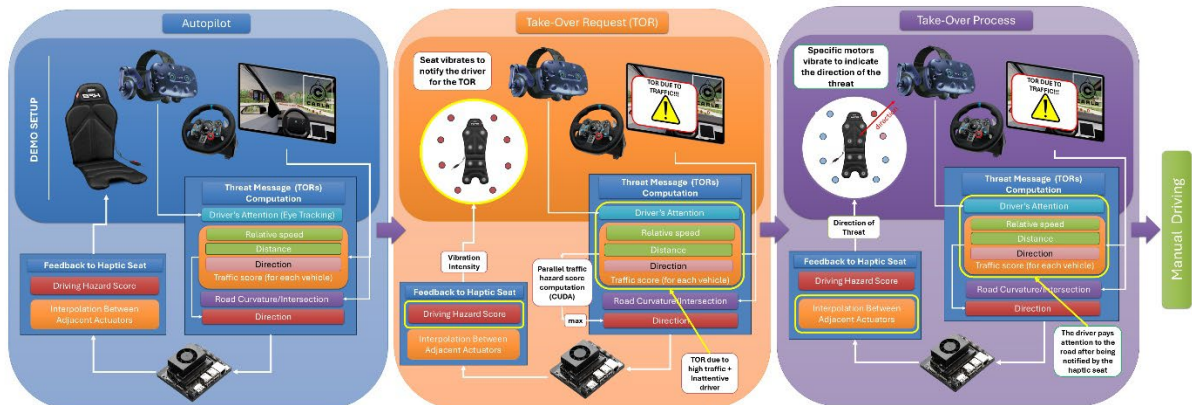# Optimizing Take-Over Requests in Autonomous Vehicles through Haptic Feedback

Summary: Our system **utilizes haptic feedback to enhance the driver's situational awareness and response during Take-Over Requests (TORs)** in autonomous driving. Tactile cues are delivered via a **context-sensitive haptic seat**, providing haptic alerts of **varied intensity** based on the threat and driver's state. The **direction** of the threat is indicated by localized vibrations on the seat. TORs arising from multiple threats (**parallel threat processing mechanism**) and haptic feedback are handled by a microprocessor rendering our system autonomous (**hardware-in-the-loop**). **User studies show that our system minimizes driver reaction times** compared to traditional audio-visual alert systems, hence maximizing safety during complex take-over scenarios.