

Table 1: Structure of networks' modules. Each Residual block consists of two 2D convolutions followed by shortcut connection. Every convolution and transposed convolution (including these in the Residual blocks), is followed by LeakyReLU with negative slope 0.2 and Instance Normalization.

	Layer Description	Output Dimension
	color image	$H \times W \times 3$
<b>Embedding module</b>		
E1	2D conv. $3 \times 5 \times 5 \times 64$ stride 2	$\frac{1}{2}W \times \frac{1}{2}W \times 64$
E2	2D conv. $64 \times 5 \times 5 \times 64$ stride 2	$\frac{1}{4}H \times \frac{1}{4}W \times 64$
E3	$2 \times$ Residual block with $64 \times 3 \times 3 \times 64$ 2D conv.	$\frac{1}{4}H \times \frac{1}{4}W \times 64$
E4-redir.	2D conv. $64 \times 3 \times 3 \times 8$ no IN, LeakyReLU	$\frac{1}{4}H \times \frac{1}{4}W \times 8$
<b>Matching module</b>		
M1	concatenate left-right embeddings E3	$\frac{1}{4}H \times \frac{1}{4}W \times 128$
M2	2D conv. $128 \times 3 \times 3 \times 64$	$\frac{1}{4}H \times \frac{1}{4}W \times 64$
M3	$2 \times$ Residual block with $64 \times 3 \times 3 \times 64$ 2D conv.	$\frac{1}{4}H \times \frac{1}{4}W \times 64$
M4	2D conv. $64 \times 3 \times 3 \times 8$ no IN, LeakyReLU	$\frac{1}{4}H \times \frac{1}{4}W \times 8$
<b>Regularization module</b>		
H1	concatenate joint embeddings M4	$\frac{1}{4}H \times \frac{1}{4}W \times \frac{1}{4}D \times 8$
H2	3D conv. $8 \times 3 \times 3 \times 3 \times 8$	$\frac{1}{4}H \times \frac{1}{4}W \times \frac{1}{4}D \times 8$
H3	3D conv. $8 \times 3 \times 3 \times 3 \times 16$ , stride 2	$\frac{1}{8}H \times \frac{1}{8}W \times \frac{1}{8}D \times 16$
H4	H3 + E4-redir.	$\frac{1}{8}H \times \frac{1}{8}W \times \frac{1}{4}D \times 16$
H5	3D conv. $16 \times 3 \times 3 \times 3 \times 16$	$\frac{1}{8}H \times \frac{1}{8}W \times \frac{1}{8}D \times 16$
H6	H5 + H4	$\frac{1}{8}H \times \frac{1}{8}W \times \frac{1}{8}D \times 16$
H7	3D conv. $16 \times 3 \times 3 \times 3 \times 32$ , stride 2	$\frac{1}{16}H \times \frac{1}{16}W \times \frac{1}{16}D \times 32$
H8	3D conv. $32 \times 3 \times 3 \times 3 \times 32$	$\frac{1}{16}H \times \frac{1}{16}W \times \frac{1}{16}D \times 32$
H9	H8 + H7	$\frac{1}{16}H \times \frac{1}{16}W \times \frac{1}{16}D \times 32$
H10	3D conv. $32 \times 3 \times 3 \times 3 \times 64$ , stride 2	$\frac{1}{32}H \times \frac{1}{32}W \times \frac{1}{32}D \times 64$
H11	3D conv. $64 \times 3 \times 3 \times 3 \times 64$	$\frac{1}{32}H \times \frac{1}{32}W \times \frac{1}{32}D \times 64$
H12	H11 + H10	$\frac{1}{32}H \times \frac{1}{32}W \times \frac{1}{32}D \times 64$
H13	3D conv. $64 \times 3 \times 3 \times 3 \times 128$ , stride 2	$\frac{1}{64}H \times \frac{1}{64}W \times \frac{1}{64}D \times 128$
H14	3D dconv. $128 \times 4 \times 4 \times 4 \times 64$ , stride 2	$\frac{1}{32}H \times \frac{1}{32}W \times \frac{1}{32}D \times 64$
H15	H14+H11	$\frac{1}{32}H \times \frac{1}{32}W \times \frac{1}{32}D \times 64$
H16	3D conv. $64 \times 3 \times 3 \times 3 \times 64$	$\frac{1}{32}H \times \frac{1}{32}W \times \frac{1}{32}D \times 64$
H17	3D dconv. $64 \times 4 \times 4 \times 4 \times 32$ , stride 2	$\frac{1}{16}H \times \frac{1}{16}W \times \frac{1}{16}D \times 32$
H18	H17+H8	$\frac{1}{16}H \times \frac{1}{16}W \times \frac{1}{16}D \times 32$
H19	3D conv. $32 \times 3 \times 3 \times 3 \times 32$	$\frac{1}{16}H \times \frac{1}{16}W \times \frac{1}{16}D \times 32$
H20	3D dconv. $32 \times 4 \times 4 \times 4 \times 16$ , stride 2	$\frac{1}{8}H \times \frac{1}{8}W \times \frac{1}{8}D \times 16$
H21	H20+H5	$\frac{1}{8}H \times \frac{1}{8}W \times \frac{1}{8}D \times 16$
H22	3D conv. $16 \times 3 \times 3 \times 3 \times 16$	$\frac{1}{8}H \times \frac{1}{8}W \times \frac{1}{8}D \times 16$
H23	3D dconv. $16 \times 4 \times 4 \times 4 \times 8$ , stride 2	$\frac{1}{4}H \times \frac{1}{4}W \times \frac{1}{4}D \times 8$
H24	H23+H3	$\frac{1}{4}H \times \frac{1}{4}W \times \frac{1}{4}D \times 8$
H25	3D conv. $8 \times 3 \times 3 \times 3 \times 8$	$\frac{1}{8}H \times \frac{1}{8}W \times \frac{1}{8}D \times 8$
H26	3D dconv. $8 \times 4 \times 4 \times 4 \times 4$ , stride 2	$\frac{1}{2}H \times \frac{1}{2}W \times \frac{1}{2}D \times 4$
H27	3D dconv. $4 \times 3 \times 4 \times 4 \times 1$ , stride (1,2,2) no IN, LeakyReLU	$H \times W \times \frac{1}{2}D$