Master thesis proposal:
Quantifying lateral movement during normal drive and evaluating countermeasures

Background and aim
During normal ride the occupant may move due to vehicle kinematics, braking and steering. The driver, can be prepared for certain movement and the driver also have the steering wheel to hold on to, which may reduce the movements due to vehicle dynamics. However, a passenger may be less aware of the ongoing traffic situation resulting in various vehicle movements, also, the passenger does not have any steering wheel to support themselves with. Does this normal movements of the occupant during ride put the occupant in sitting postures that is not desired from a crash safety point of view? Can the occupant be supported if needed, in an effective way but also accepted way by the user?

The aim of this project is to quantify lateral movement of the occupant during normal drive and evaluate countermeasures to support the occupant, both in terms of movements and occupant experience.

Task description
- Review scientific literature
- Benchmark relevant car manufactures
- Establish specific research questions to be addressed
- Analyze already collected driving data
- Set up a relevant driving study
- Conduct and analyze the driving study
- Evaluate possible countermeasures – both in terms of objective observations and occupant experience

The thesis is suitable for two master students with good knowledge and interest in data collection, data analysis and user studies. The work will be carried out at Volvo Cars Göteborg during spring 2019. Driver license B is required. Applications are handled individually. At least one of the students need to be fluent in Swedish.

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