

Press Release

DEKRA Road Safety Report 2025 on Artificial Intelligence



AI in vehicles: Safety and reliability must be guaranteed

- ▶ Strict testing and validation procedures for AI systems are essential
- ▶ Key role for DEKRA in promoting safe AI applications in vehicles
- ▶ Potential human error shifts toward IT design

The increasing integration of artificial intelligence (AI) into road vehicles offers considerable potential for improving road safety. “However, we must not ignore the high risks that can be associated with the failure of AI systems, which can never be ruled out”, warns Xavier Valero, Director of Artificial Intelligence & Advanced Analytics at DEKRA. This makes regulations and standards such as the EU's AI Act all the more important as a legal framework for the development of such systems. The topic is one of many covered in the latest DEKRA Road Safety Report 2025, “The Changing Face of Mobility”.

Whether for recognizing traffic signs, pedestrians, cyclists, or vehicles, monitoring tire pressure or engine temperature, or initiating automated braking or lane changes, advanced driver assistance systems (ADAS) will take on important tasks in more and more vehicles in the future. However, since a malfunction could endanger human health and life, the EU has classified such ADAS as high-risk systems in its AI Act, which was adopted in 2024. “These systems, which are crucial for safe driving, must therefore be subject to strict oversight and validation to ensure their reliability and avoid risks”, emphasizes Xavier Valero.

The AI Act also allows for exceptions if AI systems have already been assessed in accordance with existing regulations such as vehicle type approval (Regulation EU 2018/858). This means that safety devices such as ADAS, although indirectly regulated by the AI Act, can be validated through existing type approval procedures without the need for additional third-party assessments. “In addition to ensuring that their systems meet the requirements of the AI Act, system providers must also establish a comprehensive AI management system with clear guidelines and workflows within their organization”, adds the DEKRA expert. Furthermore, all parties involved – upstream technology suppliers, downstream integrators, and manufacturers – must

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contribute to ensuring system safety, data security, and transparency. "A comprehensive quality management system covering the entire AI life cycle is necessary for full compliance, as it ensures that all activities remain traceable and verifiable", says Xavier Valero.

Continuous monitoring

ISO/PAS 8800 provides guidelines for the safety of AI systems in the automotive industry. It covers the entire AI life cycle from design to deployment and ensures that systems are both safe and reliable at every stage.

The standard complements ISO 26262 (functional safety) and ISO 21448 (SOTIF – safety of intended functionality) to address potential risks associated with AI-controlled systems. It also emphasizes the importance of data quality control, system validation, and continuous monitoring during operation.

DEKRA plays a key role in promoting safe and reliable AI applications in road vehicles. The independent expert organization participates in regulatory discussions, has expertise in designing best practices, and offers training, assessment, and certification according to ISO 8800. This is intended to enable manufacturers to ensure that their AI systems meet the highest safety standards.

Moral dilemmas investigated experimentally

The use of AI systems in vehicles also presents challenges in terms of ethical issues and ensuring fundamental protection requirements. "The higher the degree of automation, the more the causes of accidents shift from human error in the vehicle itself to human error in the IT design behind the human-machine interface", explains DEKRA traffic psychologist Dr. Thomas Wagner. This is because those who develop the software for AI in vehicles have to make a multitude of decisions. These include the behavior of fully automated vehicles in the event of an unavoidable accident and the question of who should potentially be harmed.

"Essentially, this involves programmed decision-making routines for distributing the risk of harm between the various parties involved in an accident", the DEKRA expert continues. Car manufacturers and political decision-makers alike have to grapple with these moral dilemmas. Ultimately, consensus on the principles behind such decisions is particularly important for the general public, as otherwise fully automated vehicles will not be widely accepted and used in society.

In order to quantify society's expectations of ethical principles with regard to the conflict behavior of fully automated vehicles, a group of scientists led by Edmond Awad carried out the "Moral Machine" experiment. Participants had to choose their preferred option from unavoidable accident scenarios with two possible outcomes – the fully automated vehicle swerving or staying on course. The Moral Machine collection ultimately comprised almost 40 million decisions made by millions of people in 233 countries and regions. A total of 130 countries were divided into three broad clusters: the western cluster (North America and many European countries), the eastern cluster (e.g., Japan and Islamic countries), and the southern cluster (countries in Central and South America).

There were clear differences in some preferences between the three clusters. For example, the preference to spare younger people over older people and people with higher status over people with lower status was significantly less pronounced in countries in the eastern cluster than in the western cluster. Countries in the southern cluster showed a significantly weaker preference for sparing people over pets compared to the other two clusters. Only the preference for sparing pedestrians over passengers and the preference for sparing law-abiding road users over those who break rules seem to be equally present in all clusters.

"The results of this experiment show how multi-layered and complex the issues are that need to be decided when programming", said Dr. Wagner. "An intensive discussion within societies and the broadest possible international consensus are essential for the future."

Further background information on this topic, as well as many other aspects of "The Changing Face of Mobility", can be found in the DEKRA Road Safety Report 2025. It is available at www.dekra-roadsafety.com.



About DEKRA

For 100 years, DEKRA has been a trusted name in safety. Founded in 1925 with the original goal of improving road safety through vehicle inspections, DEKRA has grown to become the world's largest independent, non-listed expert organization in the field of testing, inspection, and certification. Today, as a global partner, the company supports its customers with comprehensive services and solutions to drive safety and sustainability forward—fully aligned with DEKRA's anniversary motto, "Securing the Future." In 2024, DEKRA generated revenue of 4.3 billion euros. Around 48,000 employees are providing qualified and independent expert services in approximately 60 countries across five continents. DEKRA holds a Platinum rating from EcoVadis, placing it among the top 1% of the world's most sustainable companies.