INSTRUCTIONS:
Fill out the hazard analysis and risk assessment below.
HA-001 should be for the lane departure warning function as discussed in t
HA-002 should be for the lane keeping assistance function as discussed in
Then come up with your own situations and hazards for the lane assistance
When finished, export your spreadsheet as a pdf file so that a reviewer can

Hazard ID			
	Operational Mode	**Operational Scenario**	**Environmental Details**
HA-001	normal driving	highway	rain (slippery mode)
HA-002	normal driving	country road	normal conditions
HA-003	normal driving	highway	normal conditions
HA-004	normal driving	highway	normal conditions

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e assistance system. Fill in the HA-003 and HA-004 rows.
viewer can easily see your work.

Situational Analysis

Situation Details	Other Details (optional)	Item Usage (function)
high speed		correctly used
high speed		incorrectly used
high speed		correctly used
high speed		incorrectly used

Situation Description	Function	Deviation
Normal driving on a highway during rain (slippery road) with high speed and correctly used system.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback	Too much vibration
Driver misusing the lane assistance function as fully autonomous function.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	Always on
Normal driving on a highway during rain (slippery road) with high speed and correctly used system.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	Too much steering correction
Driver misusing the LDW function as excuse to look away from the road.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback	Always on

Hazard Identification		
Deviation Details	**Hazardous Event (resulting effect)**	**Event Details**
LDW function applies oscillating torque with very high torque (above limit)	collision with other vehicle	High haptic feedback can affect driver's ability to steer as intended. The driver could lose control of the vehicle and collide with another vehicle or with road infrastructure.
Driver treats lane assistance as full autonomy.	collision with other vehicle	Inattentive driver may not notice other vehicles.
Too much steering correction can result in car oscillation, especially at high speeds.	collision with other vehicle	Severe oscillation can result in car leaving the lane or startling other drivers, leading to a collision.
Driver treats lane assistance as full autonomy.	collision with other vehicle	Inattentive driver may not notice other vehicles.

Hazardous Event Description	Exposure (of situation)	Rationale (for exposure)
LDW function applies too much oscillating torque to steering wheel (above limit).	E3	Rain slightly reduces risk (E3) compared to highway driving (E4).
Driver treats lane keeping function as autonomous function and takes hands off the wheel, which could result in a collision with other cars.	E2	Misusing while on country road is unusual combination.
LK system oversteers, leading to oscillations and possibly collision.	E4	Typical highway driving is common.
Driver overly reliant on LDW and looks away from the road, which could result in a collision with other cars.	E2	Misuse will be brief because over-relying on LDW will quickly result in haptic feedback and need to look at the road for correction.

Hazardous Event Classification		
Severity (of potential harm)	**Rationale (for severity)**	**Controllability (of hazardous event)**
S3	High speed collisions can be fatal.	C3
S3	High speed collisions can be fatal.	C3
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S3	High speed collisions can be fatal.	C3

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Rationale (for controllability)	**ASIL Determination**
Strong vibrations cause uncontrollable swerving.	C
Driver's hands not on wheel, so control is impossible.	B
Car oscillations can directly and immediately cause a collision, leaving the driver without time to react.	D
Driver's eyes not on the road, so control is impossible.	B

nation of ASIL and Safety Goals
Safety Goal
The oscillating steering torque from the lane departure warning function shall be limited.
The lane keeping assistance function shall be time limited and the additional steering torque shall end after a given time interval so that the driver cannot misuse the system for autonomous driving.
The steering torque from the LK function shall be limited.
The haptic warning shall be triggered by the driver closing eyes or looking away (other than quick blind spot check).