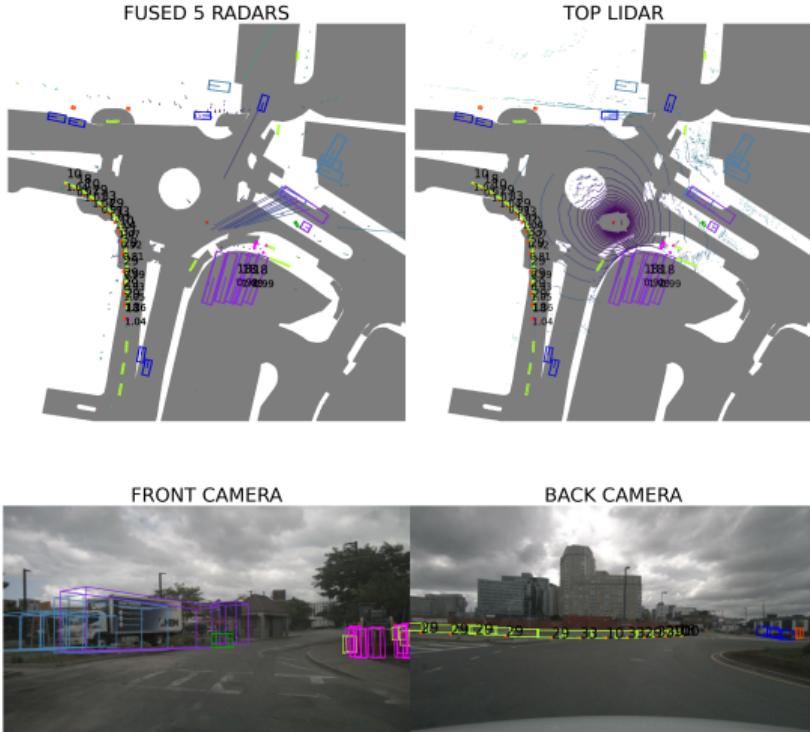


PHD Tracking Result

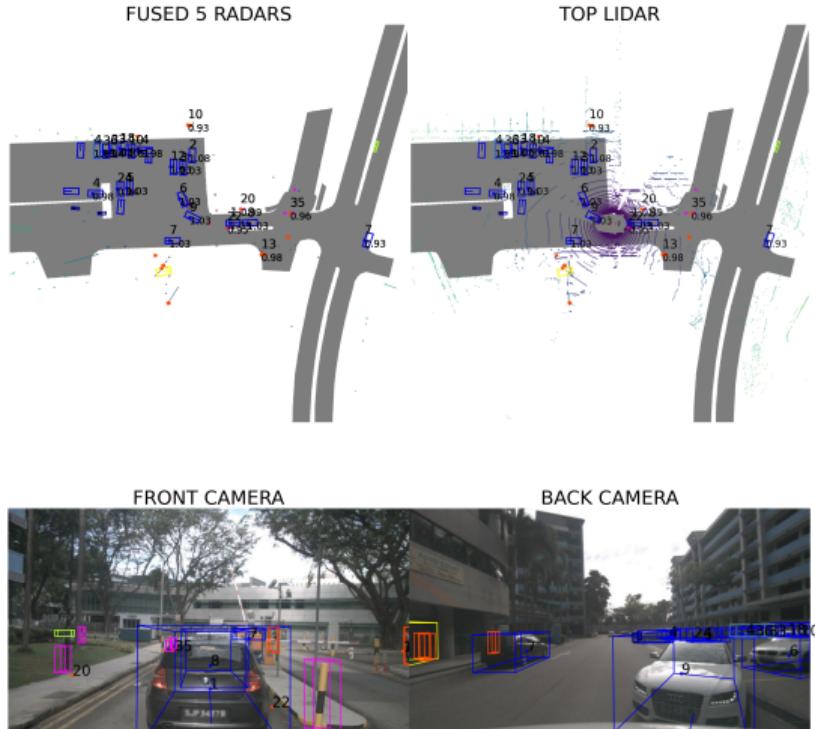
December 23, 2021

Issue One: Duplicated IDs

