INSTRUCTIONS:

Fill out the hazard analysis and risk assessment below.

HA-001 should be for the lane departure warning function as discussed in the l

HA-002 should be for the lane keeping assistance function as discussed in the

Then come up with your own situations and hazards for the lane as

When finished, export your spreadsheet as a pdf file so that a revi

Hazard ID	Situational Ar			
	Operational Mode	Operational Scenario	Environmental Details	Situation Details
HA-001	OM03 – Normal driving	OS04 – Highway	EN06 – Rain (slippery	SD02 – High speed
HA-002	OM03 – Normal driving	OS03 - Country Road	EN01 - Normal condit	SD02 – High speed
HA-003	OM03 – Normal driving	OS02 – City Road	EN01 - Normal condit	SD03 – Normal accel
HA-004	OM03 – Normal driving	OS01 – Any Road	EN01 – Sun blares (d	SD02 – High speed

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ssistance system. Fill in the HA-003 and HA-004 rows.

ewer can easily see your work.

nalysis

Other Details (optional)	Item Usage (function)	Situation Description	Function
	IU01 – Correctly us	Normal Driving on a highway during rain 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
	IU02 - Incorrectly u	a driver takes both hands off of the steering wheel and treats the vehicle as if it were autonomous	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane
eration	IU01 – Correctly used		Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane
	IU01 – Correctly us	Normal Driving on a highway during sunny day 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

Hazard Identification			
Deviation	**Deviation Details**	**Event (resulting**	**Event Details**
DV04 – Actor ef	The LDW function applies an oscillating torque with very high torque (above limit).	EV00 - 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.
DV03 - Function always activated	LKA Function is always act	EV00 - Collision with other vehicle	driver is misusing the lane keeping assistance function as a fully autonomous function
DV12 – Sensor sensitivity is too high	LKA Function is always act	Ev01 -Side collision with obstacle	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.
DV19 – Sensor	wrongly detecting lane position	EV00 - Collision with other vehicle	driver is misusing the lane keeping assistance function as a fully autonomous function

Hazardous Event Description	Exposure (of situation)	Rationale (for exposure)	Severity (of potential harm)	Hazardo
The LDW function applies too high an oscillating torque to the steering wheel (above limit).	E3 – Medium Probabilit	Driving on a highway during rain can happen once a month depending on driver's Location.	S3 - Life-threatening or fatal injuries	
LKA is always activated and driver stop focusing on driving car.	E2 – Low probability	Driving on country road and misusing LKA	S3 - Life-threatening or fatal injuries	
LKA is always activated and driver stop focusing on driving car.	E2 – Low probability	Driving on city road where the lane lines have been burned off or worn off	S1 – Light and moderate injuries	
LKA is always activated and driver stop focusing on driving car.	E4 - High probability		S2 – Severe and life-thre	

us Event Classification			Determinati
Rationale (for severity)	Controllability (of hazardous event)	Rationale (for controllability)	ASIL Determination
Driver is driving at high speed	C3 - Difficult to control or uncontrollable	overreaction of vibrating wheel will surprise the driver and won't avoid harm	C
Driver is driving at high speed	C3 - Difficult to control or uncontrollable	Driver takes hands off the wheel and completely lose control	B
Driver is driving with normal acceleration	C3 - Difficult to control or uncontrollable		QM
Driving with high speed and sensor false detection	C2 – Normally controllable	Driver is correctly use system so he can deactivate the system in case of fault	B

ion of ASIL and Safety Goals
Safety Goal
The oscillating steering torque from LDW shall be limited.
LKA shall be time limited so that the lane keeping assistance function should only work for a certain amount of time.
LKA shall be deactivated if sensors can’t detect unlaned roads LKA Lamp should be blink to indicate driver that system is deactivated.
LKA system shall be deactivated in case of false detection