A Traffic-based Method for Safety Impact Assessment of Road Vehicle Automation

Christian Rössner*, Friederike Hennecke†, Jan Sauerbier*, Adrian Zlocki*, Dirk Kemper†, Lutz Eckstein* and Markus Oeser†

**Challenges**

- One of the major challenges for enabling market introduction of automated driving is to identify risks and benefits of these functions.
- According to the German Ethics Commission on Connected and Automated Driving [1], “[…] the licensing of automated systems is not justifiable unless it promises to produce at least a diminution in harm compared with human driving, in other words a positive balance of risks […]”
- In order to assess this balance of risks, a method for safety impact assessment of continuously operating [2] automated driving functions with respect to human driver performance is necessary.

**Method**

- Based on different data sources, such as national accident statistics [3], in-depth accident data [4] and FOT-data [5], a simulation-based approach for prospective effectiveness assessment has been realized.

**Results**

- Accidents addressed by automated driving functions form the effectiveness fields gained from national accident statistics and in-depth accident data.
- Automated vehicles may not get involved in certain accident scenarios any longer while other, new accidents, will arise. Changes in frequencies of driving scenarios have to be assessed.
- In incident situations, the performance of automated vehicles is compared to human driver performance for obtaining a severity.

**Conclusion**

- The operational design domain (e.g. environmental conditions) highly affects the effectiveness of an automated driving function.
- Changes in frequencies (and thus relevance) of driving/accident scenarios have to be taken into account for safety assessment of AD.
- Human driver performance has to be modeled as a reference for assessment.

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**Bibliography**