IIHS ratings program on safeguards for partial driving automation overview

Version date: 02/16/2022
IIHS safeguards for partial driving automation ratings program

Sets minimum expectations for automakers to design systems that deter misuse through:

- **Attention reminders**
- **Driver monitoring**
- **Emergency escalation**

- **Responsible application of automated functionality**
- **Cooperation between driver and automation**
- **Safety feature use**

- Program does not endorse partial driving automation
- It is technology neutral to encourage innovative solutions
- Safeguard categories are data-driven and will continue to evolve
IIHS safeguards for partial driving automation ratings program

1. Driver monitoring
2. Attention reminders
3. Emergency escalation
4. Automated lane changing
5. ACC auto-resume
6. Cooperative steering assistance
7. Safety features
Must monitor driver for signs of disengagement

Where is the driver looking? What are the driver’s hands doing?

- Should detect driver looking away from road and hands off wheel/occupied under various everyday conditions
- To become available, system must first detect driver
- If system loses driver information, must begin attention reminder process
Attention reminders

Rapid timing and utilization of multiple channels of communication

- Attention reminders should *rapidly* escalate in urgency
- Escalation should add **more modalities at each stage** (which may include vehicle kinematic behavior, e.g., ACC coasting, pulse braking)
- Must escalate to a minimum of three modalities
Emergency escalation
Countermeasures for disengagement

- Vehicle should slow down/stop, driver cannot reactivate system for remainder of drive (lockout), and vehicle should automatically make an SOS call.

- Lockout should not cease driving support until driver takes over or vehicle has stopped.

- System lockout should occur:
  - After a threshold number of escalated attention reminders have occurred.
  - If vehicle slowing/stopping procedure has been initiated.
Automated lane changing

- Unclear if there is a safety benefit or disbenefit to auto lane change. But vehicle-initiated auto lane change functionality is unacceptable with partial driving automation.
- Driver-initiated/confirmed auto lane change is only acceptable in systems that perform well on all other safeguard categories.
ACC auto resume

- ACC should only auto-resume if the DMS has verified that the driver is looking at the forward roadway, up until a max duration of vehicle being stopped.

- If vehicle is stopped longer than that max duration, ACC should not auto-resume at all.
Cooperative steering assistance (shared control)

- System must not switch off (i.e., require manual reactivation) whenever driver steers within lane
Safety features

- System cannot be switched on while automatic emergency braking (AEB) and lane departure prevention (LDP) are disabled or while driver is unbuckled.
- AEB and LDP cannot be switched off while system is on.
- If driver unbuckles while system is on, attention reminders and emergency escalation process must begin.