AUTONOMOUS VEHICLES AND ARTIFICIAL INTELLIGENCE: PERSPECTIVES ON SAFETY AND EFFICIENCY IN FUTURE TRANSPORT

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Nowadays, when technology has become almost the pinnacle of human development, it is very difficult to invent and develop something completely new. New inventions are mostly derivatives or improved versions of what was already invented several decades ago. For example, today's artificial intelligence is an impressive example of today's technology, although the very first ideas and prototypes, as well as the very prerequisites for the emergence of this phenomenon, were in the second half of the twentieth century. It was a set of algorithms that allowed analysing and developing appropriate tactics depending on the situation in a chess game (Podgayetsky, 2012).

It was artificial intelligence that began to be used to improve vehicle safety and autonomy. AI helps prevent human error. From the very beginning, systems with data pre-processing were used to facilitate the driver's work in many aspects, such as error detection, mapping and location, and prediction of the movement of objects on the road. A large number of sensors operate in real time and provide autonomous decision-making, which greatly reduces the risk of accidents due to human error (Abbasi, 2023).

Due to the fact that the driver's life is at stake when driving an autonomous system, safety and reliability depends on the speed of the entire architecture, which includes the sensors, the system that will interpret the data received from the sensors, and the execution of actions based on the results. All of these stages equally affect the speed of decision-making and must work in a split second, which is what matters

most - road safety. Sensors should work even in bad weather conditions and the integrated system should respond to any emergency as quickly as possible (Abbasi, 2023).

It is Artificial Intelligence and Advanced Driver Assistance Systems (ADAS) that warn us in real time that there is an obstacle in front of the vehicle, or control adaptive cruise control, or the movement of the entire vehicle. All these systems use cameras and other sensors and machine learning algorithms to make decisions. Machine learning algorithms are trained on the basis of a large amount of data, created artificial scenarios of various situations and options for their solution. In addition, AI can warn of technical malfunctions and the need for repair (Karunamurthy, 2023).

Given the fact that an autonomous vehicle has advantages that ease human dependence on a vehicle, some European countries, including Germany and the ZF inland transport system, plan to make some public transport based on unmanned shuttles for greater comfort in European cities over the next five years. This will reduce traffic in cities that depend on nearby roads and airports (BBC, 2021).

In conclusion, we would like to add that the field of artificial intelligence is one of the most important and complex inventions from an engineering point of view, which can take place in many areas of life. As an example of the creation of autonomous transport systems, we are already seeing unmanned taxis and even the delivery of goods by unmanned trucks. So far, these technologies are quite expensive, and therefore it can be argued that this phenomenon will not be as widespread for several years, but when the technologies become cheaper, we will be able to use them every day.

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