

EMERGING TRENDS IN TRANSPORTATION: FROM SMART CITIES TO AUTONOMOUS VEHICLES

Improving transportation and traffic management is one of the crucial steps towards enhancing the quality of life in urban areas. A common trend in this field is the integration of modern technologies such as machine learning, wireless sensor networks (WSNs), Internet of Things (IoT), and Artificial Intelligence (AI) in developing intelligent transportation systems.

One common approach is the use of simulation models to test and optimize traffic flow in smart cities. Simulations can help in designing and evaluating new road layouts, traffic signals, and other transportation infrastructure. Another trend is the use of machine learning algorithms in predicting traffic patterns and reducing congestion. We can also highlight the importance of communication and coordination between vehicles, infrastructure, and traffic management centers.

Also, one of the most prominent aspirations is the use of technology in improving traffic safety and management. For these purposes there are various technologies such as wireless sensor networks, surveillance cameras, and automated vehicles that can be used to collect and analyze data on traffic patterns and road conditions. The data collected can then be used to develop intelligent traffic management systems, improve the efficiency of traffic flow, and reduce the risk of accidents.

Another important aspect that undoubtedly needs to be taken into account is safety and the impact of the human factor on it. At the moment, urban scientists are actively discussing the attitudes, behaviors, and skills of drivers, which can have a significant impact on road safety. For example, the relationship between driver characteristics, such as age, gender, and driving experience, and their risk-taking behavior was examined. Another research explores how factors such as traffic climate, locus of control, and driving skills influence driver's preferences for automated vehicles. Finally, we have reports on a pilot study that assessed participants' acceptance, trust, and perceived safety of automated vehicles, as well as their emotional responses to riding in such vehicles.

The fourth common trend in modern research is the growing importance of interdisciplinary approaches in transportation research. We need to focus on the collaboration between researchers from different fields such as engineering, psychology, and computer science to find comprehensive

solutions to transportation problems. This includes developing standardized methods for assessing driver's behavior and attitudes, improving the reliability and validity of measures, and using multi-methodological designs to capture different aspects of transportation-related phenomena.

Overall, the common trend in modern research is the application of technological solutions to address traffic-related problems, such as reducing speeding, managing traffic flow, and increasing safety. The studies also highlight the importance of human factors, such as personality traits, driving skills, and user attitudes, in the successful implementation of these solutions. Surveys, experimental designs, and statistical analysis, demonstrate the importance of empirical research in transportation and traffic management.