Computer Vision Final Project

Depth Map Generation on More Realistic Scenes

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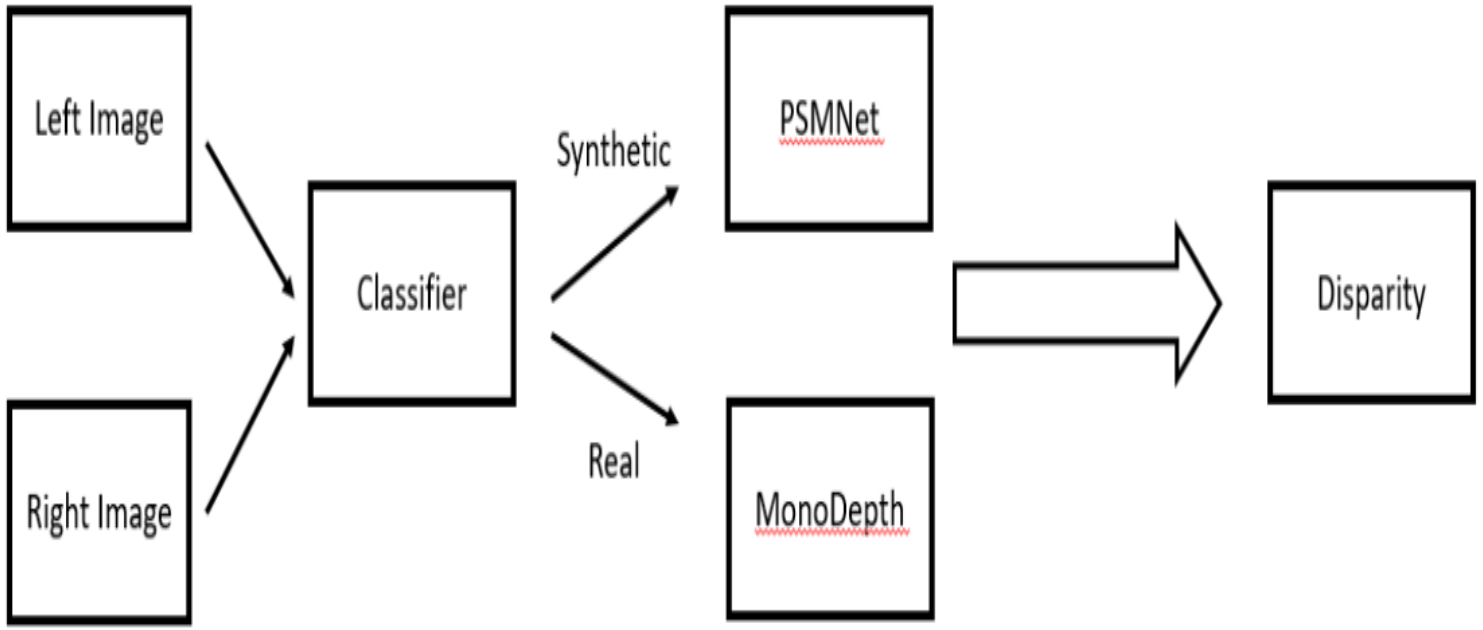
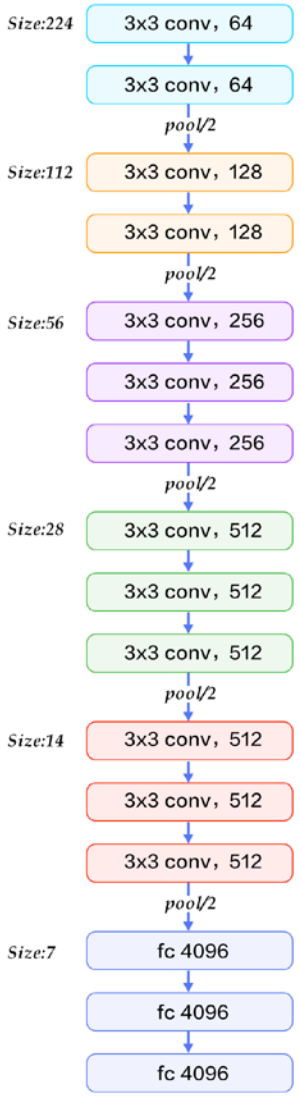
Architecture



