| | | | BDD | | | | COCO | | | |
| | | | mAP (%) | | mAR (%) | | mAP (%) | | mAR (%) | |
Scenario	Description	Difficulty	standard	distilled	standard	distilled	standard	distilled	standard	distilled
crash_ahead0	sunny	1	13	14.9	15	15.8	14.1	12.7	18.2	16.5
crash_ahead1	cloudy	3	21.1	22.5	22.6	23.5	21	20.8	22.2	22.3
crash_ahead2	rainy	3	33.7	33.7	35.1	35.7	31.4	30.1	33.3	32.1
crash_ahead3	rainy, foggy	6	24.3	23.9	27	27	19.9	20.3	21.3	24.1
crash_ahead4	foggy	4	24.4	26.3	26.8	28.8	23.1	22.7	24.8	24.1
crash_ahead5	foggy	6	34.2	37.6	35.2	38.8	33.2	34.4	34.8	35.1
crash_ahead6	dusk	2	32	35.5	33.4	37.1	33.3	32.6	35.1	34
crash_ahead7	dusk	3	21.7	25.1	23.6	26.3	20.8	21.7	21.6	22.6
crash_ahead8	dusk, rainy	3	23.5	24	25.7	25.6	22.1	23.9	23.7	25.6
crash_ahead9	foggy, rainy	6	36.6	34.9	37.9	36.3	32.9	33.6	34	34.1
crash_ahead10	foggy	2	32.2	36	33.8	36.8	30.6	31.3	32	32.1
crash_ahead11	foggy	4	22.2	23.8	24.2	26.7	17.6	19.4	18.8	20.1
crash_ahead12	dark night	6	20.8	23.4	23.8	25.4	23.2	24.1	24.9	25.4
crash_ahead13	night	5	20.4	22.4	22.5	24.6	21.2	21.8	22.8	23.5
crash_ahead14	very dark night	7	19	17.9	21	19.2	20.8	22	22.8	24
crash_ahead15	foggy, dark	5	21.8	23.9	24.5	26.2	19.9	21.2	22.3	23.3
crash_ahead16	light dark	2	31.9	34.3	34.3	36.2	31.2	30.4	33.7	32.9
crash_ahead17	foggy, light dark	3	27.1	26.9	29.2	29.5	23.1	23.8	24.6	25.4
group_of_runners0	sunny	1	24.4	25	24.7	27.6	21.5	19.1	24.2	21.2
group_of_runners1	cloudy	3	24.9	26.2	26.5	28.7	22.7	19.3	25.2	21.2
group_of_runners2	rainy	3	22.9	23.1	25	25.1	18	14.2	20.1	15.8
group_of_runners3	rainy, foggy	6	15.3	17.5	16.9	18.8	7.6	11.4	8.2	12.3
group_of_runners4	foggy	4	27.5	28.5	30.1	30.7	26.8	25.6	28.8	27.7
group_of_runners5	foggy	6	12.6	16.8	14.2	18.6	10.1	11.9	10.5	13
group_of_runners6	dusk	2	21.9	25.1	24.3	27.5	22.2	16	25.6	17.8
group_of_runners7	dusk	3	23.4	26.1	25.8	28.4	21.5	15.2	24.5	16.9
group_of_runners8	dusk, rainy	3	21.9	24	24.5	26	17.8	13.7	20.1	15.3
group_of_runners9	foggy, rainy	6								
group_of_runners10	foggy	2	25.3	27.3	28.3	29.6	25.2	22	27.5	24.2
group_of_runners11	foggy	4	14.1	18.6	15.6	20.1	8.8	11.8	9.3	13
group_of_runners12	dark night	6	2.8	3	3	3.2	2.4	3.3	4.1	3.3
group_of_runners13	night	5	9	10.3	9.7	10.7	3.8	7.4	4.1	8
group_of_runners14	very dark night	7	1.5	1.2	1.9	1.4	1.7	1.9	1.8	2
group_of_runners15	foggy, dark	5	23.7	23.3	26.2	25.7	14.9	11.1	16.1	12
group_of_runners16	light dark	2	25.4	26.8	27.9	28.8	25.3	17.6	28.1	19.6
group_of_runners17	foggy, light dark	3	22.5	21.4	24.6	23.7	18.2	10	19.5	11.1
red_light_violation0	sunny	1	61.2	63.3	65.5	65.4	61.7	69.3	64.4	71
