Real world traffic accident databases allow an accurate determination of the efficiency of Advanced Driver Assistance Systems (ADAS). Research shows that accidents with property damage have been increasing while accidents with bodily injury have fortunately decreased in the last decades. This development requires a shifted focus, from databases targeting bodily injury e.g. GIDAS, towards a new database setup that complies with requirements which occur when investigating property damage. The accurate evaluation of ADAS that mitigate or avoid property damage will help car manufactures developing future systems and insurers calculating future premiums. This paper describes a new method to analyze real world property damages and an approach to monetarily evaluate ADAS in terms of benefits for customers and insurances. An in-depth accident database containing 5000 property damage accident cases is created by Allianz Center for Technology (AZT) and Automotive Innovation Center (AIC) using insurance claim files. Using insurance data, it enables the analysis of a holistic image of traffic accidents retrospectively and to determine the monetary benefit of a certain ADAS. In order to evaluate the efficiency of ADAS, it is necessary to understand the kinematics of real world property damage accidents. Combining in-depth information of common accident types, accident kinds, detailed information of damages to the vehicle/s or obstacles, complex correlations representing the analyzed traffic...
accidents can be derived. Test scenarios that match the identified accident kinematics can be developed to determine future ADAS efficiencies. The monetary benefit of tested ADAS can be specified considering reduced repair costs due to mitigation or avoidance of an accident addressed in the scenario. This retrospective method using real world traffic accident data provides the basis to evaluate future ADAS in simulation or field tests. The detailed investigation of property damage cases using an in-depth accident database allows profound statements regarding the efficiency and the monetary benefit of current and future ADAS. Commonly damaged vehicle parts, locations and repair costs can be determined by using heat maps. By using the derived ADAS specific test scenarios, insurers can determine the monetary benefits and adjust premiums accordingly. Car manufactures may optimize ADAS using the test results. The proposed method to evaluate property damage using a new setup of retrospective in-depth databases and utilizing the data to develop test scenarios that create the foundation of further prospective evaluation analysis of future ADAS is discussed. This paper presents an application of the proposed method for the field of parking and maneuvering, which accounts for up to 50% percent of insurance reported collision claims depending on the vehicle model.

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