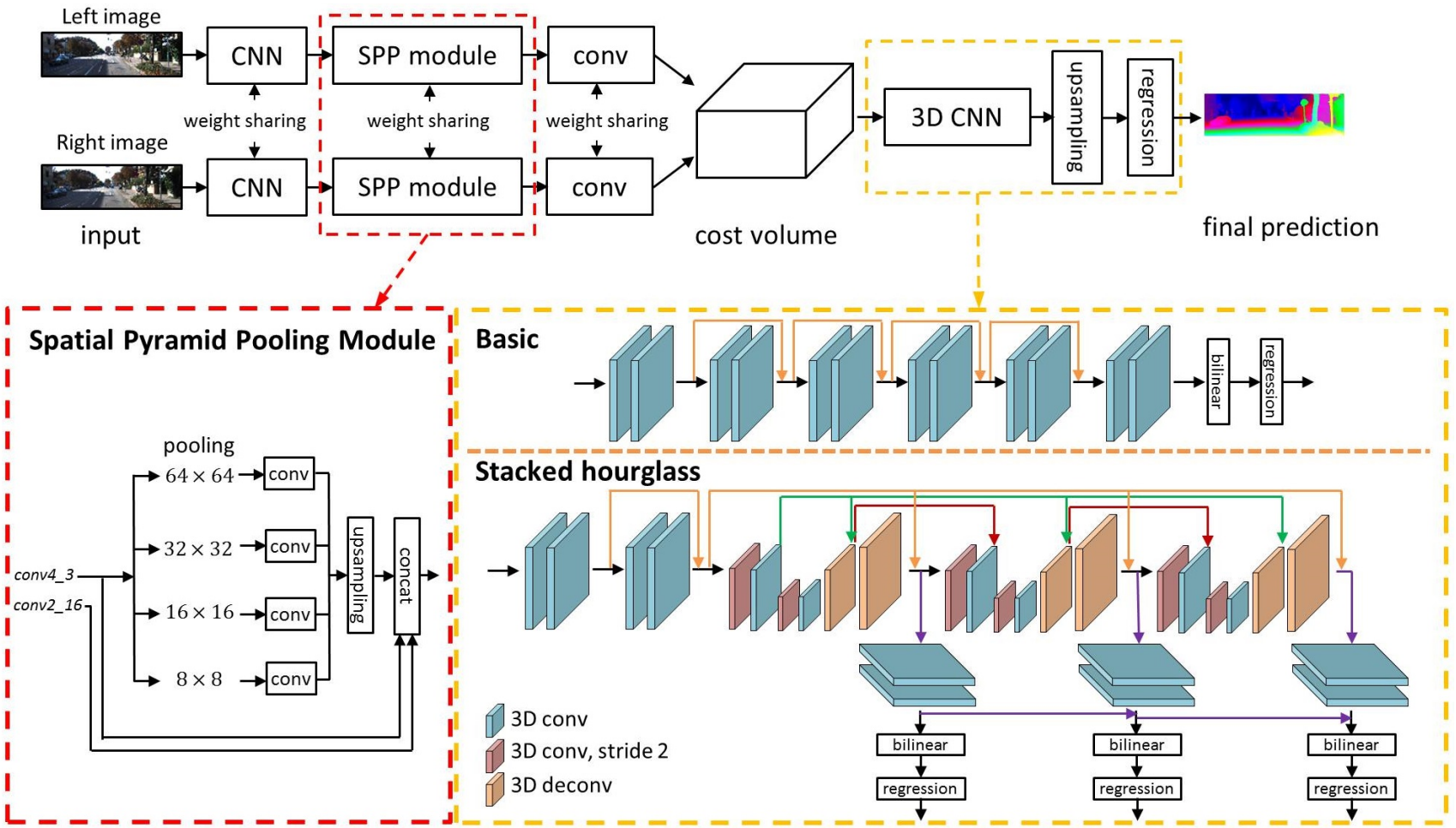
Implementation - Classifier



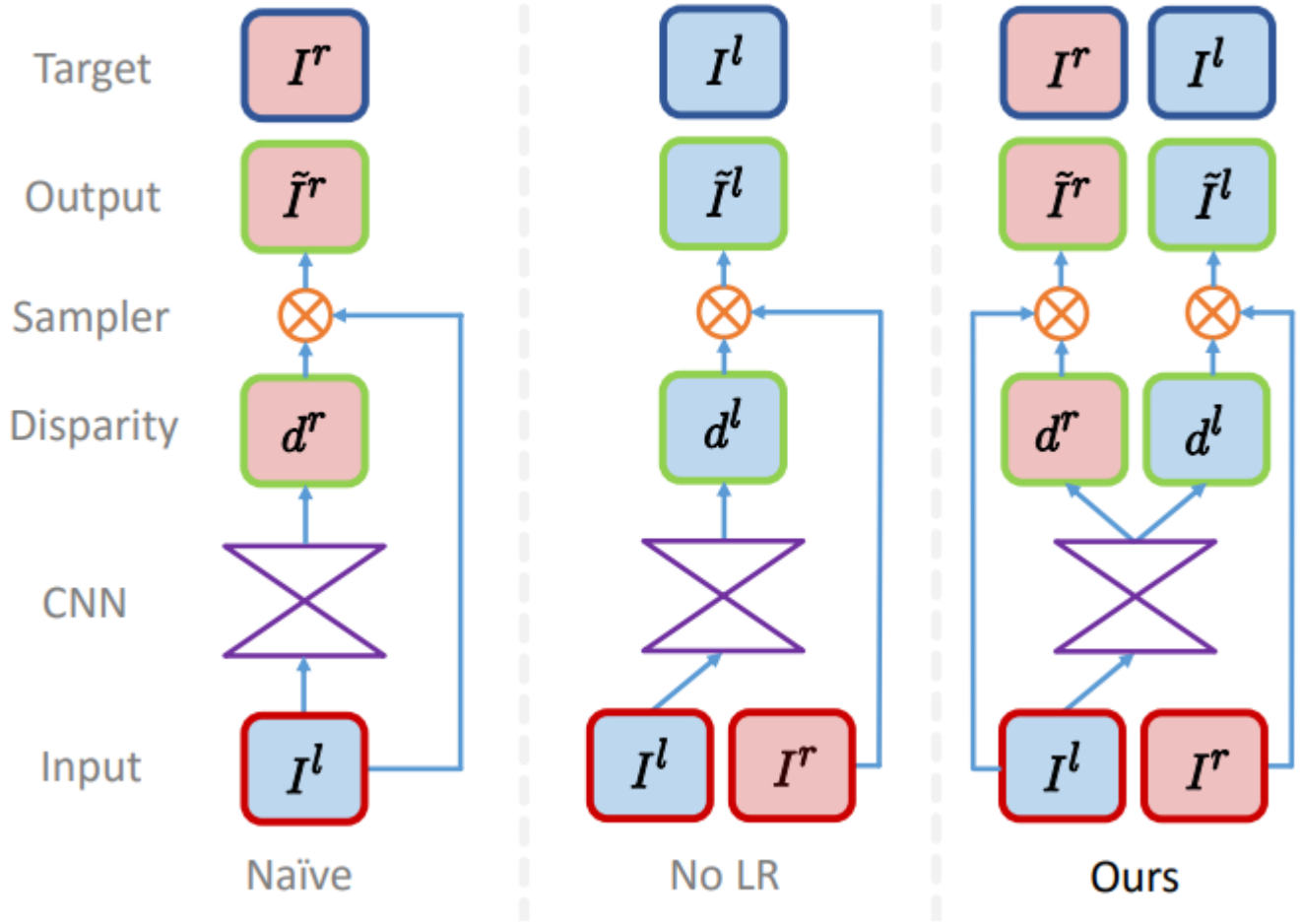

```
self.conv = nn.Sequential(
    nn.Conv2d(1, 64, kernel_size = (3, 3), padding = 1),
    nn.ReLU(),
    nn.Conv2d(64, 64, kernel_size = (3, 3), padding = 1),
    nn.ReLU(),
    nn.MaxPool2d(kernel_size = 2, stride = 2),

    nn.Conv2d(64, 128, kernel_size = (3, 3), padding = 1),
    nn.ReLU(),
    nn.Conv2d(128, 128, kernel_size = (3, 3), padding = 1),
    nn.ReLU(),
    nn.MaxPool2d(kernel_size = 2, stride = 2),

    nn.Conv2d(128, 256, kernel_size = (3, 3), padding = 1),
    nn.ReLU(),
    nn.Conv2d(256, 256, kernel_size = (3, 3), padding = 1),
    nn.ReLU(),
    nn.MaxPool2d(kernel_size = 2, stride = 2),
)

self.dense = nn.Sequential(
    nn.Linear(256 * 16 * 16, 256 * 2 * 2),
    nn.ReLU(),
    nn.Linear(256 * 2 * 2, 256),
    nn.ReLU(),
    nn.Linear(256, 1),
    nn.Sigmoid()
)
```

