Newsletter 2018/2

DEAR READER,

since 2017, VUFO is releasing newsletters bi-annually with some news, interesting projects, current research activities, and publications of VUFO. However, it was only available in German language yet.

As we got a lot of positive feedback and our customers, partners and friends are globally spread, we decided to provide an English version, too.

I hope that you enjoy the one or other article although the end of the year is usually quite busy. If you want to unsubscribe, please write an empty mail to unsubscribe@vufo.de.

Furthermore, I want to thank our customers, project partners, employees and authorities for their support and collaboration in 2018!

In the name of the VUFO team and personally I wish you a Merry Christmas, especially time for relaxing, family and friends. I also hope that you have a good start into the New Year.

Sincerely yours, Henrik Liers

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SePIA - Halftime event

The project SePIA (***Scenario-based platform for the inspection of automated driving functions***) had its half time event in October 2018. Around 80 interested people from automobile industry, vehicle inspection companies, authorities and the Saxon Ministry of Economics participated in the event, held at the Fraunhofer IVI in Dresden.

The aim of the event was to present the current project status and to discuss relevant topics of automated driving and necessary scenarios for testing and functional safety evaluations.

After a joint session with keynote lectures and an overview presentation each participant had the opportunity to visit several stations where all partners (Fraunhofer IVI, fsd / Fahrzeugsystemdaten GmbH, Tracetronic, TU Dresden - Chair of Automobile Engineering, TU Dresden - Chair of Computer Graphics and Visualisation, VUFO) presented their work packages, preliminary findings, and future tasks.

The main objectives were:

- Used data sources (e.g. GIDAS accident data, police accident data, NDS data)
- data processing methods, incl. analysis of video sequences from NDS data
- Definition of criticality
- variation of accident scenarios within physical limits
- Example scenarios
- Appropriate formats

The event ended with an outlook on the second half of the project (project end: May 2020) and the possible application of the platform.

If you are interested in the presentations please contact diana.hamelow@vufo.de. (Remark: All documents are only available in German).

Data investigation / GIDAS

Database of electronic data derived from vehicles in accidents

Contact: Dipl.-Ing. (FH) Diana Hamelow (Diana.Hamelow@vufo.de)

There is an need of securing electronic traces from accident vehicles. The data is not only relevant for accident experts or researchers like VUFO but becomes also more and more interesting for civil cases or in cases of manipulation or suspicion of fraud.

Thus, the VUFO is collecting electronic data from vehicles since 2017 intensively. One the one hand, we try to get data from the Event Data Recorders using the Bosch CDR tool. On the other hand, we use a universal tool to get diagnostics data (e.g. Diagnostic Trouble Codes) that usually reaches OE-level.

As we observed a large interest in the data and a lack of knowledge we started to provide trainings for accident experts, reconstruction engineers, and policemen. In the theoretical part of the training, knowledge about bus systems, types of electronic data in vehicles, tools, applications and limitations of data is imparted. Additionally, a practical training can be done using a crashed car that was equipped with an accessible EDR.

The next step will be the creation of a shared database that can serve as a sharing platform for experts and accident researchers. The background for this project is the fact that currently the read-out data and also interesting information on successful or unsuccessful read-out attempts are only available locally at individual persons or institutions. Under these circumstances, it is hardly possible to estimate in advance whether it is worth to read out a vehicle or which system information could be documented.

By bringing together activities of many accident experts and the VUFO, all participants benefit from the large number of selections. The database is currently under development. The focus is on possibilities for data upload, intuitive usability of the platform and compliance with all data protection requirements.

Review of the (accident) year 2018

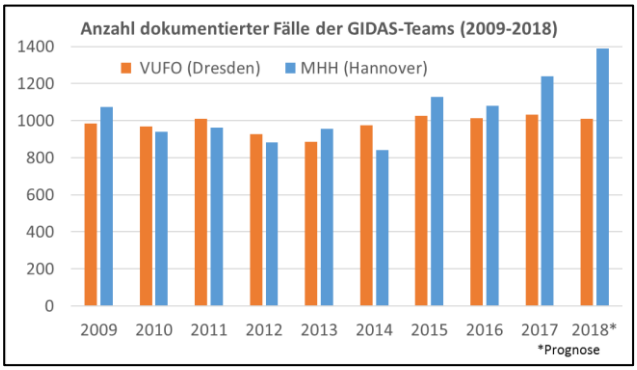
„Prediction is very difficult, especially if it's about the future"

(probably from Niels Bohr)

Since the year 2018 still has almost two weeks "remaining time" when this newsletter is published, it is not yet possible to make an exact prediction of the annual accidents scenario. However, on the basis of current projections by the Federal Statistical Office of Germany (DESTATIS) a slight increase in the number of accidents and fatalities can be expected in Germany for 2018. According to the forecast based on figures for the first nine months, the increase in the number of fatalities is likely to be around 1%, and the number of accidents recorded by the police is also likely to rise (again). According to VUFO estimates, rising numbers are to be expected for cyclists, pedelec and moped riders. The figures also point to an increase of fatalities in heavy goods vehicles.