red_light_violation1	cloudy	3	59.7	65.7	63.4	68	64.4	68.8	66.9	70.4
red_light_violation2	rainy	3	56.5	66.9	59	69.9	60.8	69.1	63.4	70.3
red_light_violation3	rainy, foggy	6	63.7	66.6	65.5	68.5	57.3	63.5	59.6	65
red_light_violation4	foggy	4	68	67.9	70.7	70.6	65.1	68.9	68.1	70.6
red_light_violation5	foggy	6	64.2	68.1	66.1	70.2	58.2	67.2	60.7	68.2
red_light_violation6	dusk	2	62.7	64.2	64.9	66.4	61	65.9	63.9	67.8
red_light_violation7	dusk	3	60.9	69.9	63.5	72.1	64.9	70.1	67.5	71.8
red_light_violation8	dusk, rainy	3	57.8	68.3	60.1	70.8	63.1	70.5	65.8	72.3
red_light_violation9	foggy, rainy	6	63.3	66.9	65.1	68.9	57.3	62.7	58.9	63.7
red_light_violation10	foggy	2	66.1	68.3	68.3	69.9	62.8	69	65.9	70.5
red_light_violation11	foggy	4	65.9	69.6	68.1	71.9	59.9	66.7	62.1	68
red_light_violation12	dark night	6	64.7	65.9	66.8	67.9	62.6	69	65.1	71.4
red_light_violation13	night	5	64.9	67.1	67	69.1	61	71	63.7	72.9
red_light_violation14	very dark night	7	59.2	62.3	61.2	64.2	59.8	62	62.6	64.4
red_light_violation15	foggy, dark	5	66.7	73.5	68.6	75.1	66.3	67.4	68.8	70
red_light_violation16	light dark	2	69	69.5	71.5	72.2	67.2	70.9	69.9	72.9
red_light_violation17	foggy, light dark	3	66.8	70.5	68.4	71.7	64.5	66	66.6	68.1
roundabout_crash0	sunny	1	76	79.6	79	82.9	70	72	73.3	74.9
roundabout_crash1	cloudy	3	64.9	72.6	67.9	74.8	73.7	76.5	76.8	79.9
roundabout_crash2	rainy	3	76.2	82.7	79.3	84.9	70.5	72.3	73.2	74.7
roundabout_crash3	rainy, foggy	6	41.8	50.2	44.1	52.3	26.8	29.5	27.8	30
roundabout_crash4	foggy	4	79.9	85.5	83.5	88.2	74.1	72.8	77.5	75.4
roundabout_crash5	foggy	6	45.7	53.9	46.9	55.7	29.6	31.7	30.6	32.5
roundabout_crash6	dusk	2	68.2	76.3	71.9	79.3	73.7	76.6	77.3	80.1
roundabout_crash7	dusk	3	61.1	75	64.7	79	73.8	77.6	77.2	80.5
roundabout_crash8	dusk, rainy	3	66.4	83.4	70.2	86.4	72.3	78.1	75.2	80.7
roundabout_crash9	foggy, rainy	6	47.8	50.5	50	52.3	29.6	35.7	30.6	36.7
roundabout_crash10	foggy	2	74	80.5	78.6	83	69.7	63	72.3	66.2
roundabout_crash11	foggy	4	48.2	54.4	49.6	55.9	33.5	37.8	34.4	39.3
roundabout_crash12	dark night	6	61.4	64.8	63	66.2	53.3	52	55.5	53.9
roundabout_crash13	night	5	58.7	68.1	60.4	69.9	52	50.8	54.3	52.9
roundabout_crash14	very dark night	7	49.2	53.9	51.4	56.5	40.7	44.7	42.4	47
roundabout_crash15	foggy, dark	5	44.8	51.4	46.1	52.5	44.7	46.5	46.7	48.1
roundabout_crash16	light dark	2	77.4	83.7	81.6	86.7	73.5	74.1	76.5	76.3
roundabout_crash17	foggy, light dark	3	47.1	54	48.5	54.9	46.2	46.4	47	48.3

Table 1: Results for CARLA scenarios under different environment conditions for Berkely Deep Drive (BDD) and Common Objects in Context (COCO).

