Innovation and Global Cooperation for Sustainability
12-14 March, 2024

Innovative Concepts for Traffic and Vehicle Safety

Prof. Dr. M. Jaikumar, Hindustan Institute of Technology & Science, Chennai India
Prof. Dr. Peter König, Trier University of Applied Sciences, Trier Germany

Project Start

Students investigated traffic conditions, traffic safety, and future transportation needs in India and Germany. Future sustainable transportation requires increased use of micromobility. In Germany, the acceptance of micromobility is limited due to missing comfort and especially lacking safety features. In India, micromobility is utilized intensively. The high number of accidents and fatalities underscores the need for enhanced safety measures for this mode of transportation.

A safe traffic infrastructure is key factor for a safe use of micromobility!

Emergency call for traffic accidents

Students developed a software for smart phones to safely detect a traffic accident even for 2-wheelers and call for first responders. Misuse events and driving on rough roads had to be filtered out by an advanced crash detection algorithm. Mobility data sets have been retracted by the students while driving in passenger cars and on motor-bikes in their regional environment. Through online courses the students learned how to set up a crash algorithm and validates their crash detection using a low level of machine learning approach.

Investigating traffic infrastructure

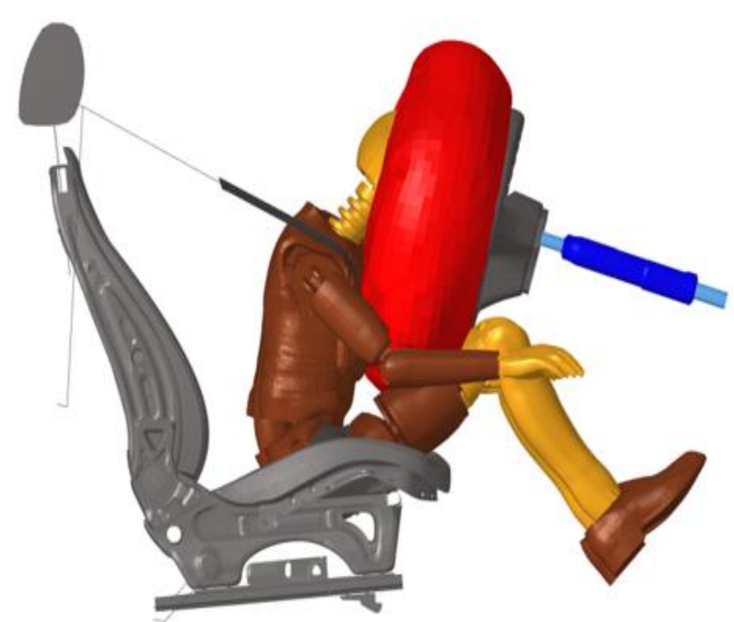
Students investigated different strategies for safe traffic infrastructure and analyzed to what extent the principles of VISION ZERO could be applied under Indian traffic and road conditions. Strategies for advanced traffic infrastructure were investigated in India, the Netherlands, Luxembourg, and Germany.

Sustainable mobility

In view of the significant waste problem in Chennai, new concepts for sustainable mobility have been developed. A biogas plant was installed and is being fed by students and the university's canteen. Students converted a vehicle for campus internal load transportation to biogas drive. Far-reaching concepts for hydrogen generation from biogas were jointly developed under the guidance of the H2 Competence Center at Trier University of Applied Sciences and led to the installation of a hydrogen lab at HITS Campus.

Advanced concepts for Vehicle Safety

Using the latest simulation tools, joint student teams learned how to analyze vehicle structures for their crashworthiness. Within a PhD thesis, it was investigated to what extent restraint systems of passenger cars should be adaptable in order to protect humans of all sizes and weights.



Joint Application for future

Next joint applications for fundings are planned in the field of sustainable technologies, safe mobility and hydrogen applications.