Couldn't start client Python

Implementation - PSMNet



Implementation - Monodepth



Results
- Runtime & Error

- Run time

	Real	Synthetic
Time	1.5 sec	0.5 sec

- Error (with augmentation)

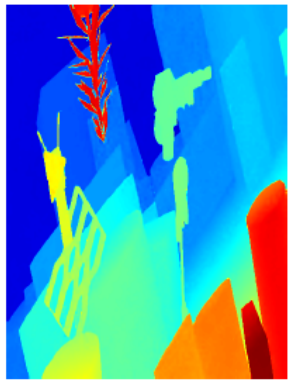
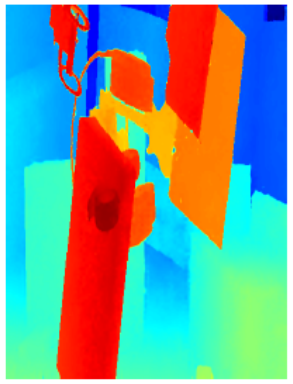
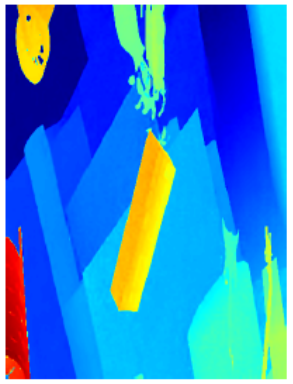
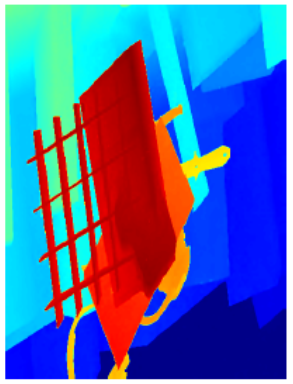
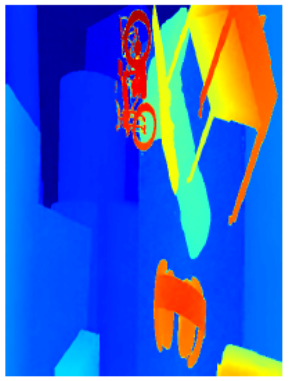
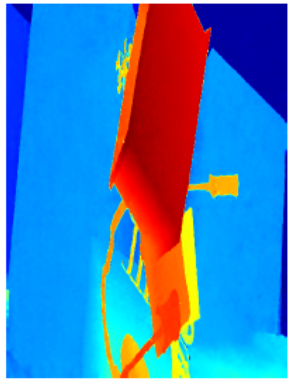
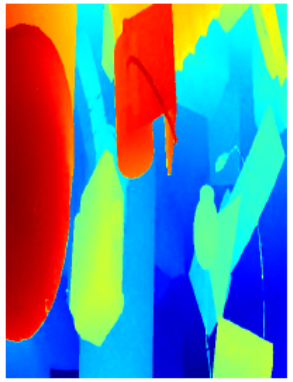
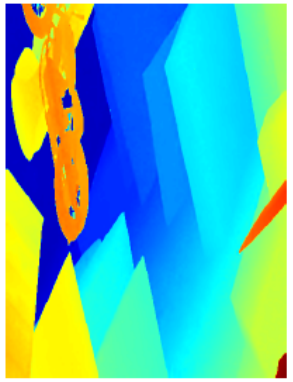
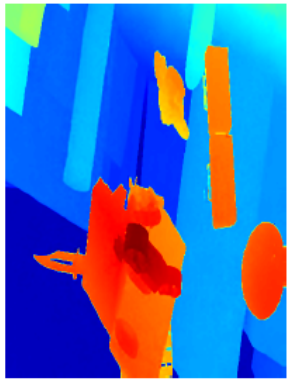
	TL0	TL1	TL2	TL3	TL4	TL5	TL6	TL7	TL8	TL9	Avg
Error	1.56	1.02	1.25	1.11	1.13	0.96	1.55	1.04	1.60	1.09	1.23

- Error (without augmentation)

	TL0	TL1	TL2	TL3	TL4	TL5	TL6	TL7	TL8	TL9	Avg
Error	0.67	0.98	0.67	0.66	1.21	0.64	0.43	0.64	0.80	1.68	0.84

