INSTRUCTIONS:
Fill out the hazard analysis and risk assessment below.
HA-001 should be for the lane departure warning function as discussed in th
HA-002 should be for the lane keeping assistance function as discussed in t
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 e

Hazard ID			
	Operational Mode	**Operational Scenario**	**Environmental Details**
HA-001	OM03 - Normal Driving	OS04 - Highway	EN06 - Rain (slippery road)
HA-002	OM03 - Normal Driving	OS03 - Country Road	EN01 - Normal conditions
HA-003	OM03 - Normal Driving	OS04 - Highway	Fog(Degraded View)
HA-004	OM03 - Normal Driving	OS03 - Country Road	Cross-wind(Lateral Force)

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system. Fill in the HA-003 and HA-004 rows.
easily see your work.

Situational Analysis		
Situation Details	**Other Details (optional)**	**Item Usage (function)**
SD02 - High speed		IU01 - Correctly used
SD02 - High speed		IU02 - Incorrectly used
SD02 - High speed		IU01 - Correctly used
SD02 - High speed		IU01 - Correctly used

Situation Description
Normal driving on a highway during rain (slippery road) with high speed and correctly used system.
Normal driving on a country road during normal conditions with high speed and incorrectly used systam.
Normal Driving on a highway in foggy conditions with high speed and correctly using the system
Normal Driving on a highway during strong winds with high speed and correctly using the system

Function
Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic
Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane
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Deviation
Steering Wheel Vibrates too much
Lane Keeping function is always activated
Function unexpectedly activated
Actor effect is too less

Hazard Identificati
Deviation Details
LDW function applies oscillating torque with very high torque(above limit)
Lane Keeping function is always activated
Due to reduced visibility, lane lines may not be clearly visible. Hence, even though the driver is driving along the
If the direction of strong wind is opposite to the direction of torque applied to keep the vehicle in lane, the amount of

on
Hazardous Event (resulting effect)
Collision with other vehicle
Collision with other vehicle
Car Comes off road
Collision with other vehicle

Event Details
High haptic feedback can affect driver's ability to steer as intented. The driver loose control and could collide with
The driver believes that the lane keeping assistance function will take care of keeping the car in the lane. But it will
Since the visibility is low, the car may drive off the road if the lane departure warning system activates incorrectly
If the amount of torque applied is not sufficient to keep the vehicle in lane, the vehicle might be in the lane

Hazardous Event Description
The Lane Departure Warning function applies an oscillating torgue with very high torque (above limit.)
The driver do not use the function properly.
Lane departure warning function activates when the driver is moving correctly along the lane. The driver may
Amount of torque applied is smaller than what is required to keep the vehicle in lane

Exposure (of situation)
E3 - Medium probability
E2 - Low probability
E3 - Medium probability
E3 - Medium probability

Rationale (for exposure)
According to functional safety standards, highway driving on wet roads Is E3
The driver is on a country road and misusing the system, which does not happen that often
Highway Driving on foggy roads
Highway Driving on windy roads

Hazardous Event Classification	
Severity (of potential harm)	**Rationale (for severity)**
S3 - Life-threatening or fatal injuries	Driving at high speed would cause a collision
S3 - Life-threatening or fatal injuries	Driving at high speed would cause a collision
S3 - Life-threatening or fatal injuries	Driving at high speed would cause a collision
S3 - Life-threatening or fatal injuries	Driving at high speed would cause a collision

Controllability (of hazardous event)
C3 - Difficult to control or uncontrollable
C3 - Difficult to control or uncontrollable
C3 - Difficult to control or uncontrollable
C2 - Normally controllable

Rationale (for controllability)
Difficult to control in case the haptic feedback is vibrating heavily and can cause distraction
A lane keeping assistance when always ON is to have the driver keep the hands off from the steering. A driver will
A wrong steering action made by the driver at high speeds is difficult to control.
Driver can control the vehicle and steer it into the right lane

ASIL Determination
ASIL C
ASIL B
ASIL C
ASIL B

Determination of ASIL and Safety Goals
Safety Goal
The oscillating torque from the LDW system shall be limited
The Lane Keeping Assistance function shall be time limited, and additional steering torque shall end after a given
The lane departure warning function shall be disabled in low visibility environments
The lane keeping assistance function shall apply a higher torque when the prevailing winds is in the direction