyclists and other vehicles are nearby. These technologies offer visual and audible alerts and if necessary, apply emergency braking.

Directional Audio Alert takes these warnings a step further. A Ford-developed software uses the information from the sensors to select the appropriate sound and play it through the speaker closest to the obstacle.

Tests in a simulated environment showed that drivers alerted by Directional Audio correctly identified the nature and source of the hazard 74 per cent of the time. Even just emitting a regular tone from the appropriate speaker enabled the driver to correctly identify the location of the object 70 per cent of the time.

Engineers also set up a real-world scenario on the test track, with a vehicle backing out of a parking space, an approaching pedestrian and the footsteps alert. Participants in the test responded positively to the footsteps sound, especially when this intuitive alert was played through a specific speaker.

In future, engineers believe that those results might be further improved by using 3D spatial sound similar to that used in cinemas and gaming to better enable drivers to identify the source of the hazard.

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¹ Driver-assist features are supplemental to and do not replace the driver's attention, judgement and need to control the vehicle.

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