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

Hazard ID			
	Operational Mode	**Operational Scenario**	**Environmental Details**
HA-001	OM03 - Normal Driving	OS04 - Highway	EN06 - Rain (slipery road)
HA-002	OM03 - Normal Driving	OS03 - Country Road	EN01 - Normal conditions
HA-003	OM03 - Normal Driving	OS03 - City Road	EN03- Fog
HA-004	OM03 - Normal Driving	OS03 - City Road	EN01 - Normal conditions

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

Situational Analysis

Situation Details	Other Details (optional)	Item Usage (function)	Situation Description
SD02 - High speed		IU01 - Correctly used	Normal driving on a highway during rain (slippery road) with high speed and correctly used system.
SD02 - High Speed		IU01 - Correctly used	Normal driving on country roads during normal conditions with high speed.
SD01 - Low Speed		IU01 - Correctly used	Normal driving on city road during heavy fog with low speed.
SD01 - Low Speed		IU01 - Correctly used	Normal driving on city road with construction side during normal condition with low speed.

			Hazard Identification
Function	**Deviation**	**Deviation Details**	**Hazardous Event (resulting effect)**
Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback	Actor effect is too much	The LDW function applies an oscillating torque with very high torque (above limit).	EV00 - Collision with other vehicle.
Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	DV03 - Function always activated	LKA function is always activated.	EV00 - Collision with other vehicle
Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	DV19 - Sensor Detection is wrong	Camera can't detect the lanes due to heavy fog	EV00 - Collision with other vehicle.
Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	DV19 - Sensor Detection is wrong	Camera can't detect the correct lane on the construction side, where addtional yellow lanes redirect the cars.	EV04 - Front collision with obstacle

Event Details	Hazardous Event Description	Exposure (of situation)
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.	The LDW function applies too high an oscillating torque to the steering wheel (above limit).	E3 - Medium probability
Driver use the function as if the car was a autonomous car and loose driving attention.	The driver do not use the function properly.	E2 - Low probability
Due to wrongly lane detection the car goes to neighbour lane or get off the road.	Wrongly lane detection due to heavy fog	E2 - Low probability
Due to not be able to distingish lane color, car crashes to construction side	Wrongly lane detection due to mixed color lane	E3 - Medium probability

Hazardous Event Classification			
Rationale (for exposure)	**Severity (of potential harm)**	**Rationale (for severity)**	**Controllability (of hazardous event)**
Driving on a highway during rain can happen once a month or more depending on driver's location.	S3 - Life-threatening or fatal injuries	Driver is traveling at high speed.	C3 - Difficult to control or uncontrollable
The driver is on a country road and misusing the system.	S3 - Life-threatening or fatal injuries	Driver is traveling at high speed.	C3 - Difficult to control or uncontrollable
Heavy fog only happeny a few times a year	S3 - Life-threatening or fatal injuries	Car goes to other lanes or get off the road could hit other cars or pedastrian.	C2 - Normally controllable
Construction side in the city is pretty common	S1 - Light and moderate injuries	With low speed collision with obscale	C2 - Normally controllable

	Determination of ASIL and Safety Goals	
Rationale (for controllability)	**ASIL Determination**	**Safety Goal**
Overreaction of wheel's vibration is very distracting and even suprising, so the most drivers won't be able to avoid harm..	C	The oscillating steering torque from the LDW function shall be limited.
LKA is always on, driver could take hands off the wheel and therefore looses control entirely.	B	LKA function shall be time limited and the additional steering torque shall end after a given timer interval so that the driver can not misuse the system for autonomous driving.
Driving at low speed, the driver could control it	A	LKA function has to be deactivated if camera sensor couldn't detect lanes correctlly in heavy fog
Driving at low speed, the driver could control it	A	LKA function has to be deactivated if camera sensor couldn't distingish between yellow and white lanes.