

Our newsletter aims to provide you with regular updates on news, current topics and dates of interest relating to the SAFIR research partnership. We look forward to your feedback as well as constructive suggestions and requests for changes!

Review: Virtual network and advisory board meeting on November 22nd, 2020

Due to the COVID-19 pandemic, the events of the SAFIR research partnership were moved to virtual space. The motto of this year's network conference was "AI in vehicle safety". After the welcome by Prof. Dr.-Ing. Thomas Suchandt (SAFIR partnership spokesman), the network meeting started with a keynote speech by Prof. Dr.-Ing. Michael Botsch. This session covered topics including the modern era of AI, the difference between strong and weak AI, how learning from data works, and where it makes sense to use AI in vehicle safety. Afterwards, the participants divided into online groups. Within these groups, the participants were able to exchange ideas on selected questions related to the topic of AI. At the end of the virtual meeting, the following network and research projects of THI presented themselves in short pitches: The AWARE-Center, the research and test center CARISSMA, AININ and Mensch in Bewegung (MiB). The advisory board meeting was also held virtually. Prof. Dr.-Ing. Thomas Suchandt reported on the past SAFIR year and gave an outlook on the future phase. Subsequently, the cluster leaders reported from the respective sub-projects.



SAFIR Cluster 1 „Sichere automatisierte Mobilität“ – Impulsprojekt 1
Ziel: Weiterentwicklung der Mixed-Reality Testumgebung / Anwendung auf reale Anwendungsfälle



Fig. 1: The SAFIR cluster leaders report on the respective sub-projects

One more request on our own behalf: A closing event is planned to conclude the first research phase. We would like to involve you/your company in the planning. Do you have any ideas, wishes or suggestions or would you like to present your company at the event? Then please contact Mrs. Kupfer directly (sonja.kupfer@thi.de). We look forward to your ideas and contributions!

Project Holistic Automotive Testing of Security, Safety and Storage (HATS3)

Hacker attacks on vehicles have been in the public eye since the successful attack on a Jeep Cherokee in 2015. The large amount of complex software in particular offers a large attack surface in the overall vehicle system: security gaps can arise, which can increase the vulnerability of vehicles. This vulnerability becomes apparent when so-called hackers use gaps in the software to manipulate it. The possible consequences of such hacker attacks range from damage to the image and recalls to damage to people and the environment. In order to prevent attacks on vehicles, it is necessary to consider the topic of automotive security as early as the development stage, which also includes testing vehicles for security in order to detect and eliminate any security vulnerabilities that have arisen. The upcoming standard ISO 21434 ("Road vehicles - Cybersecurity engineering") provides for a whole series of security tests for the development of software in the automotive sector. The central goals of the Holistic Automotive Testing of Security, Safety and Storage (HATS3) project are to build a test bench for realistic security tests on vehicles to detect existing security vulnerabilities and to enable security-relevant experiments on hybrid and electric vehicles. The goal is to achieve a high level of automation of the security tests ("Hackbot") in order to achieve cost efficiency and enable more frequent testing. This will ultimately enable efficient implementation of the security tests specified in ISO 21434. Another goal of the project is to build up knowledge in the field of IT forensics. Here, the focus is primarily on the issues of warranty and insurance for hybrid and electric vehicles.

People of HATS3

Marco Michl joined the research group "Security in Mobility" at CARISSMA Institute of Electric, Connected, and Secure Mobility in November 2020. Mr. Michl completed his high school graduation in 2012. He completed an apprenticeship as a mechatronics engineer (IHK) at Audi AG. Mr. Michl studied electrical engineering and information technology (B. Eng.) and computer science (M.Sc.) at the Ingolstadt University of Technology. During his master studies, Mr. Michl was employed at Audi AG, where he was responsible for the development of networked functions/remote services. At THI, Mr. Michl is responsible for the penetration test stand in the HATS3 project.



Fig. 2
Marco Michl

Robin Langer joined the research group "Safe Electric Mobility and Accident Analysis" at the CARISSMA Institute of Electric, Connected, and Secure Mobility in November 2020. Mr. Langer completed his high school graduation in 2013. Afterwards he completed a Bachelor's degree in automotive engineering (B.Eng.) at the Technical University of Ingolstadt and a consecutive Master's degree in mechanical engineering (M.Sc.) at the Friedrich-Alexander-University of Erlangen-Nuremberg. At the THI, Mr. Langer is responsible for both occupational safety and the integration of an event data storage system within the HATS3 project.



Fig. 3:
Robin Langer

Design and implementation penetration test bench

Dominik Bayerl and Marco Michl are currently pushing the development of the penetration test bench. The two research assistants from the research group "Security in Mobility" are working together with Robin Langer from the research group "Safe Electromobility and Accident Analysis". After a preliminary version of the safety concept was available, the team installed a lifting platform (see Figure 2) as the heart of the test bench.

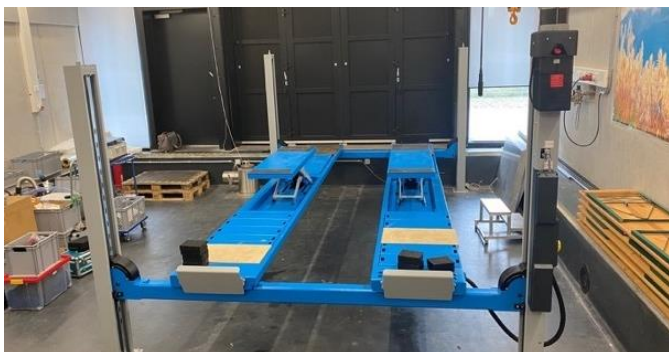


Fig. 4: Heart of the penetration test stand: Lifting platform

Talks

Following the invitation of the Global ITS Research & Technology Management of AVL, Professor Hans-Joachim Hof spoke about "Automotive Security Testing" at the Research Networking Day 2020 on November 25, 2020. He presented the research vision "Hackvisor" of his research group "Security in Mobility". The Hackvisor consists of the HACKbot and the Security AdVISOR. With the penetration test bench from HATS3, an essential element of the hackbot is currently being developed, which Professor Hof reported on.

Professor Hof also reported on the hackbot from the HATS3 project in his keynote "Automotive Security - Quo Vadis? Current Situation and Future Directions in Automotive Security" at The Fourteenth International Conference on Emerging Security Information, Systems and Technology (SECURWARE 2020) in Valencia, Spain (21.11.-25.11.2020).

Furthermore, the current work in HATS3 was also part of Professor Hof's presentation "Automotive Security" at the Future Mobility Forum of the Ingolstadt University of Technology.

Automotive Forensik: Lecture

Klaus Böhm, research assistant of the research group "Safe Electromobility and Accident Analysis" in the CARISSMA Institute of Electric, Connected, and Secure Mobility and DEKRA expert also presented topics from HATS3 at the Legal Conference 2020 - Current Legal Questions on Road Safety (www.dvr.de). He pleaded for a science-based, standardized solution for the storage of vehicle data: an event data storage system (Forensic EDR). A cloud solution would be best for fast data access, with only specially certified experts having access to the vehicle data (Trust Center). The data could then be used to create a high-quality accident analysis, including avoidance scenarios. In this way, the existing data would benefit the entire society in terms of accident prevention.



Fig. 5: Klaus Böhm during his talk

We would like to thank all network partners for their trust and support so far and look forward to continuing our cooperation with you, also during the next SAFIR phase!

Now we wish you and your loved ones a Merry Christmas and a good start into the New Year. But above all: Stay healthy!