Vehicle Safety Institute

E-Scooter - Traffic Safety of new Vulnerable Road Users

Background

A trend towards new means of transport can also be observed in Austria. E-scooters are becoming more and more popular, which can be seen not least in the sales figures and the increasing number of e-scooters for hire. The increase in the number of e-scooters in road traffic is also leading to increasing conflicts with other road users (pedestrians, cyclists and motor vehicles), which often end in accidents. The aim of the research project Smart Urban Road Safety- Traffic Safety of new Vulnerable Road Users (SURF) is - should an accident occur - to assess the injury risk in e-scooter accidents and to derive recommendations for accident and injury prevention. Therefore, FE simulations with human models should be conducted. To conduct these simulations, it is necessary to determine the usual driving posture of e-scooter users and to create FE e-scooter models.

Your goal in this thesis is to conduct volunteer tests with different volunteers in the laboratory. With the help of the volunteer tests the usual driving posture for males and females is to be determined. Moreover, different 3D-CAD e-scooter models should be created with the help of laboratory measurements. If you are doing a Master Thesis this 3D-CAD e-scooter models should be transferred into a FE simulation model and test simulations should be conducted to see if the FE model behaviour is in accordance to the real e-scooter.

Tasks

- **Get familiar** with e-scooter accidents and literature research.
- **Perform** volunteer test and measurement of various e-scooters models in the laboratory.
- **Development** of 3D-CAD e-scooter models and deriving of usual driving postures for males and females.
- **For Master Thesis:** Creating FE e-scooter models and conducting FE test simulations.

Topic as thesis for

Bachelor or Master Thesis depending on the agreed period and scope of tasks.

Organizational

- Start: anytime
- Language: German or English
- Scholarship **only for Master Thesis**: min. € 2.500, - for successful completion of the thesis
- Contact: Christoph Leo (christoph.leo@tugraz.at)