

Development of an Assessment System of Driver Visual Behaviours on a Car Simulator

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Disclaimer

No conflicts of interest exist for the presenter,
financial or otherwise



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Project Fundamentals & Objectives

- **Driving** relies heavily on vision → it is important to measure visual behaviours during driving activities, especially with visually impaired persons.
- **Driving simulator** offers a safe, controlled and standardized evaluation of the effect of visual impairment on various aspects of driving performance.
- **Objective of the project:** to develop an assessment system of visual behaviours during driving performance on a car simulator.

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Components of the Assessment System

1. Driving simulator
2. Adapted driving scenarios
3. Eye tracker
4. Driving behaviours observation grid
5. Software application

The Driving Simulator

VS500M (Virage Simulation)

High fidelity fully immersive car driving simulator



The Driving Scenarios

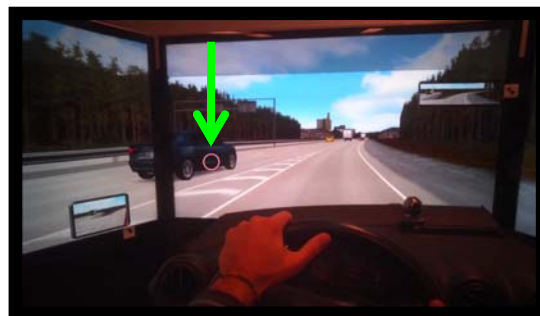
- 4 adapted driving scenarios of *Virage Simulation*
- 7.5 km total drive (\cong 15 min)
- Common driving situations:
 - ◆ Urban boulevards and highways; light to heavy traffic conditions
 - ◆ Intersection crossings, merging, lane change
 - ◆ Traffic lights, stop sign
 - ◆ Pedestrians
- Exclusions
 - ◆ 90° intersection turns
 - ◆ Reading street or highway panels



The Eyetracker



- *Tobii Pro Glasses 2*
- Captures natural viewing behaviours during driving performance on the car simulator.
- Adaptable with far sight correction lens inserts

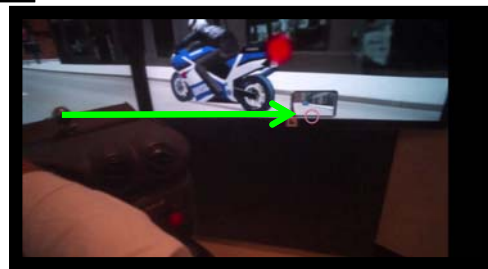


The Driving Behaviours Observation Grid

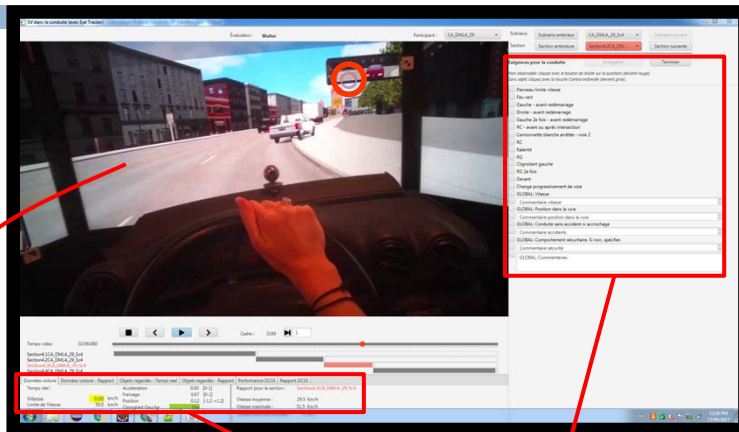


329 expected driving behaviours

- Visual (n = 230)
- Operational (n = 43)
- Global (n = 56)



The Software Application



Eye tracker video

Driving simulator data

Behaviours observation grid

Ongoing Project

- Interjudge reliability and content validity of the observation grid
 - Active drivers
 - 25-40 and 60-85 years old
 - ≥ 4 years of driving experience
 - VA > 20/50

Conclusion

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The INLB assessment system of driving visual behaviours on a car simulator has been developed to answer **clinical and research needs**.

It is expected it will allow a better understanding of the visual and global behaviours during driving activity, and how the type and severity of the visual impairment influence them.

Acknowledgement

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