

Bidirectional Feature Pyramid Network with Recurrent Attention Residual Modules for Shadow Detection

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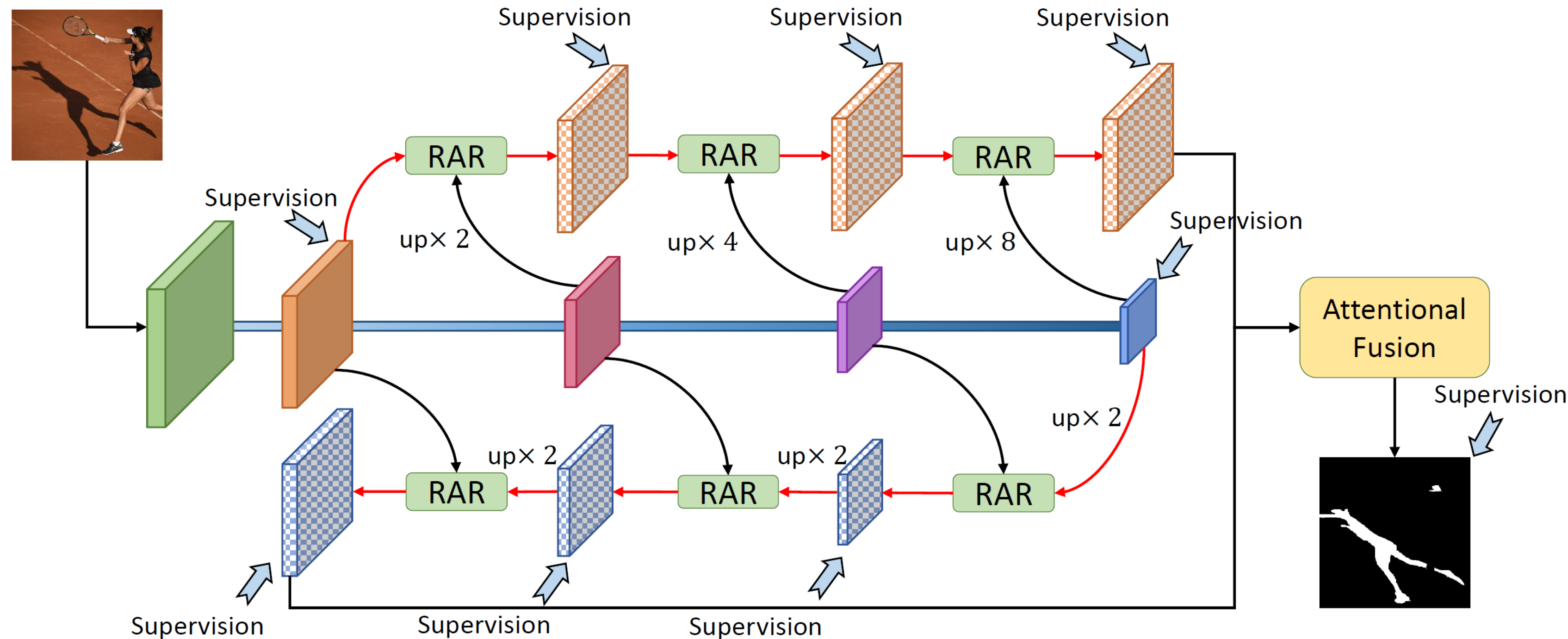
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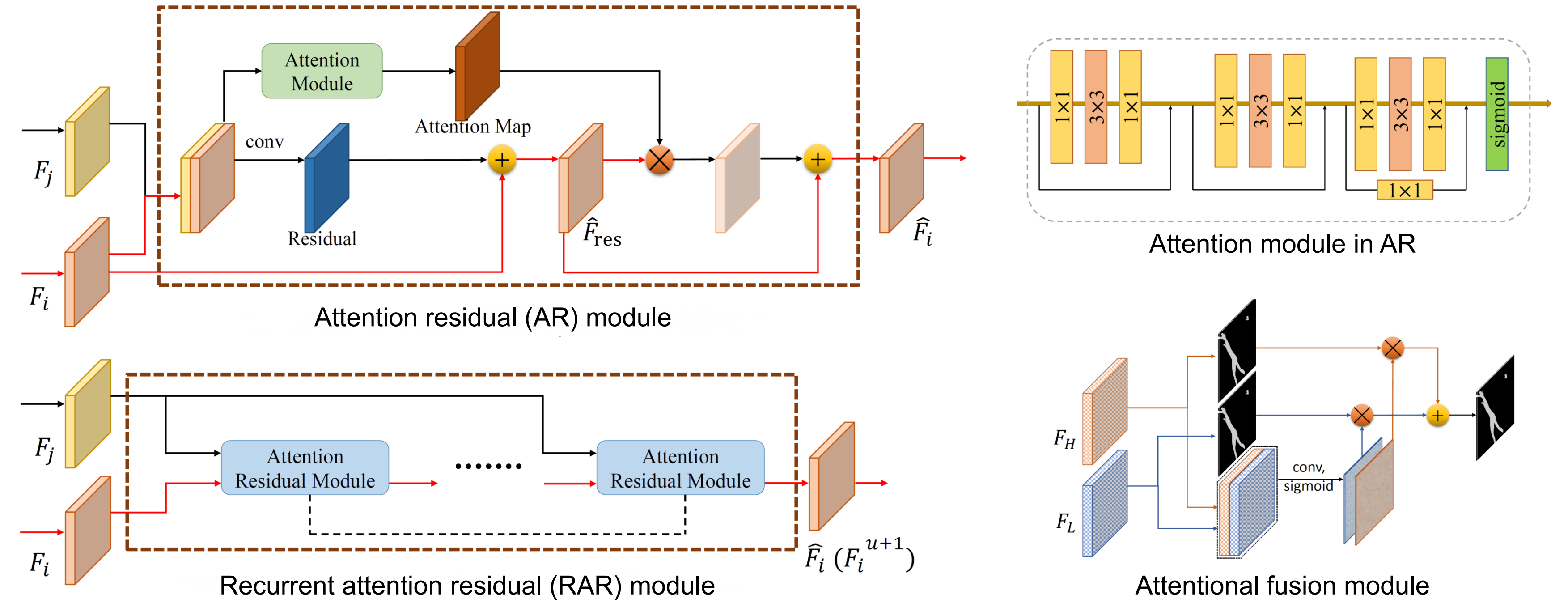
Contributions