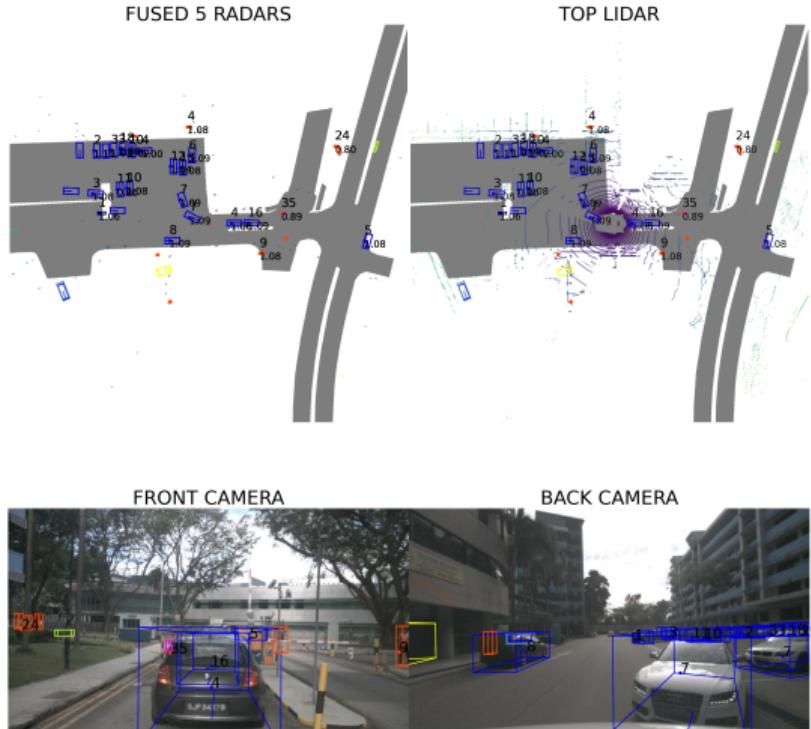


car	construction vehicle	pedestrian
truck	bicycle	
trailer	traffic cone	
motorcycle		
bus	barrier	