The two GIDAS investigation teams will also achieve the targeted number of 1,000 accidents with personal injury in 2018. The **VUFO will document around 1,010 accidents** in the Dresden investigation area, while the Hanover-based team will see a further increase and may even record 1,400 accidents (after 1,240 accidents in the previous year).

The development of case numbers over the past decade presented below shows that more than 1,000 accidents per year have been recorded by both GIDAS teams since 2015.



Data Analysis and Simulation

Accidents with tree and guard rail collisions

Contact: Dipl.-Ing. Johann Ziegler (johann.ziegler@vufo.de)

In 2017, the Federal Statistical Office recorded approx. 74,000 traffic accidents involving personal injury on rural roads. This corresponds to approx. 25% of all traffic accidents recorded by the police in Germany. However, 56% of all road fatalities occurred on rural roads. Accidents on these roads are therefore characterized by a high accident severity. The roadside design has a decisive influence on the injury consequences. Especially in collisions with poles (punctual) objects, the severity of injuries is significantly higher. However, there is currently no detailed knowledge on the dependence of the accident consequences on the characteristics of the objects (e.g. distance to the road, trunk diameter).

In cooperation with the Chair of *"Road planning and road design"* of the Faculty of Traffic Sciences of the TU Dresden, VUFO has compiled a detailed database within the framework of a BASt research project. The database includes information on accidents, but also links road design features, speed parameters of road users and parameters of road condition.

In addition, the effects of different impact opponents on the severity of injuries were investigated.

Analysis of US accident databases

Contact: Dipl.-Ing. (FH) Robby Rößler (robby.roessler@vufo.de)

Based on a diploma thesis on the topic "Comparison of the injury severity of persons involved in traffic accidents and the severity of accidents between in the German and US American accident scenario", the VUFO analyses various US accident databases.

One of the goals is to compare the GIDAS data with the data of the American Crashworthiness Data System (CDS). The data collection systems of the National Highway Traffic Safety Administration (NHTSA) usually have online portals where accident reports, coding manuals, raw data tables and evaluations are available. Tools such as the "Crash Viewer" make it possible to filter accidents according to various parameters on accident, vehicle, personal, and injury level. On the other hand, it is difficult or impossible to query explicit parameters that are not included in the search mask.

VUFO is therefore developing a comparison database which will combine the possibility of individual queries based on the tabular accident data provided by the NHTSA with the advantages of the CDS Crash Viewer. With the help of such a database, a variety of evaluations with regard to vehicle and traffic safety issues will be possible.

Comparisons between American and European accident databases are becoming increasingly important, particularly in the course of harmonization efforts with regard to regulations (e.g. Global Technical Regulations). Such data sources and evaluations are also of interest to vehicle manufacturers and suppliers involved in both markets.

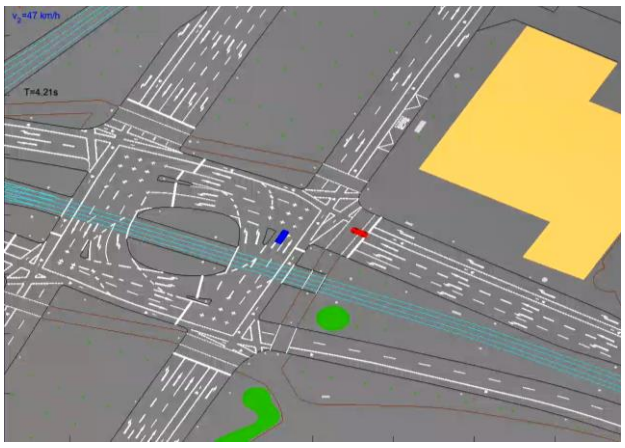
Release of the PCM format specifications

Contact: Dipl.-Ing. (FH) Marcus Petzold, Dipl.-Ing. Florian Spitzhüttl (pcm@vufo.de)

The Pre-Crash-Matrix (PCM) as format and database has been developed by VUFO since 2011 in order to display the results of the accident simulation and the associated environment. It follows the principle to discretize all relevant information of the environment and trajectories into single points and time steps. This makes it easy to use and understand. Currently, around 20 OEMs, suppliers and institutes use the GIDAS based PCM for developing and evaluating safety measures and autonomous driving functions.

To enable other institutions to use the PCM format for accident and traffic scenarios in the future, further developments to generalize and open up the format were developed. As a result, the PCM v5 format should be universally applicable (not GIDAS-related) and publicly accessible. Among other things, it will be possible to map any other vehicle contours, trajectories and country-specific traffic signs.

The format including description and generic example scenarios will be available for download on our VUFO homepage in January 2019. Further development with user support and feedback is planned for the future. Questions, suggestions and development suggestions can be sent to the contact above.