Scenario	Description	Difficulty	KITTI mAP (%) standard	distilled	KITTI mAR (%) standard	distilled	CARLA mAP (%) standard	distilled	CARLA mAR (%) standard	distilled
crash_ahead0	sunny	1	5.2	7.3	6.1	9	8.8		10	
crash_ahead1	cloudy	3	6.5	8.9	7.1	10.8	10.8		12.9	
crash_ahead2	rainy	3	8.1	15.1	9.1	15.9	10.8		13.7	
crash_ahead3	rainy, foggy	6	1.5	3.7	1.6	4.6	6.3		7.3	
crash_ahead4	foggy	4	6.2	7.1	6.9	9.6	11		13.5	
crash_ahead5	foggy	6	5.6	14.9	6.1	15.6	4.4		6	
crash_ahead6	dusk	2	11.6	16.5	13.9	17.2	11.6		16	
crash_ahead7	dusk	3	8.2	9.1	9	11.4	11.8		13.3	
crash_ahead8	dusk, rainy	3	6.7	11.9	8.5	14	10.2		11.5	
crash_ahead9	foggy, rainy	6	2	16.7	2.1	17.6	2.3		4	
crash_ahead10	foggy	2	4.2	16.2	4.8	18.2	7		7.7	
crash_ahead11	foggy	4	2.8	4.7	2.8	5.4	11.3		12.9	
crash_ahead12	dark night	6	5.3	10.7	7.4	15	8.2		9.7	
crash_ahead13	night	5	4.8	12.3	6.1	16.5	9.6		10.2	
crash_ahead14	very dark night	7	2.9	9.3	3.9	11.8	1.6		2.2	
crash_ahead15	foggy, dark	5	2.7	7.6	4.1	10.1	8.9		10.2	
crash_ahead16	light dark	2	13.3	14	15.2	14.9	9.5		13.7	
crash_ahead17	foggy, light dark	3	5.2	9.8	6.4	12.5	10.3		11.2	
group_of_runners0	sunny	1	17.2	13.6	19.4	15.9	28.3		30.6	
group_of_runners1	cloudy	3	18.2	14.6	21.2	16.6	28.7		31.1	
group_of_runners2	rainy	3	15.4	12.8	18	16.3	28.3		30.3	
group_of_runners3	rainy, foggy	6	0.9	1.3	0.8	1.2	13.3		14.4	
group_of_runners4	foggy	4	19.9	18.3	24.1	23	27.9		30.4	
group_of_runners5	foggy	6	0.8	1.2	1	1.1	19.7		22.2	
group_of_runners6	dusk	2	14.2	11.8	19.5	14.3	29.6		31.8	
group_of_runners7	dusk	3	15.2	14.1	19.4	16.8	29.4		31.8	
group_of_runners8	dusk, rainy	3	14.9	11.5	18.1	14	27.8		29.9	
group_of_runners9	foggy, rainy	6								
group_of_runners10	foggy	2	16.2	16.3	18.6	18.9	28.2		30.5	
group_of_runners11	foggy	4	0.8	1.1	1	1.1	21.3		23.2	
group_of_runners12	dark night	6	0.9	1.3	1.1	2.3	0		0	
group_of_runners13	night	5	1.2	1.6	2.1	3.4	0		0	
group_of_runners14	very dark night	7	0.9	1.2	1.2	2.3	0		0	
group_of_runners15	foggy, dark	5	1.5	10.4	1.8	15.6	15.7		17.5	
group_of_runners16	light dark	2	10.6	16	17.9	19.7	15.8		20.2	
group_of_runners17	foggy, light dark	3	1.6	10.8	1.8	15.4	0.4		0.4	
red_light_violation0	sunny	1	42.3	41.5	45.6	45.3	43.4		48.3	
