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

Hazard ID			
	Operational Mode	**Operational Scenario**	**Environmental Details**
HA-001	OM03 Normal Driving	OS04 Highway	EN06 Rain (slippery road)
HA-002	OM03 Normal Driving	OS04 Highway	EN01 Normal consitions
HA-003	OM03 Normal Driving	OS02 City Road	EN07 Snow(slippery road)
HA-004	OM03 Normal Driving	OS04 Highway	EN04Snowfall(degraded view)

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

Situational Analysis

Situation Details	Other Details (optional)	Item Usage (function)
SD02 High speed	N/A	IU01 Correctly used
SD02 High speed	N/A	IU02 Incorrectly used
SD01 Low speed	N/A	IU01 Correctly used
SD02 High speed	N/A	IU01 Correctly used

Situation Description	Function	Deviation
Normal driving on 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	DV04 Actor effect is too much
Normal driving on country roads during normal conditions with high speed(the driver is misusing the lane keeping assistance function as an autonomous function)	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	DV03 Function always activated
Normal driving on city road during snow(slippery road) with low speed and correctly used the system.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback	DV04 Actor effect is too much
Normal driving on highway during snowfall(degraded view) with high speed and correctly used system.	Camera function shall capture vehicle driving including detectable lane lines	DV19

Hazard Identification		
Deviation Details	**Hazardous Event (resulting effect)**	**Event Details**
The Lane Departure Warning function applies an oscillating torque with 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.
Lane Keeping Assistance functionis is always activated and it leads to misuse as an autonomous driving function	Collision with other vehicle	If Lane keeping assistance function is always activated, drivers can misuse the function as an autonomous driving and their hands are off from steering wheel. It can lead to lose control of car and collide with other vehicle.
The Lane Departure Warning function applies an oscillating torque with 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.
Camera function captures lane lines by mistake(because of the degraded view)	Collision with other vehicle	Falsely detected lane lines by camera leads to unintended use of Lane Departure Warning function or Lane Keeping Assistance

Hazardous Event Description	Exposure (of situation)	Rationale (for exposure)
Oscillating torque to the steering wheel is too high	E3	Normal driving on highway during rain is not so rare
Lane Keeping Assistance is always activated	E2	The condition of normal driving on country road during normal conditions sometimes happens
Oscillating torque to the steering wheel is too high	E2	The condition of normal driving on city road at snowy road condition sometimes occurs
Camera function falsely detects lane lines	E2	The condition of normal driving on highway at snowfall condition sometimes occurs

Hazardous Event Classification		
Severity (of potential harm)	**Rationale (for severity)**	**Controllability (of hazardous event)**
S3	In highway, the speed of vehicle is expected to be high	C3
S3	In highway, the speed of vehicle is expected to be high	C3
S1	In city road, the speed of the vehicle is expected to be low	C3
S3	In highway, the speed of vehicle is expected to be high	C2

	Determi
Rationale (for controllability)	**ASIL Determination**
Oscillating steering wheel too much at high speed is hard to control	ASIL C
Driver hands are off from the steering wheel at high speed are difficult to control	ASIL B
Oscillating steering wheel too much in snow(slippery condition) is difficult to control	QM
Unintended use of Lane Departure Warning and Lane Keeping Assistance function can be detectable by most of the drivers, so they can control the car.	ASIL A

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 torque is applied for only limited time duration.
The oscillating steering torque from the lane departure warning function shall be limited
The use of camera in degraded view condition shall be limited.