

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 the HA-003 and HA-004 rows.
When finished, export your spreadsheet as a pdf file so that a reviewer can easily see your work.

Hazard ID	Situational Analysis							Hazard Identification						Hazardous Event Classification							Determination of ASIL and Safety Goals	
	Operational Mode	Operational Scenario	Environmental Details	Situation Details	Other Details (optional)	Item Usage (function)	Situation Description	Function	Deviation	Deviation Details	Hazardous Event (resulting effect)	Event Details	Hazardous Event Description	Exposure (of situation)	Rationale (for exposure)	Severity (of potential harm)	Rationale (for severity)	Controllability (of hazardous event)	Rationale (for controllability)	ASIL Determination	Safety Goal	
HA-001	OM03 - Normal Driving	OS04 - Highway	EN06 - Rain (Slippery Road)	SD02 - High Speed		IU01 - Correctly Used	normal driving under rain (on slippery road), with high speed situation.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback	DV04 - Actor Effect is too much	the lane departure warning function's oscillation torque is beyond limit.	EV00 - Collision with Other Vehicle	Too much haptic feedback could affect driver's regular driving behaviour, and lead to a collision to vehicles on other lanes or the curb.	The LDW function's oscillation torque is beyond the limit.	E3 - Medium Probability	Driving under raining and high speed situation is about 1% to 10% time.	S3 - Life-threatening or Fatal Injuries	collision to other car or curb on high speed condition may lead to fatal injuries.	C3 - Difficult to control or Uncontrollable	It becomes very difficult to control is too much oscillation is provided from the LDW system.	C	The oscillating steering torque provided by the LDW function should be strictly limited.	
HA-002	OM03 - Normal Driving	OS03 - Country Road	EN01 - Normal Conditions	SD02 - High Speed		IU02 - Incorrectly Used	normal driving on country road, normal condition, with high speed, and incorrectly used item.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	DV03 - Function is Always Activated	Lane Keeping function is always activated.	EV00 - Collision with Other Vehicle	The function is always on, so that driver may lose vigilance to control the car accordingly.	The driver mis-use the function properly, and lose attention.	E2 - Low Probability	Driving on country road is normal, but incorrect use of system could be only a few times a year.	S3 - Life-threatening or Fatal Injuries	collision to other car or curb on high speed condition may lead to fatal injuries.	C3 - Difficult to control or Uncontrollable	After lost attention, it is difficult for driver to handle immediate hazardous event.	B	The LKA function should be time limited. Corresponding on/off should be sent to driver.	
HA-003	OM03 - Normal Driving	OS04 - Highway	EN01 - Normal Conditions	SD02 - High Speed		IU01 - Correctly Used	normal driving on highway road, normal condition, with high speed, and correctly used item.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback	DV02 - Function Unexpectedly Activated	the Lane Departure Warning (LDW) function is always activated with camera stopped working.	EV00 - Collision with Other Vehicle	The LDW function continues to affect driver's regular steering behaviour, and may lead to some potential out-of-control condition and hence collision.	The LDW function may produce random oscillation torque to the system, while camera is not functional.	E4 - High Probability	Driving on highway is quite often.	S3 - Life-threatening or Fatal Injuries	collision to other car or curb on high speed condition may lead to fatal injuries.	C2 - Normally Controllable	Most driver can focus and ignore the warning and control the car, given that the warning torque is normal and not beyond limit.	C	The LDW function should be deactivated when camera is not working.	
HA-004	OM03 - Normal Driving	OS03 - Country Road	EN01 - Normal Conditions	SD02 - High Speed		IU01 - Correctly Used	normal driving on country road, normal condition, with high speed, and correctly used item.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	DV02 - Function Unexpectedly Activated	the Lane Keeping Assistance (LKA) function is always activated with camera stopped working.	EV00 - Collision with Other Vehicle	The LKA function continues to provide steering torque, which will lead to over steering or lack of steering, which may lead to collision.	The LKA function may produce random torque to the car, while camera is not functional.	E4 - High Probability	Driving on highway is quite often.	S3 - Life-threatening or Fatal Injuries	collision to other car or curb on high speed condition may lead to fatal injuries.	C3 - Difficult to control or Uncontrollable	It is difficult for the driver to control, when the system randomly activates and provides additional steering torques.	D	The LKA function should be deactivated when camera is not working.	