- Detect shadows by exploring and combining **global context in deep layers** and **local context in shallow layers** of a deep convolutional neural network (CNN).
- Formulate the **recurrent attention residual (RAR) module** to combine the contexts in two adjacent CNN layers and learn an attention map to select a residual and then refine the context features.
- Develop a **bidirectional feature pyramid network (BFPN)** to aggregate shadow contexts spanned across different CNN layers by deploying two series of RAR modules.
- Outperform the best existing method with **34.88%** reduction on SBU and **34.57%** reduction on UCF for the balance error rate (BER).

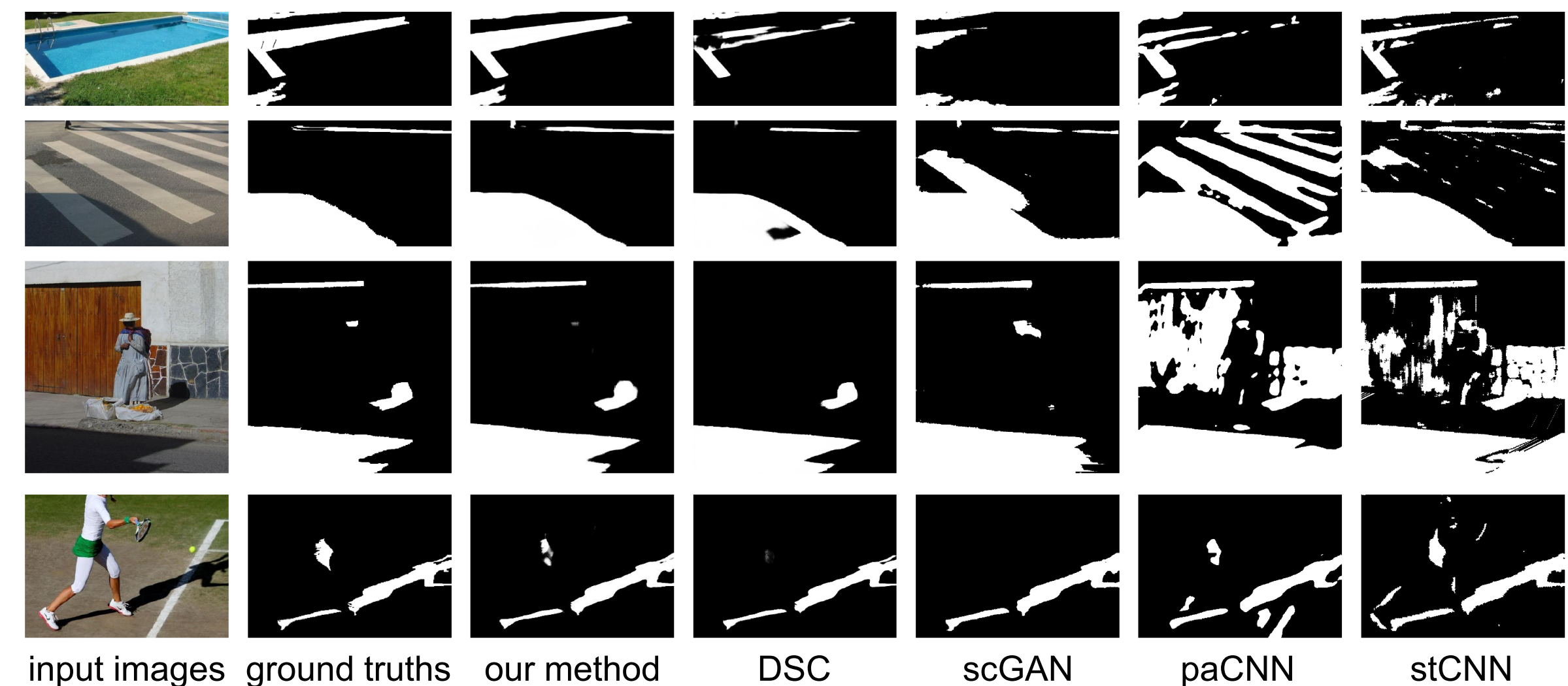
Network Architecture



Module Details



Experimental Results



method	BER	
	SBU	UCF
BDRAR (ours)	3.64	5.30
DSC	5.59	8.10
scGAN	9.10	11.50
stacked-CNN	11.00	13.00
patched-CNN	11.56	-
Unary-Pairwise	25.03	-
DeshadowNet	6.96	8.92
SRM	7.25	9.81
Amulet	15.13	15.17
PSPNet	8.57	11.75