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

Hazard ID	Situational A			
	Operational Mode	Operational Scenario	Environmental Details	Situation Details
HA-001	OM03 - Normal driving	OS03 - Country Road	EN06 - Rain (slippery	SD02 - High speed
HA-002	OM03 - Normal driving	OS04 - Highway	EN01 - Normal conditi	SD02 - High speed
HA-003	OM03 - Normal driving	OS04 - Highway	EN01 - Normal conditi	SD02 - High speed
HA-004	OM03 - Normal driving	OS05 - Mountain Pass	EN03 - Fog (degraded	SD01 - Low speed

Normal driving on a highway during rain (slippery road) with high speed and correctly used system
The lane departure warning function shall apply an oscillating steering torque to provide the driver
DV04 - Actor effect is too much
The LDW function applies an oscillating torque with very high torque (above limit)
EV08 - Collision with other vehicle
High haptic feedback can affect driver's ability to steer as intended. The driver could lose control o
Torque to the steering wheel is too high
E3 - Medium probability
Highway driving is part of regular driving however, rain does not occur often
S3 - Life-threatening or fatal injuries
On highway speed of vehicle is expected to be high
C3 - Difficult to control or uncontrollable
Excessive vibration will make it difficult for most drivers to loose control
CThe oscillating steering torque from the lane departure warning function shall be limited

the HA-003 and HA-004 rows.
work.

Analysis

Other Details (optional)	Item Usage (function)	Situation Description
Rainy day on country	IU01 - Correctly used	Normal driving on a highway during rain
Clear weather on	IU02 - Incorrectly used	Normal driving on country roads during
Clear weather on	IU02 - Incorrectly used	Normal driving on a highway during
Driving on mountain	IU01 - Correctly used	Normal driving on a mountain pass during

a haptic feedback

of the vehicle and collide with another vehicle or with road infrastructure.

		Hazard Identification	
Function	**Deviation**	**Deviation Details**	**Hazardous Event (resulting effect)**
The lane departure warning	DV04 - Actor	The LDW function applies	EV08 - Collision with
Lane Keeping Assistance (LKA)	DV03 - Function	The driver misuses the	EV08 - Collision with
Lane Keeping Assistance (LKA)	DV03 - Function	The driver misuses the	EV08 - Collision with
The lane departure warning	DV04 - Actor	The LDW function applies	EV08 - Collision with

Controllability	Exposure		
		S0	S1
C1	E1	QM	QM
	E2	QM	QM
	E3	QM	QM
	E4	QM	QM
C2	E1	QM	QM
	E2	QM	QM
	E3	QM	QM
	E4	QM	A
C3	E1	QM	QM
	E2	QM	QM
	E3	QM	A
	E4	QM	B

Event Details	Hazardous Event Description	Exposure (of situation)
High haptic feedback can affect	Torque to the steering wheel is	E3 - Medium probability
The driver misuses the function	Lane keeping function is	E2 - Low probability
The driver misuses the function	Lane keeping function is	E4 - High probability
High haptic feedback can affect	Torque to the steering wheel is	E1 - Very low probability

Severity	
S2	S3
QM	QM
QM	QM
QM	A
A	B
QM	QM
QM	A
A	B
B	C
QM	A
A	B
B	C
C	D

Hazardous Event Classification			
Rationale (for exposure)	**Severity (of potential harm)**	**Rationale (for severity)**	**Controllability (of hazardous event)**
Highway driving is part of regular	S3 - Life-threatening or	High speed collisions	C3 - Difficult to control or
Driving in the country road may	S3 - Life-threatening or	High speed collisions	C3 - Difficult to control or
Highway driving is part of regular	S3 - Life-threatening or	High speed collisions	C3 - Difficult to control or
Mountain pass driving occurs very	S3 - Life-threatening or	High speed collisions	C3 - Difficult to control or

	Determination of ASIL and Safety Goals	
Rationale (for controllability)	**ASIL Determination**	**Safety Goal**
Excessive vibration will make it difficult for most	C	The oscillating steering torque from the
Vehicle accident would not be controllable as the	B	The lane keeping assistance function
Vehicle accident would not be controllable as the	D	The lane keeping assistance function
Excessive vibration will make it difficult for most	A	The oscillating steering torque from the