

Interview

Autonomous trucking

“The safety of the system is paramount”

As Senior Expert in Vehicle Safety, Harald Feifel heads up AUMOVIO’s in-house accident research. In this interview, he explains why the autonomous trucking system, developed in collaboration with Aurora, is safe – and how it can mitigate even unlikely traffic situations.

Driverless trucks on American motorways: how will people react? Although driverless taxis are already in use in some US cities, trucks without drivers are a whole different matter.

Trucks and truck drivers are an integral part of the American streetscape. Autonomous trucks on US highways therefore represent not just a new chapter in the logistics industry; they also mark the beginning of a new era for road transport and mobility. The US is an ideal market for the introduction of this new technology, precisely because ‘autonomous driving’ is, to some extent, already a natural part of everyday motoring. Public reaction is a key factor in the success of such a project. That is why, in our accident research, we are conducting in-depth studies into the possible behavioral patterns of human road users in response to specific maneuvers carried out by autonomous trucks.



AUMOVIO_PP_Harald_Feifel

Harald Feifel, head of Accident Research at AUMOVIO.

How does the driving behavior of ‘normal’ cars influence the way autonomous trucks maneuver?

In accident research, we look at: What evidence do we have regarding how motorists react when they encounter autonomous vehicles? How can we best anticipate their behavior in order to ensure a harmonious and safe coexistence? For years, we have been focusing precisely on typical reaction times, distances between vehicles and evasive maneuvers. We have analyzed an incredible amount of data on typical accident scenarios and crash reconstructions, specifically for the American market. We are among the leading developers of driver assistance systems. Our aim is to replicate human driving behavior as authentically as possible – without the mistakes that people make. Because this, too, is one of our findings: 80 per cent of accidents today are caused by driver inattention. This inattention does not occur with sensors and computers.

Interview

Can you give an example of how AUMOVIO and Aurora authentically replicate human driving behavior?

Autonomous trucks are designed to blend in with the flow of traffic. They should not behave in a conspicuous manner. A good example is distance control. Experience shows that if we set the gap to the vehicle in front too large, other vehicles will move in and fill the gap. This, however, causes the distance to decrease abruptly. So if we set the distance control too conservatively, new safety-critical traffic situations can arise as a result. We want to avoid this – and so we design the distance control precisely to ensure safety whilst not hindering the general flow of traffic. Fortunately, the range of such safety-critical situations in our autonomous truck system is manageable.

Why?

The use of autonomous trucks is initially limited to interstate motorways and their access roads. The aim is to transport goods from one hub to the next. The driving challenges are therefore limited: they mainly involve changing lanes, overtaking maneuvers and joining motorways. There are no junctions on these routes, nor any residential areas. The lorries mainly travel in a straight line from A to B. Naturally, the system also accounts for more complex situations. It is always possible that a person might cross the highway. We have therefore also covered scenarios which, although rare, can occur.

Even a reliable technical system can fail – although this is highly unlikely.

We have designed the overall system to be extremely robust and, amongst other things, utilize components such as cameras, radars, high-performance computers and telematics systems, which are already in use by our customers in millions of vehicles. This is what we bring to the table: technologies and products that have proven themselves to the highest automotive standards. The safety of the system is our top priority. However, there is no guarantee that every single component is absolutely infallible. That is why we have developed a fallback system that provides a backup in the unlikely event of a technical failure – just like in an airplane. With standard driver assistance systems, the driver is still in control. They act as our fallback system – the ‘driver-in-the-loop’, as it is known.

You won’t find that in the Aurora cockpit...

No, we don’t have a ‘driver-in-the-loop’ system here. Even in an airplane, in an emergency – should the entire main system fail, for example – there’s still the pilot. They’d then fly using the backup system. Our backup system operates entirely without human intervention. And independently of the components of the main system – that’s crucial. This ensures that a failed sensor doesn’t also compromise the backup system. In this way, the backup system – which we’ve developed entirely in-house – can safely bring an autonomous truck to a halt in critical situations.

Press contact

Sören Pinkow
Media Spokesperson Autonomous and Commercial Mobility
AUMOVIO SE
Phone: +49 69 7603 8492
Email: soeren.pinkow@aumovio.com

Your contact:

Sören Pinkow
Phone: +49 69 7603 8492