

IOU TESTS

Tests explanation

Considering the tests performed on the weights of the loss in `weight_loss_balancing_comparison.md` we've selected as the best option the one using $\alpha = 1/7$. In addition to the weighted MAE loss, we've also added an IoU loss, which is defined as:

$$loss_{IoU} = 1 - IoU(pred, GT).$$

Also for that loss we can give more or less weight to it so we've performed some tests to see which is the best option for the λ value to use:

$$loss = loss_{MAE} + \lambda loss_{IoU}.$$

Tests results

attempt #	λ	avarage MAE (depth)	min MAE (depth)	max MAE (depth)	avarge IoU (depth)	min IoU (depth)	max IoU (depth)
1	1.0	0.0551	0.013	0.1457	0.762	0.4749	0.9325
2	1.5	0.053	0.0102	0.1623	0.7648	0.4779	0.9473
3	2.0	0.0531	0.0097	0.1796	0.7622	0.4702	0.9507
4	2.5	0.0562	0.0113	0.1806	0.7542	0.4689	0.9377
5	3.0	0.0498	0.0089	0.1823	0.7742	0.4755	0.9578
6	5.0	0.0552	0.0153	0.1845	0.7662	0.4739	0.9225

Tests result on best case using the mIoU

If the $loss_{IoU}$ is properly computed on both classes the overall performance of the network changes.

attempt #	λ	avarage MAE (depth)	min MAE (depth)	max MAE (depth)	avarge IoU (depth)	min IoU (depth)	max IoU (depth)
1	3.0	0.0562	0.0164	0.1781	0.7567	0.4736	0.9243

As it is possible to see from the above table using the mIoU instead of the IoU the network performance decreases.