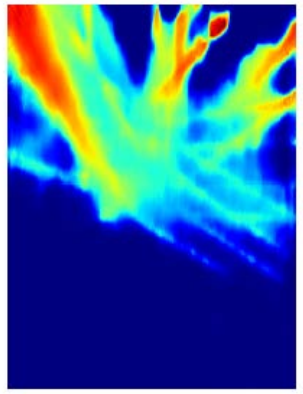
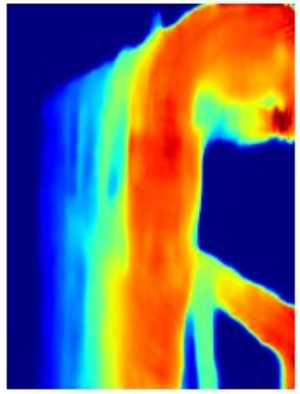
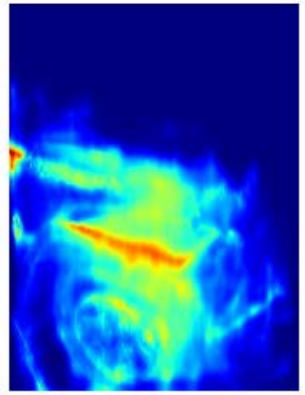
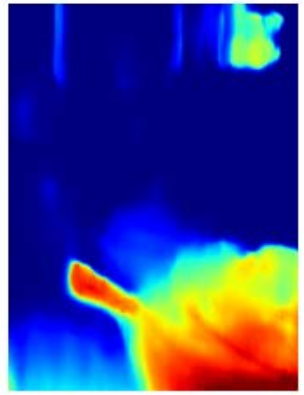
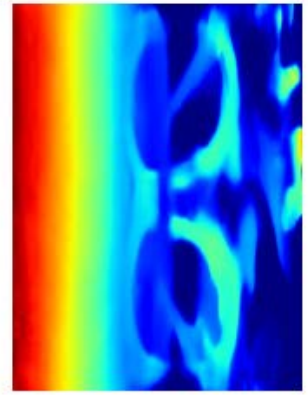
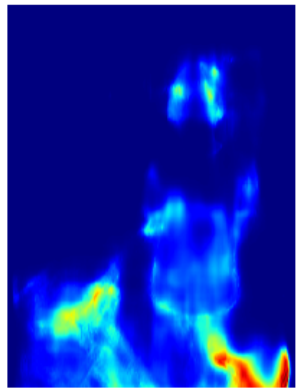
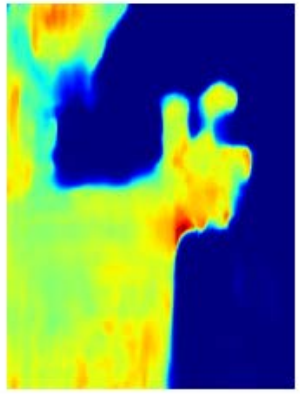
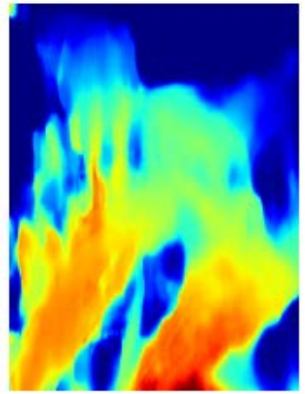
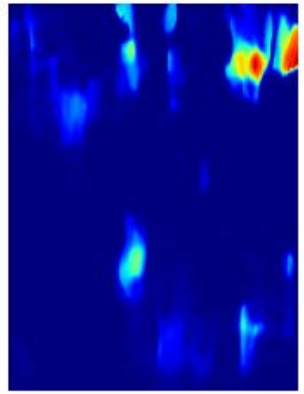
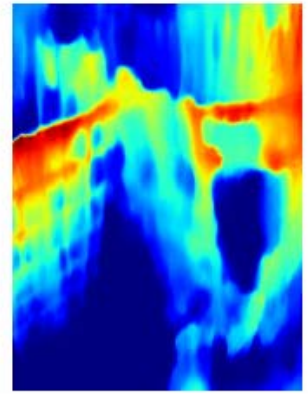
Results

- Disparity Map (Syn)

Synthetic_TL0	Synthetic_TL1	Synthetic_TL2	Synthetic_TL3	Synthetic_TL8
				
Synthetic_TL4	**Synthetic_TL5**	**Synthetic_TL6**	**Synthetic_TL7**	**Synthetic_TL9**
				

Results

- Disparity Map (Real)

Real_TL0	Real_TL2	Real_TL3	Real_TL4	Real_TL5
				
Real_TL1	**Real_TL6**	**Real_TL7**	**Real_TL8**	****Real_TL9****
				

Thanks for listening