



AUTONOMOUS DRIVING AND POSSIBLE OUTCOME FOR BICYCLISTS – TECHNOLOGY WHICH HELPS TO IDENTIFY HAZARDS

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ABSTRACT OF PAPER

1 INTRODUCTION

Cycling is an increasingly popular alternative transport mode, but there were far too many cycling fatalities over the past decade (European Transport Safety Council 2015). 138,400 pedestrians & cyclists were killed in EU in the space of time from 2001 to 2013. According to recent safety analysis data from ETSC (2015) bicyclists face a high accident risk. Vulnerable road users account for 29% of all road deaths across EU (pedestrians: 21%, cyclists: 8%).

According to a TRL report (Knowles et al 2008) more than a quarter of all cycling deaths in 2005-07 happened when a vehicle ran into the rear of a bike. This occurred to more than one-third in rural areas and to 40% in collisions that took place away from junctions. According to the same report it seemed that one cause for cyclists' accidents was that car drivers as well as cyclists "failed to look properly" as was the interpretation in the TRL report. Therefore, it is necessary to find out how traffic safety for bicyclists can be enhanced – especially in cities with dense traffic and a lot of interactions (see also Sanders 2015).

In order to learn more about possible risks for riders especially considering the automation level of cars at high automation level 5 the author of this abstract tried to match outcomes of different ongoing projects to find out, where bicyclists direct their visual attention on their ways within a naturalistic riding study in Vienna and the city of Salzburg as well as understand if other road users, especially car drivers estimate the needs of cyclists regarding safety and comfort. The latter will be derived from research about automation level 5 and the thus estimated results on traffic in general and especially on unprotected road users.

2 AIM OF PAPER

As the target of the study has been the evaluation of different registration methods for analysing the interaction of cyclists with their environment in the context of a naturalistic cycling study concerning their feasibility, the presentation will discuss pros and cons of an existing technological investigation tool for critical incidences as well as points of interest of cyclists in general. The theoretical framework will show which communication necessities cyclists meet and how automation will influence these necessities, or preconditions.



3 METHOD

To study the visual behaviour and the information and orientation needs of bicyclists one research project, finalized in summer 2017 (BIKEALYZE, coordinated by Salzburg Research in Salzburg, Austria, funded by the Austrian Ministry of Transportation, Innovation and Infrastructure), used an eye marker camera system that usually is applied in marketing, with the goal to find out where customer look to in shops or on websites or in the last time is used in geographic studies (e.g. Brychtová & Coltekin, 2014, Popelka 2015). A video system (GO PRO) was also used, carried on helmets by the riders. The other study (INPUT, coordinated by FACTUM Chaloupka & Risser OG in Vienna, Austria, funded by the German BAST), investigated the estimation of experts as well as different road user groups about pros and cons of highly automated driving and the outcome for the traffic system – including cycling and walking. Interviews as well as an observation study have been carried out. The outcomes of both studies will be matched to find a conclusion regarding traffic safety and mobility for unprotected roadusers, especially cyclists.

4 RESULTS AND CONCLUSION

As the analysis of both investigations as well as the matching is still going on, results will be available only in spring 2018. Within the project numerous influencing conditions (degree of acceptance of automated cars, general knowledge of automated cars, legal conditions, technical equipment of infrastructure etc.) have been identified which are key elements for the future ways of communicating in traffic. Till now one conclusion can be derived, namely that there is an importance of considering communication processes in naturalistic cycling studies as a supplement to provide a more informative and complete picture of events which are relevant for comfort and safety of cyclists. It seems that quantitative investigation methods have to be completed with qualitative methods in order to understand "what is really happening" in the frame of communication and interaction between road users. Only counting events seems not to enough.

5 REFERENCES

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