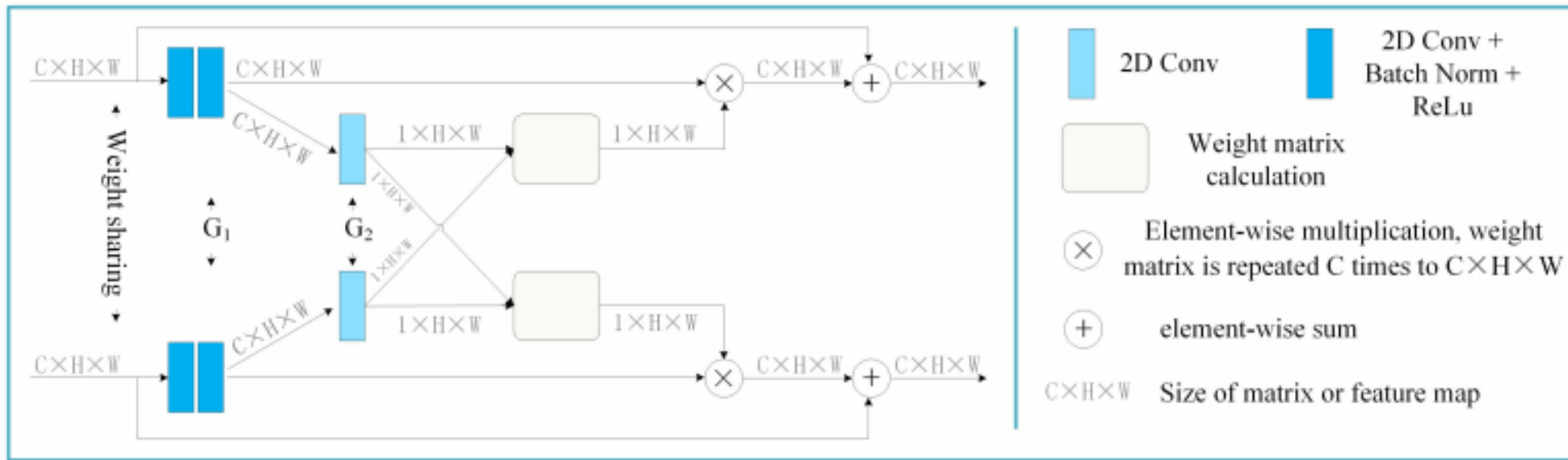


# Suppressing Features That Contain Disparity Edge For Stereo Matching

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Existing networks for stereo matching usually use 2-D CNN as the feature extractor. However, objects are usually continuous in spatial, if an extracted feature contains disparity edge (the representation of this feature on original image contains disparity edge), then this feature usually not occur inside the region of an object. We propose a novel attention block to suppress features containing disparity edge, named SDEA-Block.





In the weight matrix calculation part, the weight of point  $x$  would be set to:

$$f(x^{(i,j)}) = \sigma(\min_{k \in |k-j| < maxdisp} |x^{(i,j)} - x'^{(i,k)}|)$$

Where:

$$\sigma(x) = 1 - \text{sigmoid}(x)$$

we apply SDEA-Block on feature extraction of PSMNet to test the performance of SDEA-Block.

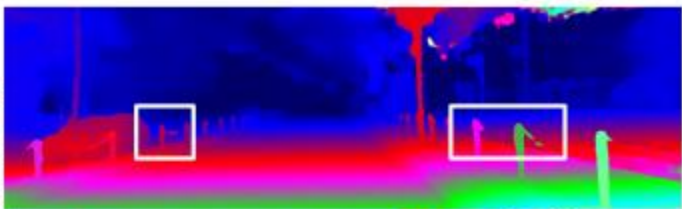
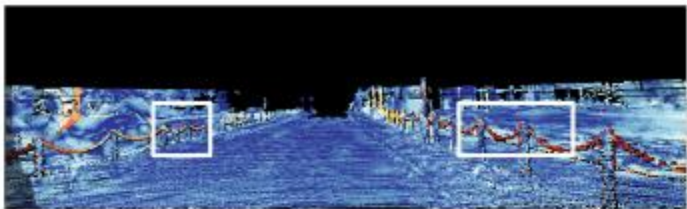
SCENEFLOW DATASET RESULT

Model	EPE	Model	EPE
<b>SDEA-Net</b>	<b>0.77</b>	GwcNet-g [4]	0.79
PSMNet [2]	1.09	StereoNet [23]	1.10
CRL [18]	1.32	SegStereo [22]	1.45

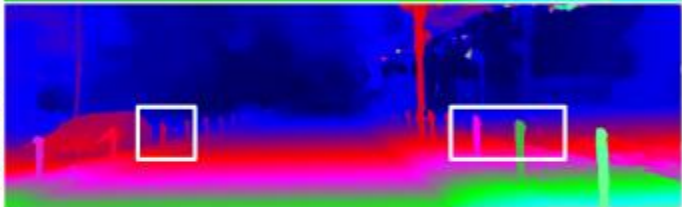
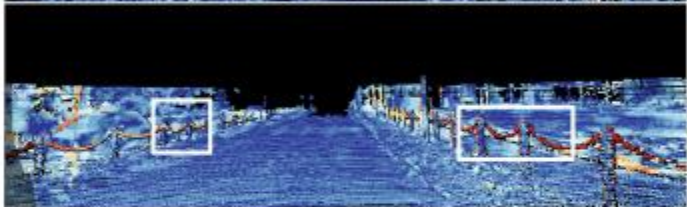
KITTI2015 RESULT

Model	All (%)			Noc (%)		
	D1-bg	D1-fg	D1-all	D1-bg	D1-fg	D1-all
GC-Net [20]	2.21	6.16	2.87	2.02	5.58	2.61
iResNet-i2e2 [19]	2.14	<b>3.45</b>	2.36	1.94	3.20	2.15
CRL [18]	2.48	3.59	2.67	2.32	<b>3.12</b>	2.45
SegStereo [22]	1.88	4.07	2.25	1.76	3.70	2.08
MCUA [5]	<b>1.69</b>	4.38	2.14	<b>1.55</b>	3.90	1.93
PSMNet [2]	1.86	4.62	2.32	1.71	4.31	2.14
SDEA-Net	1.71	4.17	<b>2.12</b>	1.56	3.76	1.93

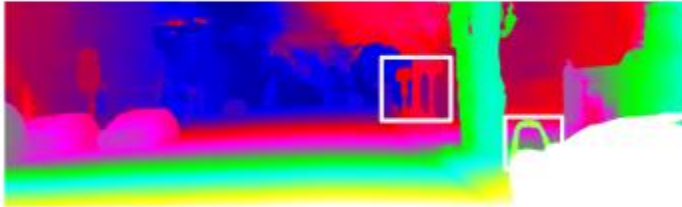
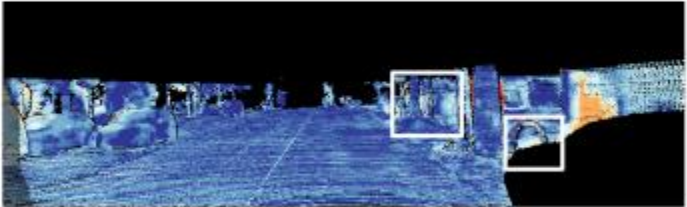
Our Network



PSMNet



Our Network



PSMNet

