

Haptic Latch: Enhancing Passenger Safety with Tactile Feedback in Vehicle Door Systems



Summary: Vehicle door-related accidents remain a serious safety concern, particularly in blind-spot situations. Our proposal introduces "Haptic Latch," a tactile feedback mechanism embedded in vehicle door handles that alerts passengers with vibration when potential hazards—such as approaching cyclists or cars—are detected during door-opening attempts. By leveraging existing in-vehicle sensors (e.g., ultrasonic or radar), the system provides real-time, passenger-specific alerts. Unlike conventional warnings that rely on visual or auditory cues (often aimed only at drivers), Haptic Latch offers intuitive, distraction-free feedback, with vibration intensity adjusted according to threat level. This approach prioritizes rear-seat passenger safety, which is frequently neglected in current systems.