Issue Two: Frequent ID switches, LABEL

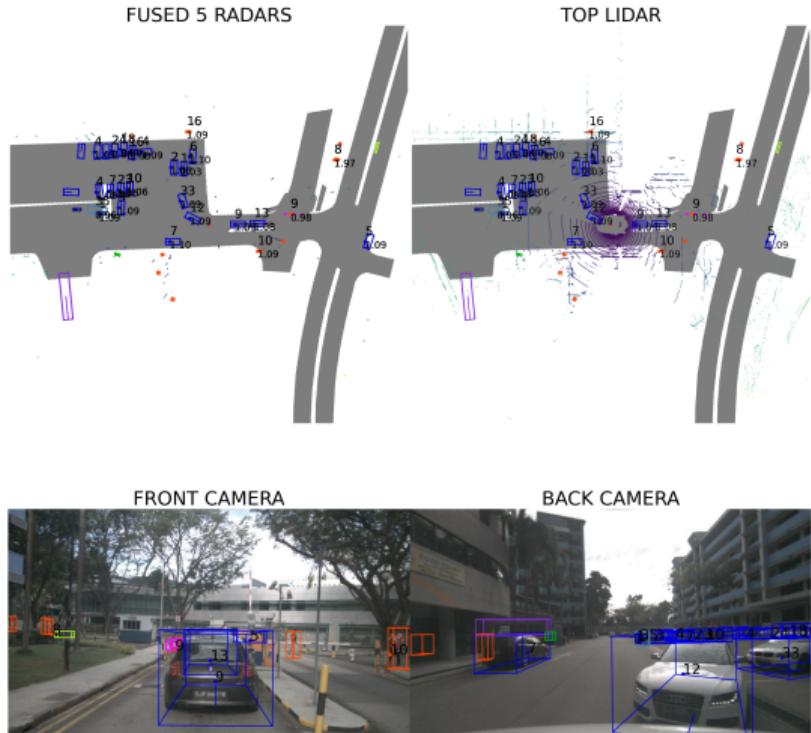


Issue Two: Frequent ID switches, LABEL

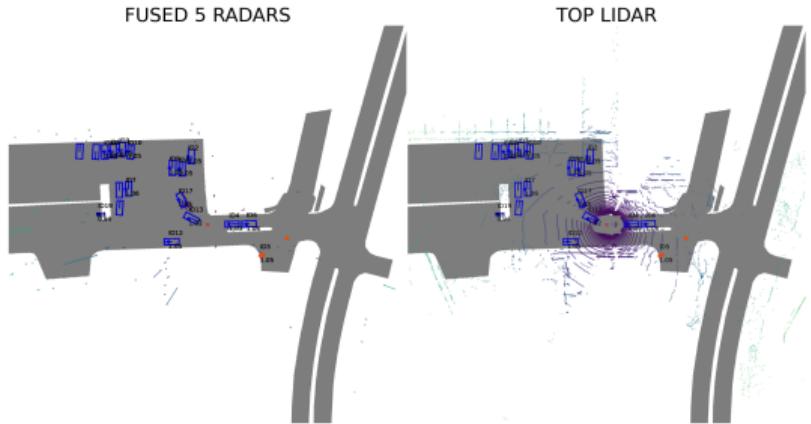


car	construction vehicle	pedestrian
truck	bicycle	traffic cone
trailer	motorcycle	barrier
bus		

Issue Two: Frequent ID switches, LABEL

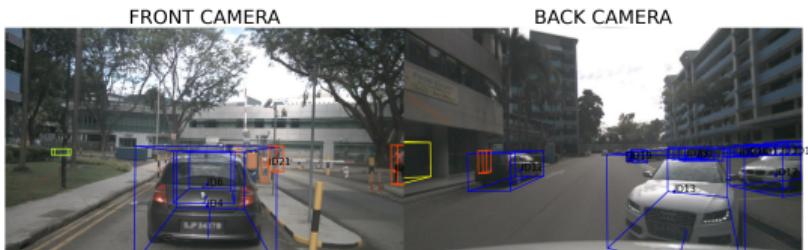
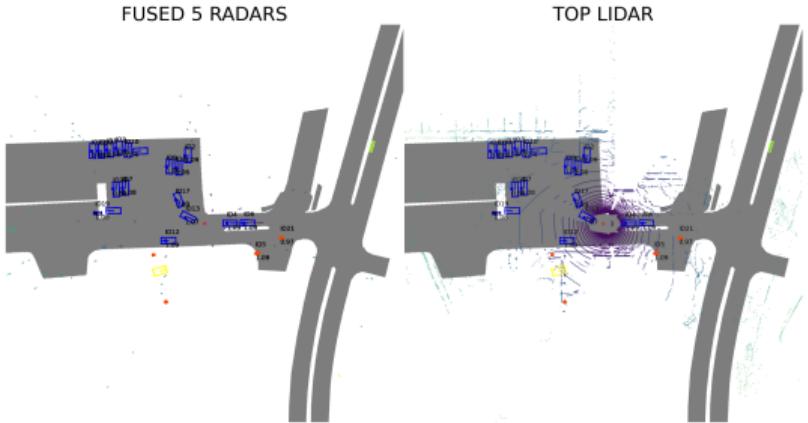


