



MOBILITY OBSERVATION BOX: Measure objectively and improve road safety

Since road safety depends to a large extent on the interaction of road users with each other and with the road infrastructure, researchers from the AIT Austrian Institute of Technology have developed an innovative solution for measuring traffic conditions and traffic conflicts.

TRAFFIC EVALUATION AND TARGETED MITIGATION MEASURES

The Mobility Observation Box (MOB) makes it possible to measure the safety of transport infrastructures according to objective criteria and thus make them comparable. Once data collection is done, machine learning algorithms automatically recognize different groups of road users (pedestrians, cyclists, cars, trucks, e-scooters, etc.), detects them, evaluates their traffic behavior using surrogate safety measures and provides

a basis for targeted mitigation measures. Conflict situations can be observed and evaluated objectively and for a desired period of time. The battery-operated system allows a quick and uncomplicated installation and deinstallation of the box, not requiring supplemental power source. Due to its small size, a registration of all traffic participants can be realized without distraction or influence.

The collected video data is the basis of the risk-based evaluation procedure, using machine learning algorithms and artificial intelligence. Using a unique video-based surrogate safety technology, the displacements of all road users within a traffic scene can be monitored to a high degree of precision, in a repeatable and unobtrusive way. Each road user is detected, classified, and tracked.

This data is then used to assess and provide metrics on road safety (such as near-collision and over-speeding incidents), as well as traffic flow conditions (such as volumes and speeds). A better understanding of these collision precursors helps practitioners improve infrastructure without relying solely on historical collision data.





The aim of the survey with the MOB is to provide objective and comparable evaluations of the effects of various infrastructural and traffic engineering measures on the risk of collisions and injuries. The MOB is also used network-wide in the planning or retrofitting of traffic infrastructures to determine cost-effective recommendations for specific traffic safety measures.

HOW THE MOBILITY OBSERVATION BOX DISTINGUISHES ITSELF:

- meets the highest data protection standards according to GDPR
- energy self-sufficient
- inconspicuous
- quickly and flexibly ready for use
- reliable

OUR SERVICES AND PERFORMANCE AT A GLANCE:

- Objective evaluation of traffic safety, including
 - calculating traffic volumes for all different road users,
 - identifying near-miss interactions and their safety indicators,
 - generating heatmaps, illustrating speed data, traffic directions, and possible black-spots

- Evaluation of infrastructural measures
- Conducting specific studies of individual forms of mobility (e.g. pedestrians, cyclists or e-scooter users) in public spaces and for internal safety issues

REFERENCES:

- Horizon Europe project "AMIGOS": Evaluation of infrastructure elements in Hamburg, Gabrovo, Istanbul, Ankara, Reykjavik, Jurmala, Lappeenranta, Laz Rosas
- Surveys for the Swiss Council for Accident Prevention (BFU) in the area of cycling safety
- National deployments in Vienna, Graz, Linz in the field of traffic counting, conflict detection and in-house safety research



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