

Perspectives and Strategies for driving instruction and testing based on vehicle automation and road accident scenarios

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Abstract

Driving is a complex task that requires appropriate training. The most important issue related with driving is road safety. Usually, training is mainly focused to the tasks related with the control of the vehicle and theoretical aspects related with road code. However, it is important to the drivers to understand the road environment and the risk factors related with the driving task.

Nowadays, vulnerable road users (pedestrians and two-wheelers occupants) represent about 50% of the fatalities worldwide, and a similar share in some European countries as Portugal. Vulnerable road users' fatalities are increasing and for instance in Lisbon area in 2018 they represented 75% of the fatalities and 70% of the serious injuries. Also, there are more motorcycle occupants killed than car occupants. This group of road users must have special attention in the training of drivers. Based on in-depth accidents investigation outcome some topics are presented in order to improve training and mitigate the type of accidents.

In-depth accident investigation is important to evaluate the causes and responsibilities of the accidents but also to identify aspects related specially with driver behaviour and driver errors that can be mitigated through training. Typical collision scenarios where driving training is important are identified, and risk factors obtained from statistical analyses of the road accidents occurred in Portugal are presented.

Self-driving vehicles will be commercialized in the next decade, but for many decades they will share the road with lower-level automation vehicles. This will cause some issues related with road share between different types of vehicles and special training is required. Also, the training related with the new automated driver assisted systems (ADAS) is required because it is important to the drivers to know how they work and their limitations. But when we talk about self-driving vehicles we talked about cars or trucks, but especially for power-two wheelers these vehicles are not fully getting these technologies and more focus should be concentrated in the training of these power two-wheelers drivers.