Compare to: GNN Less Frequent ID switches



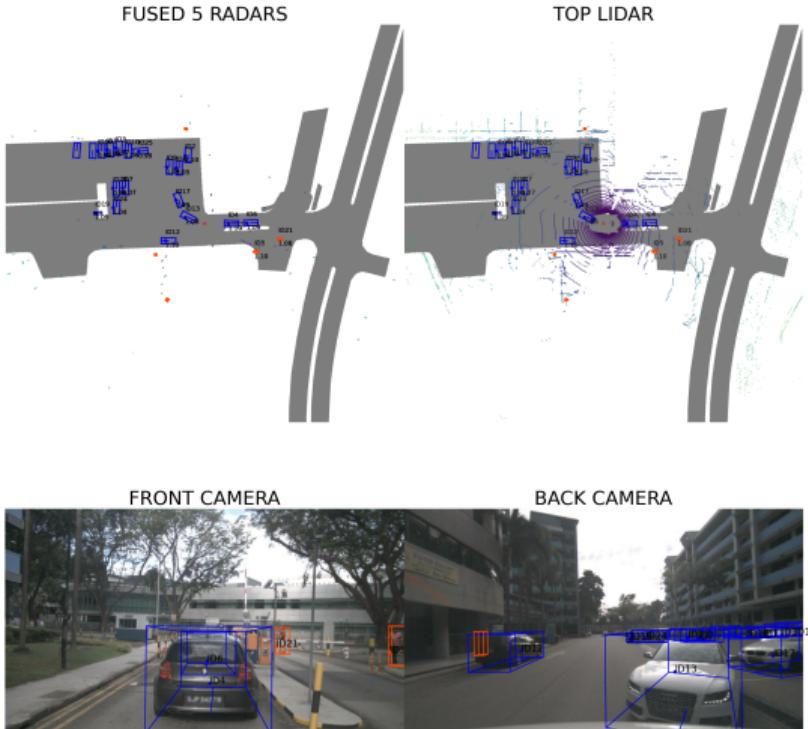
car	construction vehicle	pedestrian
truck	bicycle	traffic cone
trailer	motorcycle	barrier
bus		

Compare to: GNN Less Frequent ID switches



car	construction vehicle	pedestrian
truck	bicycle	traffic cone
trailer	motorcycle	barrier
bus		

Compare to: GNN Less Frequent ID switches



Primary Metrics One: AMOTA

- larger is better
- AMOTA, metrics for entire scene, n frames
- $AMOTA = \frac{1}{n-1} \sum_r MOTAR$
- MOTAR, metrics for single frame
- $MOTAR = \max(0, 1 - \frac{IDS_r + FP_r + FN_r - (1-r)P}{r*P})$
- $r = \frac{i}{n-1}$ i = (1,2,...n-1)

Primary Metrics One: AMOTA

- IDS, ID switch. Any IDS would cause MORTA to decrease
- FP, False Positive. Any FP would cause MORTA to decrease
- FN, False Negative. Any FN would cause MORTA to decrease
- P, number of ground-truth. Normalizing element

Primary Metrics Two: AMOTP

- Smaller is better
- $\frac{1}{n-1} \sum_r \frac{\sum_{it} d_{it}}{\sum_t TP_t}$
- $r = \frac{i}{n-1}$ $i = (1, 2, \dots, n-1)$
- d_{it} , position error for track i at time t . Any position error would lead to increase of AMOTP
- TP_t Track Matched at time t . Normalizing Element

Result

Metrics	Regular	P_d replaced	Label
AMOTA	0.020	0.019	0.031
AMOTP	1.879	1.900	1.846
RECALL	0.132	0.096	0.173
MOTAR	0.103	0.134	0.306
GT	17080	17080	17080
MOTA	0.025	0.027	0.043
MOTP	0.815	1.056	0.604
MT	334	264	372
ML	5951	6598	5525
FAF	194.4	231.9	108.7
TP	22130	16360	17184
FP	16341	4435	11992

Result

Metrics	Regular	P_d replaced	Label
FN	94172	101114	88575
IDs	3263	2091	13803
FRAG	1785	968	3320
TID	7.77	10.2	5.57
LGD	9.12	11.22	6.7