red_light_violation1	cloudy	3	45.8	39.1	48.8	43	43.3		48.6	
red_light_violation2	rainy	3	42.7	37.3	45.7	42	44.1		49.9	
red_light_violation3	rainy, foggy	6	19.2	4.5	21.1	4.9	31.3		33.7	
red_light_violation4	foggy	4	40.1	38	42.2	44.2	43.3		47.3	
red_light_violation5	foggy	6	24	3.8	26.4	3.7	34.7		38.4	
red_light_violation6	dusk	2	43.8	38.1	47	43	45.1		49.5	
red_light_violation7	dusk	3	44.7	36.6	48.2	41.8	48.5		53	
red_light_violation8	dusk, rainy	3	37.2	35.2	41.2	40.1	43.7		48.8	
red_light_violation9	foggy, rainy	6	21.2	7.5	23.7	7.9	32.3		35.5	
red_light_violation10	foggy	2	40.8	40.2	43.6	44.6	44.3		47.9	
red_light_violation11	foggy	4	27.7	5.6	30.1	5.7	37.1		40.4	
red_light_violation12	dark night	6	39.3	38.3	41.5	42.1	34.8		38.2	
red_light_violation13	night	5	43.8	41.7	46.2	44.9	35.3		39.3	
red_light_violation14	very dark night	7	34.7	23.3	37.2	25.4	3.3		7.4	
red_light_violation15	foggy, dark	5	35.2	30.2	37.4	32.3	25.3		31.4	
red_light_violation16	light dark	2	48.5	42.9	51.9	46	38.4		42.1	
red_light_violation17	foggy, light dark	3	40.9	32.2	42.6	34.3	26.5		31.2	
roundabout_crash0	sunny	1	50.3	37.6	54	41.9	66.9		70.9	
roundabout_crash1	cloudy	3	51.7	44.4	56.2	47.4	67.1		71.3	
roundabout_crash2	rainy	3	51.4	43.8	56.9	47	63.2		66.9	
roundabout_crash3	rainy, foggy	6	0.6	0	0.5	0	9.9		14.9	
roundabout_crash4	foggy	4	40.3	38.4	45.1	40.1	62.9		68.4	
roundabout_crash5	foggy	6	0	0	0	0	23.1		29	
roundabout_crash6	dusk	2	48.2	38.8	53.1	42.6	61.7		64.9	
roundabout_crash7	dusk	3	50	44.1	55	46.9	60.9		64.7	
roundabout_crash8	dusk, rainy	3	50	42.2	55.5	44.8	59.9		63.4	
roundabout_crash9	foggy, rainy	6	0.6	0	0.4	0	12.6		16.3	
roundabout_crash10	foggy	2	31.6	33.9	35.9	35	59.1		63.5	
roundabout_crash11	foggy	4	0	0	0	0	25.1		30.3	
roundabout_crash12	dark night	6	19.6	11.2	21.4	19.3	3.9		7.6	
roundabout_crash13	night	5	24.3	16.3	27.1	24.2	6		11.6	
roundabout_crash14	very dark night	7	26.7	24.4	29.1	29.4	0.6		1.9	
roundabout_crash15	foggy, dark	5	2.2	5.7	2.1	5.7	8.9		13.5	
roundabout_crash16	light dark	2	34.4	41.1	36.9	45.7	32.2		40.5	
roundabout_crash17	foggy, light dark	3	9.8	5.6	9.6	5.9	9		13.2	

Table 2: Results for CARLA scenarios under different environment conditions for KITTI and CARLA.