

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	EN01 - Normal conditi	SD03 - Normal acceleration		IU01 - Correctly used	Normal driving on a highway during normal condition with normal acceleration and correctly used system.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the	DV02 - Function unexpectedly activated	High steering torque cause extreme vibration	EV03 - Car spins out of control	The lane departure warning system applies too high a steering torque to the steering wheel	Too high steering torque makes the driver loose control	E3 - Medium probability	The high torques has medium possibility	S3 - Life-threatening or fatal injuries	The crash/spin of vehicle has high severity	C3 - Difficult to control or uncontrollable	It is very difficult to control vehicle when steering is vibrating	C	The oscillating steering torque from the lane departure warning function shall be limited
HA-002	OM03 - Normal Driving	OS03 - Country Road	EN01 - Normal conditi	SD02 - High speed		IU02 - Incorrectly used	Normal driving on a country road during normal conditions with high speed misusing the LKA as a fully autonomous function	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	DV03 - Function always activated	The malfunction was that the lane keeping assistance was always on and had no time limit, so drivers could take both hands off the whed	EV02 - Collision with pedestrian	The malfunction was that the lane keeping assistance was always on and had no time limit	Because hands aren't on the wheel at high speeds, a vehicle accident would not be controllable	E2 - Low probability	combination probably does not happen often	S3 - Life-threatening or fatal injuries	driver is traveling at high speed	C3 - Difficult to control or uncontrollable	hands aren't on the wheel at high speeds, a vehicle accident would not be controllable	B	The usage of LKS in always ON mode shall be warned to driver.
HA-003	OM03 - Normal Driving	OS04 - Highway	EN01 - Normal conditi	SD02 - High speed		IU01 - Correctly used	Normal driving on a highway during normal conditions with high speed and correctly used system.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the	DV02 - Function unexpectedly activated	The camera sensor stop working and the Lane Departure Warning function continue to be activated.	EV00 - Collision with other vehicle.	The Lane Departure Warning continue to be activated and start executing random torque to the steering wheel making the driver to loose control with potential collision	The Lane Departure Warning start acting randomly when the camera sensor is not working.	E3 - Medium probability	Driving on a highway with rain could happen between 1% and 10% of the time operating the vehicle.	S3 - Life-threatening or fatal injuries	Collitions at high speed could cause fatal injuries.	C3 - Difficult to control or uncontrollable	When the driver loose control of the vechicle is very difficult to realize the situation and act accordently.	C	The Lane Departure Warning function shall be deactivated when the camera sensor stop working.
HA-004	OM03 - Normal Driving	OS03 - Country Road	EN01 - Normal conditi	SD02 - High speed		IU01 - Correctly used	Normal driving on a country road during normal conditions 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.	DV02 - Function unexpectedly activated	The camera sensor stop working and the Lane Keeping Assistance function continue to be activated.	EV00 - Collision with other vehicle.	The Lane Keeping Assistance continue to be activated startling executing random torque to the vehicle making the driver to loose control with potential collision with other vehicles.	The Lane Keeping Assistance start acting randomly when the camera sensor is not working.	E3 - Medium probability	Driving on a highway with rain could happen between 1% and 10% of the time operating the vehicle.	S3 - Life-threatening or fatal injuries	Collitions at high speed could cause fatal injuries.	C3 - Difficult to control or uncontrollable	When the driver loose control of the vehicle is very difficult to realize the situation and act accordently.	C	The Lane Keeping Assistance function shall be deactivated when the camera sensor stop working.