Safe Road User

Driver Behavior Modelling (DBM) is an area of road safety management that is concerned with the characterization of driver behavior. This characterization is enabled through the analysis of various inputs from either the transportation infrastructures, e.g., on-road CCTV cameras, speed-sensors; other infrastructures, e.g., smartphones, reporting to services such as Waze or Google Maps, registrations to cellular-base stations; or an in-vehicle sensing setup. Combined or separated, baselines for "safe" or "responsible" driving can be synthesized, against which counter driving behaviors are identifiable. Meanwhile, considerations for driver awareness or alertness can also be realized to extend identification to behaviors exhibited when driving under fatigue, distraction, or influence.

A smartphone-based driver activity recognition system is proposed in with the objective of preventing drivers from texting while driving. The system identifies whether a smartphone holder (a) has entered a vehicle; (b) has boarded the vehicle from the left or the right; (c) sat in the front or back seat; and (d) is texting. Another system that differentiates drivers from passengers is offered in The system in employs fuzzy logic and utilizes the acceleration, gravity, magnetic, and GPS sensors to estimate driving aspects such as jerk, orientation rate, speed variation, and bearing variation. A fusion module is then employed to distinguish activity such as hard/sudden acceleration or overspeeding.

The work in exploits smartphone cameras to monitor the driver's alertness through recognizing head position and body orientation. It also utilizes the smartphone's back camera to process the driver's lane-change. Additionally, the system assists the user in detecting vehicles in the driver's blind-spot and alerts the driver if a lane change is undertaken while another vehicle is occupying the blind-spot.