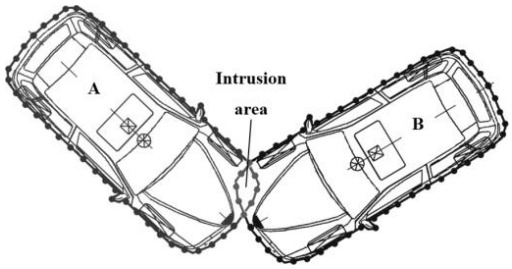


Visualization of the information contained in a PCM of a GIDAS accident

Reduced Order Dynamic Models (RODM)

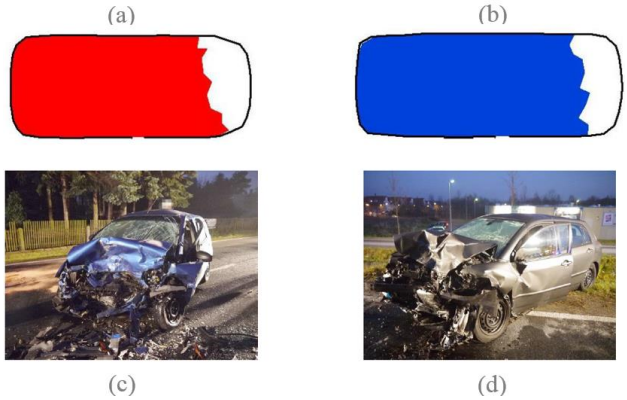
Contact: Dipl.-Ing. Florian Spitzhüttl (florian.spitzhuettl@vufo.de)

Crash simulation is a central topic in the field of vehicle safety and traffic accident research in order to reliably calculate and simulate deformations. There are different approaches of different complexity, based on a mechanical impact model up to (explicit) FEM models with very high degrees of freedom.



Since the robust evaluation of ADAS should analyze as many accidents as possible, FE models are unsuitable due to the time-consuming modelling process. Therefore, a current research focus is the development of a reduced model approach for the calculation of vehicle deformations.

Together with the University of Florence, the Reduced Order Dynamic Models (RODM) approach is being investigated and further developed.



<u>Students are currently being sought for this topic as SHK or for graduation theses (internship, diploma/master thesis). If you are interested, please contact the contact above.</u>

Publications

7. Sachverständigenseminar der CTS Münster, 13.-14.09.2018

The VUFO reconstruction engineers use the seminar, which is flanked by real crash tests, for further training and exchange of experience. In addition, we supported the seminar with a lecture on "Using the findings from the GIDAS accident research project for accident experts and insurers".

The focus was on the one hand on increased cooperation with accident experts in the field of reading electronic vehicle data and on the other hand on the possibility of predicting injury severity on the basis of statistical models.

For further information (in German) see:

https://www.vufo.de/ueber-uns/publikationen/?action=details&t4m_id=500

EVU, Dubrovnik, 11.-13.10.2018

The main topics of this year's annual conference of the European Association for Accident Research and Analysis were motorcycle accidents, insurance fraud and Big Data. In addition to the lectures, there was a poster session in which research results will be presented on posters.

In this context, EVU Deutschland e.V. has advertised three poster places for young experts and university graduates to apply for with their research and study projects. One of the places went to our employee Diana Hamelow, who wrote her diploma thesis on "Investigating the usability of vehicle-internal electronic data as part of accident analysis".

The poster (German and English) is available in the VUFO publication area:

https://www.vufo.de/ueber-uns/publikationen/?action=details&t4m_id=501

SIAM/ACMA/VDA Conference "Safer and sustainable road transportation" New Delhi, 20.11.2018

The VUFO supported the joint conference of the associations ACMA, SIAM and VDA with a lecture and participation in the panel discussion. The subject was the presentation of the GIDAS project and in particular the connection between pre-competitive industrial (FAT) and institutional (BASt) research.

One of the aims of the lecture was to transfer the findings and positive experiences from the GIDAS project to the Indian participants of the event and to serve as an incubator for comparable projects in India.

The presentation (in English) can be found on:

https://www.vufo.de/ueber-uns/publikationen/?action=details&t4m_id=502

Symposium „20 JAHRE AARU – Verkehrsunfallforschung am UKR" Regensburg, 24.11.2018

On the occasion of the 20th anniversary of the "Audi Accident Research Unit" (AARU), a cooperation of the University Hospital Regensburg and AUDI AG, a symposium took place. Prof. Dr. med. Schaser (Medical Director of the University Centre for Orthopaedics and Trauma Surgery and Scientific Director of Medicine at VUFO) and VUFO's Managing Director Liers spoke on the subject of "GIDAS - the gold standard?" and discussed the future role and tasks of traffic accident research.

https://www.vufo.de/ueber-uns/publikationen/?action=details&t4m_id=503

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