

INSTRUCTIONS:
Fill out the hazard analysis and risk assessment below.
HAASD should be for the new 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 HAASD and HA-Std 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 ASL and Safety Goals			
Operational Mode	Operational Scenario	Environmental Details	Situation Details	Other Details (optional)	New Image (function)	Situation Description	Function	Deviation	Deviation Details	Hazardous Event (naming effect)	Event Details	Hazardous Event Description	Exposure (if applicable)	Rationale (for exposure)	Severity (of potential harm)	Rationale (for severity)	Controllability (of hazardous event)	Rationale (for controllability)	ASL Determination	Safety Goal
HA-001	CMOS - Normal Driving	OS04 - Highway	CM00 - Normal conditions		AE01 - Controls lost	Normal driving on a highway during the day, speed limit 70 mph. The driver is in the right lane, maintaining a steady speed. The lane keeping assistance function is active.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback.	Driver does not respond to the haptic feedback.	The LDW function applies an oscillating torque with very high torque (please specify).	EV01 - Collision with other vehicle	High haptic feedback can affect driver's ability to steer or maintain lane. The driver could lose control of the vehicle and collide with another vehicle or off-road infrastructure.	The LDW function applies high torque, causing discomfort, driving on or off road and loss of control.	S1 - Moderate probability	According to functional safety, driving on or off road and loss of control is a high severity event.	S1 - Loss of steering or loss of control	According to ISO 26262, high severity of potential harm.	C1 - Difficult to control or avoid	If the driver does not respond to the haptic feedback, the system should deactivate the LDW function and issue a warning to the driver.	C	The oscillating steering torque from the lane departure warning function shall be tested.
HA-002	CMOS - Normal Driving	OS03 - Country Road	CM00 - Normal conditions		AE02 - Controls lost	The driver is missing the lane keeping assistance function on a country road during the day, speed limit 40 mph. The driver is in the right lane, maintaining a steady speed. The lane keeping assistance function is active.	Lane Keeping Assistance (LKA) function shall apply the oscillating torque when active in order to stay in the right lane.	Driver does not respond to the haptic feedback.	The LKA function applies an oscillating torque with very high torque (please specify).	EV02 - Collision with other vehicle	When the driver is missing the LKA as fully autonomous driving by being too busy or off the road, the driver could lose control of the vehicle and collide with another vehicle or off-road infrastructure.	When the driver is missing the LKA as fully autonomous driving by being too busy or off the road, the driver could lose control of the vehicle and collide with another vehicle or off-road infrastructure.	C2 - Low probability	The driver is on a country road and maintaining the system. The driver could lose control of the vehicle and collide with another vehicle or off-road infrastructure.	S2 - Loss of steering or loss of control	According to ISO 26262, high severity of potential harm.	C2 - Difficult to control or avoid	If the driver does not respond to the haptic feedback, the system should deactivate the LKA function and issue a warning to the driver.	B	The new lane keeping assistance function shall be tested and the additional steering torque shall be tested.
HA-003	CMOS - Normal Driving	OS04 - Highway	CM01 - Snowfall (precipitated snow)		AE01 - Controls lost	Normal driving on a highway during the day, speed limit 70 mph. The driver is in the right lane, maintaining a steady speed. The lane keeping assistance function is active.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback.	Driver does not respond to the haptic feedback.	The LDW function applies an oscillating torque with very high torque (please specify).	EV03 - Collision with other vehicle	High haptic feedback can affect driver's ability to steer or maintain lane. The driver could lose control of the vehicle and collide with another vehicle or off-road infrastructure.	The LDW function applies high torque, causing discomfort, driving on or off road and loss of control.	S2 - Low probability	Should occur a few times a year for the great majority of drivers.	S2 - Loss of steering or loss of control	According to ISO 26262, high severity of potential harm.	C2 - Difficult to control or avoid	If the driver does not respond to the haptic feedback, the system should deactivate the LDW function and issue a warning to the driver.	B	The oscillating steering torque from the lane departure warning function shall be tested.
HA-004	CMOS - Normal Driving	OS01 - City Road	CM01 - Snowfall (precipitated snow)		AE02 - Controls lost	Normal driving on a city road during the day, speed limit 30 mph. The driver is in the right lane, maintaining a steady speed. The lane keeping assistance function is active.	Lane Keeping Assistance (LKA) function shall apply an oscillating steering torque to provide the driver with haptic feedback.	Driver does not respond to the haptic feedback.	The LKA function applies an oscillating torque with very high torque (please specify).	EV04 - Collision with other vehicle	When the driver is missing the LKA as fully autonomous driving by being too busy or off the road, the driver could lose control of the vehicle and collide with another vehicle or off-road infrastructure.	When the driver is missing the LKA as fully autonomous driving by being too busy or off the road, the driver could lose control of the vehicle and collide with another vehicle or off-road infrastructure.	E2 - Low probability	The driver is on a city road and maintaining the system. The driver could lose control of the vehicle and collide with another vehicle or off-road infrastructure.	S1 - Light and moderate severity	In-city traffic, speed of 30 mph. The driver could lose control of the vehicle and collide with another vehicle or off-road infrastructure.	C1 - Simply controllable	At city speed, most drivers will be able to control the vehicle by applying brakes and there is additional time to react in an emergency.	GM	The lane keeping assistance function shall be tested and the additional steering torque shall be tested.